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A-16 PATRIOT

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823 (U)~~(S)~~
PROGRAM: PATRIOT

AS OF DATE: December 31, 1985

85-034

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1. (U) Designation and Nomenclature (Popular Name): Guided Missile System, Air Defense (PATRIOT).

2. (U) DoD Component: Department of the Army

3. (U) Responsible Office and Telephone Number:

Project Manager, PATRIOT
U.S. Army Missile Command
ATTN: AMCPM-PA
Redstone Arsenal, AL 35898-5620

PM: COL Larry R. Capps
Assigned: July 8, 1985
AV 742-3240; COMM (205) 895-3240

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

4. (U) Program Elements:

RDTE: 64307A
PROCUREMENT: C49100, CA0252
MILCON: 1335,1336,1337,1348,1349,1346,1347,0498

5. (U) Related Programs: Improved HAWK and PATRIOT Anti-Tactical Missile

6. (U) Mission and Description:

(U) PATRIOT will replace NIKE HERCULES and some of the Improved HAWK units. Deployment of the PATRIOT System will significantly reduce manpower and logistical costs and provide an improved Army air defense. In the field Army, PATRIOT defenses will be complemented by short range, low altitude forward area air defense weapons and will be integrated with the U.S. Air Force in the overall air defense of the theater of operations. The advanced features of PATRIOT will provide an increased capability against saturation attacks, electronic countermeasures (ECM), and maneuvering targets.

CLASSIFIED BY [redacted] CLASSIFICATION GUIDE
DECLASSIFY: OADR

NOTE: THE PATRIOT SAR WILL NOT BE SEPARATED INTO CONFIDENTIAL AND SECRET DOCUMENTS AT ANY LEVEL, BUT WILL BE STAMPED/DISTRIBUTED AS A SINGLE SECRET DOCUMENT.

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

(U) PATRIOT will use an advanced surface-to-air guided missile system with a high single-shot kill probability capable of operation in an Electronic Countermeasures Environment (ECM) and able to conduct multiple simultaneous engagements against the high-performance air-breathing targets (ABT) likely to be encountered by deployed United States forces during the 1980s and beyond. To cope with the projected threat, PATRIOT will utilize a trainable, multifunction, electronically-scanned, phased array radar. In addition, a digital computer will be used to automatically control the system functions and provide the operator, through various displays, the ability to control and monitor operations. The guidance system combines command guidance and homing guidance (track-via-missile [TVM]) systems. A listing of the principal items of the PATRIOT weapon system is provided in paragraph 11.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- The PATRIOT (formerly SAM-D) Weapon System development program began in 1965 when the Secretary of Defense (SECDEF) authorized Concept Definition (CD). In May 1967, CD was completed and a contract for Advanced Development (AD) was awarded to Raytheon Company, the prime contractor. On January 10, 1974, DEPSECDEF directed the Army to redirect the SAM-D Program to permit early flight verification of the TVM guidance system and emphasize greater austerity. As a result, the SAM-D development effort was restructured by letter contract modification dated February 11, 1974. ASARC/DSARC decisions in January 1976 approved the program to resume full-scale Engineering Development.

(U) OT II began on November 19, 1979, and was completed on March 10, 1980. During the OT-II testing, some shortfalls were experienced in the areas of reliability, maintainability, target identification, and ECCM performance. As a result of these shortfalls, the September 10, 1980, Secretary of Defense Decision Memorandum (SDDM) approved only limited production and prescribed a series of four test units to demonstrate system performance, reliability and maintainability prior to a full production decision. By October 1981 test units one, two, and three had been completed. With the exception of the maintainability area, these tests demonstrated that the corrective measures taken to eliminate the system's shortfalls were very effective.

(U) During 1981 several support concepts were analyzed. These analyses, coupled with the maintainability shortfall, dictated several revisions to the PATRIOT maintenance concept.

(U) In September 1984, SDDM Test Unit 4 (Follow-On Evaluation) was successfully completed. All targets (4 of 4) were destroyed during the two mission firing phase.

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

(U) During the period of April 11 through August 1, 1985, five P^3I missile flight tests were conducted. These flights provided flight environment performance data for the new fuze digital processor. The new fuze is currently being used in production missiles.

(U) On March 11, 13, and 16, 1985, three reliability surveillance missiles were fired against MQM107 drone targets by 2/43 ADA troops as a part of collective training graduation exercises. Each of the three missiles destroyed the intended target.

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

(U) Deployment of the first European battalion was successfully completed on March 5, 1985. After all personnel and equipment arrived in Germany in January 1985, full demonstration of the battalion's tactical operations was accomplished and final user acceptance occurred as scheduled.

(U) The second European battalion completed collective training in March 1985. Shipment of its equipment began in May 1985 with all personnel arriving in Germany, as scheduled, in June 1985. Deployment of the second battalion was successfully completed on August 16, 1985. Two PATRIOT battalions are now successfully performing their assigned NATO missions.

(U) The Japanese coproduction Memorandum of Understanding (MOU) was signed on October 4, 1985, and the Implementing Agreement was signed on November 12, 1985, permitting Japan to produce PATRIOT under a license agreement with Raytheon. The planned quantity to be produced is 26 fire units with attendant missiles and support equipment, making PATRIOT the largest dollar value ($3 billion) program in the history of U.S./ Japanese defense cooperation.

(U) A foreign military sales case with the Federal Republic of Germany was signed in February 1985 for 14 PATRIOT fire units at an estimated cost of $1.1 billion. Periodic dialogue among Italy, Belgium, and OSD is presently ongoing to arrange some type of cooperation program patterned after the German approach. Korea has requested updated information and a government team visited there in October 1985.

(U) A multiyear contract is planned for buy-out of the PATRIOT system during FY 1987-1991. This procurement strategy will result in significant (10 percent) savings over annual procurements. The cost information provided in this report reflects the planned multiyear procurement.

(U) The system is expected to meet its mission requirements. Completion of the program on schedule is dependent upon full-funding support.

c. (U) Changes Since "As Of" Date -- The third European Battalion began collective training on January 15, 1986, at Fort Bliss, Texas.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCPs (dated October 14, 1976, with Cover Sheet No. 1, approved January 20, 1978, and Cover Sheet No. 2, approved November 24, 1978) or SDDM (dated September 10, 1980) threshold breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate/ Approved Program	Current Estimate
Initiation of ADDEV	May 67/May 67	May 67
DCP Thresholds: Contract for ED	Mar 72/Mar 72	Mar 72

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

	Development Estimate/ Approved Program	Current Estimate
PATRIOT DCP Milestones (Oct 76/Jan 78):		
First Electronic Countermeasures (ECM) Flight	Aug 76/Aug 76	Dec 76
Delivery of FU-2 to White Sands Missile Range	Jan 77/Jan 77	Jul 77
Completion of Phase II ECM Search/Track Tests	Jun 77/Jun 77	Dec 77
Start of Producibility Engineering and Planning (PEP)	Oct 77/Oct 77	Oct 77
Delivery of FU-3 to White Sands Missile Range	Sep 78/Sep 78	Dec 78
First Modular Digital Airborne Guidance System (MDAGS) Flight	Oct 78/Oct 78	Sep 78
Delivery of FU-5 to White Sands Missile Range	Jan 79/Jan 79	Feb 79
Contractor Flight Tests completed and start of DT/OT II testing	Jul 79/Jul 79	Jan 80
Secretary of Defense Decision Memorandum (SDDM) (10 Sep 80) Tests:		
Completion of DT/OT II testing	May 80/May 80	Dec 80
Completion of SDDM Test Unit 1	Jan 81/Jan 81	Jan 81
Completion of SDDM Test Unit 2	Jun 81/Jun 81	Jul 81
Completion of SDDM Test Unit 3	Oct 81/Oct 81	Oct 81
Completion of Component/System Design Confirmation	Sep 82/Sep 82	Feb 83
Completion of SDDM Test Unit 4	May 83/May 83	Sep 84
Contract for Initial Production Facilities (IPF)	Apr 79/Apr 79	Mar 79
Limited Production Decision (DSARC-III [LP])	N/A	Sep 80
Full Production Decision	Apr 80/Apr 80	Apr 82
Initial Operational Capability (IOC)	Apr 82/Apr 82	Feb 83

b. (U) Previous Change Explanations --

The differences reflect delays in initial availability of Fire Units 1, 2, and 3 and interruptions of the flight test program for MDAGS integration. System integration difficulties delayed the completion of contractor flight tests, start and completion of DT/OT II, full production decision, and the IOC date. Additionally, the differences reflect delays in delivery of production hardware. Schedules were adjusted to incorporate additional stress and reliability verification testing prior to the beginning of SDDM Test Unit 4 (Follow-On Evaluation).

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

d. (U) References -- Development Estimate/Approved Program:

(U) Revised DCP #50, approved October 14, 1976, with Cover Sheet No. 1, approved January 20, 1978, and Cover Sheet No. 2, approved November 24, 1978.

(U) SDDM, dated September 10, 1980.

10. (U) Technical/Operational Characteristics:

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a. (U) Characteristics			
(U) Firing Unit Static Inherent [illegible]	0.97	.97	0.97
(b)(1) [redacted]			

b. (U) Previous Change Explanations --

The primary difference in the performance estimates is due to changes in hardware configuration as a result of OSD redirection of the program in January 1974. The current estimate reflects PATRIOT performance for specific conditions of target size, altitude, speed, and maneuver (and time of execution of manuver). Predicted performance presented is against the system requirement and is projected for the worst case conditions. The system performance should be substantially better when the system is employed against targets in a full tactical environment where the full multiple environment favorable to the enemy is unlikely to be encountered.

1/ (U) The values shown reflect range to intercept for a target not in line from jammer to radar; the numbers shown in parentheses reflect range to intercept for a target in line from jammer to radar.

10. (U) Technical/Operational Characteristics (Cont'd):

(b)(1) [redacted]

d. (U) References -- Development Estimate/Approved Program: DCP #50, approved October 14, 1976.

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. (U) Cost --			
Development (RDT&E)	$1106.2	$ +447.3	$1553.5
Procurement	3121.2	-100.8	3020.4
Guided Missile	(964.7)	(+133.9)	(1,098.6)
HE Warhead	(121.9)	(+3.9)	(125.8)
Adaption Kit	(271.7)	(-271.7)	(0.0)
Fire Control Section (FCS)	(1141.8)	(-358.0)	(783.8)
Launcher	(254.0)	(+59.8)	(313.8)
Other (GSE)	(186.0	(-45.3)	(140.7)
Advanced Prod Engr	(56.9)	(-56.9)	(0.0)
IFF		(+138.6)	(138.6)
Total Flyaway	(2997.0)	(-395.7)	(2601.3)
Peculiar Support Equipment	(26.7)	(+6.3)	(33.0)
Training Devices		(+18.0)	(18.0)
Software Support		(+63.7)	(63.7)
ILS		(+65.7)	(65.7)
DMPE		(+8.4)	(8.4)
Initial Spares	(97.5)	(+132.8)	(230.3)
Construction (MILCON)	40.0	+16.5	56.5
Total FY 72 Base-Year $	4267.4	+363.0	4630.4
Escalation	973.1	+6492.4	7465.5
Development (RDT&E)	(93.8)	(+492.3)	(586.1)
Procurement	(848.6)	(+5935.8)	(6784.4)
Construction (MILCON)	(30.7)	(+64.3)	(95.0)
Total Then-Year $	5240.5	+6855.4	12095.9
b. (U) Quantities --			
Development (RDT&E)	6.0	-1	5.0
Procurement	234.0	-134	100.0 1/
Total	240.0	-135	105.0 1/
c. (U) Unit Cost --			
Procurement:			
FY 72 Base-Year $	13.338	+16.866	30.204
Then-Year $	16.965	+81.083	98.048
Program:			
FY 72 Base-Year $	17.781	+26.318	44.099
Then-Year $	21.835	+93.364	115.199

1/ Does not include the 3 fire units funded by NATO Air Base Defense funds.

11. (U) Program Acquisition Cost (Cont'd): (Current Estimate in Millions of Dollars)

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

	Development Est 1/ DCP (Mar 72)		Approved PGM 2/ DCP (Oct 76)		Current Est Flyaway Cost	
	Qty/Rate Per Mo.	Cost	Qty/Rate Per Mo.	Cost	Qty/Rate Per Mo.	Cost
Missile Round						
FY 72 Base-Year $	6250/120	.090 3/	6250/55	.157	6037/80	.207
Then-Year $		.113 3/		.341		.698
Radar						
FY 72 Base-Year $	125/3	2.828	125/2	3.259	101/1.25	5.817
Then-Year $		3.585		6.690		18.145
Engagement Control Station						
FY 72 Base-Year $	125/3	.887	125/2	1.022	102/1.25	1.575
Then-Year $		1.125		2.098		4.886
Launching Station						
FY 72 Base-Year $	625/15	.250	625/11	.378	588/11	.540
Then-Year $		.316		.787		1.740

1/ The Mar 72 DCP reflected contractor Design-to-Unit Production Cost Goals.
2/ The Oct 76 DCP does not reflect approved thresholds for these items.
3/ Missile Round without Warhead and Canister.

e. (U) Foreign Military Sales --

Quantity	Estimate Cost Then-Year $	Country
4	$292M	Netherlands
14	$1157M	Germany

f. (U) Nuclear Costs - - None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

		Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. (U)	Program Acquisition			
(1) (U)	Cost	12095.9	12704.3	12095.9
(2) (U)	Quantity	105 1/	105 1/	105 1/
(3) (U)	Unit Cost	115.199	120.993 2/	115.199
b. (U)	Current Procurement	(FY 1986)	(FY 1986)	(FY 1987)
(1) (U)	Cost	1020.6	1088.4	1037.4
	Less CY Adv Proc			45.3
	Plus PY Adv Proc			
	Net Total	1020.6	1088.4	992.1
(2) (U)	Quantity	12	12	12
(3) (U)	Unit Cost	85.050	90.700	82.675

1/ Does not include the 3 fire units bought with NATO Air Base Defense funds.
2/ Baseline SAR improperly reported $117.632M based on a quantity of 108.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1200.0	3969.8	70.7	5240.5
Previous Changes				
Economic	+89.3	+2503.0	-35.9	+2556.4
Quantity	-87.8	-911.8	-73.5	-1073.1
Schedule	+322.4	+2019.9	+2.7	+2345.0
Engineering	+331.0	-573.1	-	-242.1
Estimating	+360.0	+1749.0	+195.5	+2304.5
Other	+27.6	-	-	+27.6
Support	+130.6	+1414.9	-	+1545.5
Subtotal	+1173.1	+6201.9	+88.8	+7463.8
Current Changes				
Economic	-5.9	-389.0	-2.1	-397.0
Quantity	-	+37.3	-5.9	+31.4
Schedule	-	+4.7	-	+4.7
Engineering	-	-	-	-
Estimating	-227.6	+ 31.5	-	-196.1
Other	-	-	-	-
Support	-	-51.4	-	-51.4
Subtotal	-233.5	-366.9	-8.0	-608.4
Total Changes	+939.6	+5835.0	+80.8	+6855.4
Current Estimate	2139.6	9804.8	151.5	12095.9

(FY 1972 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1106.2	3121.2	40.0	4267.4
Previous Changes				
Quantity	-65.1	-1058.1	-42.9	-1166.1
Schedule	+231.4	+442.1	-	+673.5
Engineering	+129.4	-455.4	-	-326.0
Estimating	+144.3	+485.8	+6 .9	+692.0
Other	+24.5	-	-	+24.5
Support	+63.6	+480.9	-	+544.5
Subtotal	+528.1	-104.7	+19.0	+442.4
Current Changes				
Quantity	-	+9.7	-2.5	+7.2
Schedule	-	+1.2	-	+1.2
Engineering	-	-	-	-
Estimating	-80.8	+9.6	-	-71.2
Other	-	-	-	-
Support	-	-16.6	-	-16.6
Subtotal	-80.8	+3.9	-2.5	-79.4
Total Changes	+447.3	-100.8	+16.5	+363.0
Current Estimate	1553.5	3020.4	56.5	4630.4

3. (U) Cost Variance Analysis (Cont'd):

b. (U) Previous Change Explanations --

RDT&E
- Economic: revised escalation rates
- Quantity: reduction in test hardware and missiles
- Schedule: program stretchout/redirection and acceleration of deployment
- Engineering: improvements in ECCM to accommodate state-of-the-art changes
- Estimating: changes of PEP, redefined estimating procedures, add RSI and increased development tasks
- Other: reflects a negotiated overrun
- Support: changes in training, maintenance concept and support equipment

Procurement
- Economic: revised escalation rates
- Quantity: reduction of 134 fire units and reconfiguration of a fire unit to 8 launchers vice 5
- Schedule: change from 24 to 12 fire units per year and stretchout caused by program redirection and funding cuts
- Engineering: elimination of nuclear warhead, change missile guidance, computer memory, antenna mast set, ARM decoy, fuze, and radar side lobe cancellors
- Estimating: reflects refined estimating techniques, deletion of non-peculiar GFE, transfer of software to OMA and savings due to FMS

Construction
- Quantity: deletion of CONUS fire units and reduced two European sites based on U.S./ German agreement
- Estimating: change in reporting requirements

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) (U) RDT&E		
Revised Jan 86 escalation rates. (Economic)	N/A	-5.9
Funds for Mod development effort were transferred to 6.7. (Estimating)	-80.8	-227.6
(2) (U) Procurement		
Revised Jan 86 escalation rates (Economic)	N/A	-389.0
Addition of 60 missiles (Quantity)	+9.7	+37.3
Procurement of 100 missiles in FY91 instead of FY88 (Schedule)	+1.2	+4.7

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

	(Dollars in Millions) Base-Year	Then-Year
Estimating changes	+9.6	+ 31.5
o Revised estimate of the hardwaare based on more recent production cost data.	(+44.2)	(+154.4)
o MIPA funding of software transfer from OMA	(+46.5)	(+171.9)
o Revision of cost for 60 additional missiles	(+5.2)	(+20.0)
o Savings due to multiyear	(-86.3)	(-314.8)
Changes in support requirements (Support)	-16.6	-51.4
o Reduced estimate for peculiar support equipment	(-3.2)	(-10.8)
o Reduced estimate for ILS	(-8.1)	(-26.9)
o Revised estimate for Initial Spares	(-5.3)	(-13.7)

(3) (U) MILCON

Revised Jan 86 escalation rates (Economic)	N/A	-2.1
Deletion of a CONUS site due to reconfiguration of the CONUS units (Quantity)	-2.5	-5.9

d. (U) References -- Development Estimate:

(1) (U) Revised DCP #50, dated March 1972.

(2) (U) SDDM, dated September 10, 1980.

14. (U) Program Acquisition Unit Cost (PAUC History): (Millions of then-year dollars)

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

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
6.881	+6.580	+3.888	+0.897	+1.346	+2.243			+14.954	21.835

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

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
21.835	+20.566	+18.154	+22.377	-2.306	+20.080	+0.263	+14.230	+93.364	115.199

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

a. (U) RDT&E

Engineering Development

Raytheon Company, Boston, MA
DAAH01-82-C-A181, CPIF
Award: March 10, 1981
Definitized: April 27, 1982

Initial Contract Price

Target	Ceiling	Qty
$11.3	N/A	N/A

Current Contract Price

Target	Ceiling	Qty
$105.1	N/A	N/A

Estimated Price at Completion

	Contractor	Program Manager
AS AMENDED	(b)(4)	

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$4.6	$-7.0
Cumulative Variances to Date (10/27/85)	$6.2	$-5.6
Net Change	$1.6	$ 1.4

(U) Explanation of Change: The cost variance is due to underruns on Intermediate Maintenance (IM) Logistics Support Analysis Report (LSAR), IM Software, Maintenance Improvement Program (MIP) Engineering Development (ED), Battery Replaceable Units (BRUs), Standoff Jammer Counter, Fire Unit-3 Upgrade, Radar Enhancement, and Information and Coordination Central Processing Unit. The net schedule variance is due to schedule recovery on MIP, Clutter Canceller Development, ED BRUs, Software Enhancement, DAS-3A Adaption and Radar Enhancement, and schedule slips on Standoff Jammer.

(U) The Program Manager's estimate $0.2M net decrease was due to a $1.3M increase associated with contract modifications for Responsive Threat Analysis and System Integration Requirements and a $2.2M net Estimate-to-Complete (ETC) decrease due to ETC decrease on Intermediate Maintenance LSAR, Software Maintenance, Radar Enhancement, Fire Unit-3 Upgrade, Standoff Jammer and ED Spares, and ETC increases for DAS-3A and clutter canceller. The total program estimate and schedule are not affected by these variances.

b. (U) Procurement

IPF (Buy 6)

Raytheon Company, Boston, MA
DAAH01-84-C-A147, CPFF/AF/IF
Award: June 29, 1984
Definitized: September 20, 1984

Initial Contract Price

Target	Ceiling	Qty
$43.0	N/A	1/

5. (U) Contract Information (Cont'd): (Then-Year Dollars in Millions)

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$43.0	N/A	N/A	AS AMD (b)(4)	

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$-1.1	$ 0.0
Cumulative Variances to Date (10/27/85)	$ 5.5	$-7.1
Net Change	$ 6.6	$-7.1

(U) Explanation of Change: The cost variance is due to underruns on Project Support and Test Equipment. The schedule variance is due to schedule slips on Tooling, Production Line Setup, and Test Equipment. The Program Manager's estimate is equal to the contract target price at completion and will remain unchanged until trends indicate otherwise. The total program estimate and schedule are not affected by these variances.

IPF (Buy 7)

Raytheon Company, Boston, MA
DAAH01-85-C-A066 , CPFF/AF/IF
Award: May 31, 1985
Definitized: May 31, 1985

Initial Contract Price		
Target	Ceiling	Qty
$63.6	N/A	1/

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$70.7	N/A	N/A	AS (b)(4)	

	Cost Variance	Schedule Variance
Previous Cumulative Variance	-	-
Cumulative Variances to Date (10/27/85)	$ 1.2	$0.5
Net Change	-	-

(U) Explanation of Change: This is the first SAR submission, thus, there are no variances from a prior SAR to address. The present variances are primarily due to underruns on Test Equipment and Program Management, and Test Equipment completions ahead of schedule. The Program Manager's estimate is equal to the target price and will remain unchanged until trends indicate otherwise. The total program estimate and schedule are not affected by these variances.

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

Production Contract (FY83)

Raytheon Company, Boston, MA
DAAH01-83-C-A004 , FPI
Award: November 17, 1982
Definitized: September 30, 1983

Initial Contract Price		
Target	Ceiling	Qty
$480.0	$531.4	12 2/

Current Contract Price		
Target	Ceiling	Qty
$492.4	$544.7	12 2/

Estimated Price at Completion

	Contractor	Program Manager
AS AMEN	(b)(4)	

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$ -5.2	$ -9.8
Cumulative Variances to Date (10/27/85)	$-14.0	$-20.1
Net Change	$-8.8	$-10.3

(U) Explanation of Change: The cost variance is primarily associated with Fabrication, Assembly, Inspection and Test (FAIT) inefficiencies and the associated increase in apportioned support labor, applied rates and factors and schedule recovery effort on the Launcher at Martin Marietta. The schedule variance is primarily associated with the FAIT inefficiencies mentioned above and the missile radome bonding problem at Raytheon. The Program Manager's estimate increased $7.1M due to a contract modification for missile changes and a revised Estimate-to-Complete (ETC) for FAIT inefficiencies and associated effects on support labor and rate applications and the radome bonding problem impact on the missile schedule. Additional funding liability after third year availability will be provided by Headquarters AMC. The total program estimate and schedule are not affected by these variances.

Production Contract (FY84)

Raytheon Company, Boston, MA
DAAH01-84-C-A041 , FPI
Award: November 29, 1983
Definitized: August 24, 1984

Initial Contract Price		
Target	Ceiling	Qty
$640.7	$722.8	13 2/

Current Contract Price		
Target	Ceiling	Qty
$639.2	$721.1	13 2/

Estimated Price at Completion

	Contractor	Program Manager
AS AMENDE	(b)(4)	

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$-6.7	$ -6.4
Cumulative Variances to Date (10/27/85)	$ 0.5	$-52.0
Net Change	$ 7.2	$-45.6

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

(U) Explanation of Change: The cost variance is primarily associated with underruns on Ground Support Equipment FAIT and associated support labor and applied rates and factors. The schedule variance is due to the impact of production Buys 3 and 4 schedule slips and the resulting late start of Production 5 activities, part shortages, and late vendor delivery to Martin Marietta. The PPO LRE decrease is due to a contract modification incorporating changes in the missile. The Program Manager's estimate is equal to the contract target price at completion and will remain unchanged until trends indicate otherwise. The total program estimate and schedule are not affected by these variances.

Production Contract (FY85)	Initial Contract Price		
Raytheon Company, Boston, MA DAAH01-85-C-A026 , FPI Award: January 15, 1985 Definitized: 3/	Target	Ceiling	Qty
	$107.2M 4/	N/A	18 2/ 5/

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$911.5	$911.5	18 5/	(b)(4)	

	Cost Variance	Schedule Variance
Previous Cumulative Variance	-	-
Cumulative Variances to Date (10/27/85)	$-2.0	$ 6.8
Net Change	-	-

(U) Explanation of Change: This is the first SAR submission, thus, there are no variances from a prior SAR to address. The present variances are primarily due to correction of actual cost adjustments and material received ahead of schedule at Raytheon. The ceiling price reflects the target price and will remain unchanged until Mod 1 is definitized with a new ceiling price. The Program Manager's estimate is equal to the Target Price and will remain unchanged until trends indicate otherwise. The total program estimate and schedule are not affected by these variances.

FOOTNOTES:

1/ The quantities of Special Tools (ST) and Special Test Equipment are too numerous to list; however, ST and STE quantities have been procured to support production rates as discussed in prior SAR reports.

2/ Quantity = Fire Unit

3/ Definitization of the letter contract is estimated to be February 4, 1986.

4/ Reflects Limitation of Government Liability.

5/ 12 U.S./3 FMS/3 NATO

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

a. (U) Program Status --

(1) (U) Percent Program Completed: 81.5% (22 yrs/27 yrs)

(2) (U) Percent Program Cost Appropriated: 64.7% ($7825.4/$12095.9)

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

Appropriation	Current & Prior Yrs (FY65-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Balance To Complete Beyond FYDP (FY92)	Total
RDT&E	2139.6	0	0	0	2139.6
Procurement	5586.9	1037.4	3180.5	0	9804.8
MILCON	98.9	18.8	33.8	0	151.5
Total	7825.4	1056.2	3214.3	0	12095.9

c. (U) Annual Summary --

Fiscal Year	Qty FU/Msl	FY 72 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway Nonrec	Flyaway Rec	Total	Advance Proc Debit	Advance Proc Credit	Total	
Appropriation: RDT&E								
1965				17.8			13.6	1.8
1966				18.8			15.0	2.7
1967				14.7			12.0	3.2
1968				33.0			28.0	3.6
1969				67.1			59.9	4.7
1970				63.2			59.4	5.5
1971				84.2			83.1	5.1
1972				111.0			115.3	4.6
1973				154.0			170.8	4.4
1974				164.6			193.8	8.0
1975				81.5			104.2	10.9
1976				95.9			129.9	6.6
FY7T				28.5			40.0	2.9
1977				126.1			181.9	2.6
1978				136.7			214.3	6.8
1979				132.3			228.2	8.4
1980				67.7			128.5	10.6
1981				36.3			75.1	10.6
1982				23.4			51.5	7.6
1983				19.5			44.9	4.9
1984				32.7			78.3	3.8
1985				24.7			61.1	3.6
1986				19.8			50.8	3.2
Subtotal	5/126			1553.5			2139.6	

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

c. (U) Annual Summary --

Fiscal Year	Qty FU/Msl	FY 72 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: MIPA								
1979	0/0	31.8		32.8			67.1	8.9
1980	5/117	40.3	128.4	180.3			413.8	11.8
1981	5/130	5.4	155.9	180.4			462.2	11.6
1982	9/176	14.0	213.0	268.6			757.2	14.3
1983	12/287	10.8	235.9	283.4			852.8	9.0
1984	12/440 1/	13.6	237.1	305.1			959.5	8.0
1985	12/440	7.1	262.6	321.6			1053.7	4.1
1986	12/585		254.3	300.0			1020.6	4.1
1987	12/700		247.2	295.0	45.3		1037.4	4.1
1988	12/715		241.6	285.3	40.1	-45.3	1032.9	3.9
1989	9/815		225.7	258.1	37.4	-40.1	958.4	3.4
1990	0/815		146.6	167.1		-18.7	635.1	2.9
1991	0/817		133.5	142.7		-18.7	554.1	2.3
Subtotal	100/6037 1/	123.0	2481.8	3020.4	122.8	-122.8	9804.8	

1/ Does not include the 3 fire units and 40 missiles procured with NATO Air Base Defense funds.

Appropriation: MILCON								
1972				1.4			1.4	5.9
1973								5.6
1974								11.8
1975								16.1
1976								3.0
FY7T								1.6
1977								2.8
1978								7.7
1979				1.4			2.4	9.3
1980								10.6
1981								10.6
1982				4.7			11.7	7.6
1983				18.7			48.1	4.9
1984				5.9			15.4	3.8
1985								3.6
1986				7.0			19.9	3.2
1987				6.4			18.8	4.1
1988				5.7			17.3	3.9
1989				4.3			13.4	3.4
1990				1.0			3.1	2.9
Subtotal				56.5			151.5	
Total	105/6163 1/	123.0	2481.8	4630.4	122.8	-122.8	12095.9	

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

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated 1/	Expended 1/
Appropriation: RDT&E			
1965	13.6	13.6	13.6
1966	15.0	15.0	15.0
1967	12.0	12.0	12.0
1968	28.0	28.0	28.0
1969	59.9	59.9	59.9
1970	59.4	59.4	59.4
1971	83.1	83.1	83.1
1972	115.3	115.3	115.3
1973	170.8	170.8	170.8
1974	193.8	193.7	193.7
1975	104.2	104.2	104.1
1976	129.9	129.9	129.9
FY7T	40.0	40.0	40.0
1977	181.9	181.9	181.8
1978	214.3	214.3	214.3
1979	228.2	228.2	228.2
1980	128.5	128.5	128.3
1981	75.1	74.5	73.1
1982	51.5	51.5	49.4
1983	44.9	44.8	40.1
1984	78.3	78.3	65.3
1985	61.1	60.4	52.2
1986	50.8	26.5	0.5
To Complete			
Total	2139.6	2113.8	2058.0
Appropriation: MIPA			
1979	67.1	67.1	67.1
1980	413.8	396.0	393.8
1981	462.2	438.8	431.9
1982	757.2	675.9	656.8
1983	852.8	775.7	669.0
1984	959.5 2/	824.2	447.5
1985	1053.7	848.4	182.0
1986	1020.6	25.6	.5
1987	1037.4		
1988	1032.9		
1989	958.4		
1990	635.1		
1991	554.1		
To Complete			
Total	9804.8	4051.7	2848.6

1/ Does not include MIPA for Initial Spares. Spares are procured by the U.S. Army Missile Command.

2/ Does not include $185.0M of FY84 NATO Air Base Defense funds.

6. (U) Program Funding Summary (Cont'd):

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated 1/	Expended 1/
Appropriation: MILCON			
1972	1.4	1.4	1.4
1973			
1974			
1975			
1976			
1977			
1978			
1979	2.4	2.4	2.4
1980			
1981			
1982	11.7	9.5	3.7
1983	48.1	23.4	0.8
1984	15.4	14.0	
1985			
1986	19.9		
1987	18.8		
1988	17.3		
1989	13.4		
1990	3.1		
To Complete			
Total	151.5	50.7	8.3

1/ Reported in the 31 Dec 84 SAR. Updated information has not been provided by the Corps of Engineers.

7. (U) Production Rate Data:

a. (U) Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum 1/
Missiles				
1978	34			
1979	524			
1980	960	117	117	220
1981	1080	130	130	220
1982	1440	176	176	220
1983	1440	287	287	440
1984	1440	525	440	440
1985	1080	815	440	660
1986	1080	815	585	800
1987	607	816	700	840
1988		830	715	880
1989		891	815	880
1990		815	815	880
1991			817	880
Fire Units				
1978	4			
1979	18			
1980	36	5	5	5
1981	36	5	5	5
1982	36	9	9	9
1983	36	12	12	12
1984	36	15	12	12
1985	32	17	12	15
1986		17	12	15
1987		17	12	15
1988		6	12	15
1989			9	15

1/ Includes capability to produce both FMS and U.S. requirements.

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

b. (U) Cost Variance -- Dollars in Millions

ITEM	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	4690.2	-59.8	4630.4	0.0	4630.4
(TY $)	11312.2	+783.7	12095.9	0.0	12095.9
PAUC (BY $)	43.428	+ 0.671	44.099	0.0	44.099
(TY $)	104.743	+ 10.456	115.199	0.0	115.199

c. (U) Schedule Variance --

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)			9/80	N/A	9/80
Duration (in Months)			159	0	159
End Date (Mo/Yr)			12/93	N/A	12/93

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

	To Date
RDT&E	
Fire Units	5/5
Missiles	126/126
Procurement	
Fire Units	26/24
Missiles	762/640

18. (U) Operating and Support Costs: N/A

(3)

SAR-85-095

A-17 PERSHING II

~~CONFIDENTIAL~~

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

AS OF DATE: December 31, 1985

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1. (U) Designation/Nomenclature (Popular Name): Not assigned/Field Artillery Missile System (PERSHING II).

2. (U) DOD Component: Department of the Army

3. (U) Responsible Office and Telephone Number:

PERSHING Project Manager's Office
Program Management Office
Redstone Arsenal, AL 35898-5690

PM: COL Robert A. Brown
Assigned April 30, 1984
AUTOVON: 746-1165

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

RDTE: PE 64311
PROCUREMENT: PE No. C76600 (Missile) and C83700 (GSE) APPN 2032
MILCON: PE No. P6100 (Idaho) and 2193E (Germany)

5. (U) Related Programs: None

AS AMENDED pp 3, 4, 7-10, 19, 20, 24 (para markings appthroughout

CLEARED FOR OPEN PUBLICATION

MAR 21 1986

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

Concur in Classification as marked

18 MAR

SECURITY REVIEW

86 0729

Classified by: PII SCG [illegible] 4

Declassify on: OADR

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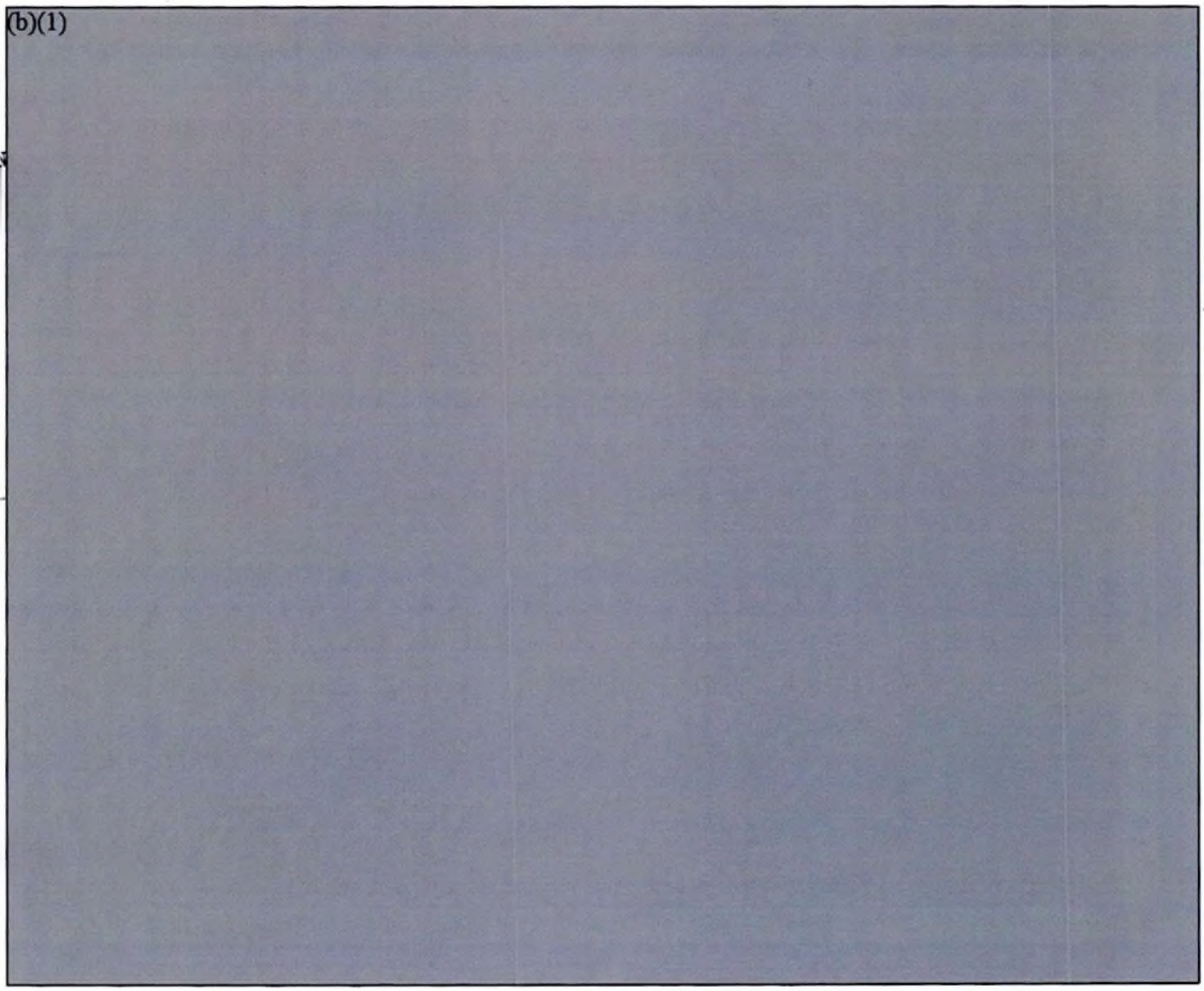
~~FORMERLY RESTRICTED DATA~~

6. (U) Mission and Description:

The PERSHING II (PII), a modular improvement to the PERSHING Ia (P1a) missile system, is a ground-mobile, two-stage, solid-propellant, terminally-guided, surface-to-surface nuclear weapon system. Its primary mission is to deliver fire on planned targets in support of the Supreme Allied Commander, Europe. In peacetime, portions of each PERSHING battalion are required to be on a quick-reaction alert status at a fixed hard site. Through the use of a new terminally-guided reentry vehicle with a new warhead, new propulsion sections, and modified P1a ground support equipment, PII provides increased effectiveness covering longer ranges with reduced collateral damage over the P1a. The PII system basically consists of the missile, erector launcher (EL), 10-ton tractor/crane, platoon control central, reference scene generation facility, system component test station, rear area power unit, and electrical and mechanical shop sets.

(b)(1)



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

b. (U) Significant Developments Since Last Report:

(1) (U) On January 11, 1985, a PII first stage rocket motor accidentally ignited during a missile assembly training operation at Fort Redleg, West Germany. Three U.S. Army soldiers were killed and sixteen were injured in this mishap. An accident investigation team was formed to determine the cause of the fire. As a result of the accident, a world-wide restriction on handling, moving, counting, or applying tactical power to any PII motor was imposed. After extensive investigation, the findings indicated that the ignition was caused by electrostatic discharge. The investigation included a comprehensive vulnerability assessment of motors, a development program for protective covers or blankets for the propulsion sections, and a feasibility study for use of inert motors for off-post training. The VCSA has directed that 54 each first and second stage propulsion section trainers or inert motors be procured. It is expected that HQDA will direct the procurement of approximately 146 each EL shells. Modification to the motor sections, both in production and in the field, as well as changes in handling procedures, are being incorporated to eliminate the buildup of static charge on the motor sections.

(2) (U) Full operational capability was successfully achieved in Europe on December 13, 1985 as scheduled. Deployment in CONUS was completed on December 31, 1985 on schedule.

(b)(1)

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(4) (U) The engineering development contract was completed as of June 28, 1985.

(5) (U) The System Shakedown Operation (SSO) firing of three PII missiles was completed on schedule on December 16 and 17, 1985 at Cape Canaveral, Florida. Flight data analysis indicates that all firings were completely successful.

(6) (U) The FY 86 missile procurement was broken out. Martin Marietta Aerospace (MMA) remained the prime contractor for all items of hardware it was formerly responsible for except motors. Hercules, the former subcontractor, became the prime for the first stage rocket motor assembly.

(7) (U) Letter order contracts for the FY 86 procurement quantity of 24 missiles were signed with MMA on December 17, 1985 and with Hercules on December 16, 1985.

(8) (U) A letter order contract was awarded to MMA on December 16, 1985 for missile trainers. Procurement will be for 54 inert counting training motors for use in Europe.

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

c. (U) Changes Since "As Of" Date:

(1) (U) The second SSO firing of three PII missiles was conducted on February 14, 1986. These missiles were fired from McGregor Range in New Mexico at a target on White Sands Missile Range. All three firings were completely successful and impacted well within the required accuracy.

(b)(1)

[redacted]

AS AMEND

8. (U) Decision Coordinating Paper (DCP) Th... ...aches:

There are currently no DCP (dated April 21, 1980) thre... ...breaches.

9. (U) Schedule:

a. (U) Milestones:

	Development Estimate	Approved Program	Current Estimate
DSARC I	NA	Jan 74	Jan 74
DT/OT I			
a. Start	NA	Nov 77	Nov 77
b. Complete	NA	May 78	May 78
DSARC II	Dec 78	Dec 78	Dec 78
Award ED Contract	Feb 79	Feb 79	Feb 79
Integrated Test Program (DT/OT II)1/			
a. Start	Dec 81	Apr 82	Jul 82
b. Complete	Apr 83	Aug 83	Sep 83
Production Readiness Review	Feb 83	Nov 81	Nov 81
Long Lead Procurement	Mar 83	Dec 81	Dec 81
DSARC III	Jul 83	Jun 82	Waived
Award Production Contract	Oct 83	Jun 82	Jun 82
First Production Delivery	Jul 84	Apr 83	Apr 83
IOC	Dec 84	Dec 83	Dec 83

1/ The Integrated Flight Test Program was completed in September 1983. The overall development program was completed in June 1985.

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

b. (U) Previous Change Explanations:

(1) (U) At a special ASARC on December 21, 1981, the PII test program was evaluated, and the decision made to restructure the DT/OT II test program to incorporate developmental and operational testing.

(2) (U) The requirement for DSARC III was waived and the Army was directed to proceed with production and deployment. Progress was reviewed through DA IPRs.

(3) (U) The change in IOC date was directed by a Secretary of Defense memorandum dated November 24, 1980.

c. (U) Current Change Explanations: None

d. (U) References:

(1) (U) Secretary of Defense Memorandum, November 26, 1980, subject: PERSHING II Initial Operational Capability.

(2) (U) Special ASARC, December 21, 1981, subject: PII Test Program.

10. (U) Technical/Operational Characteristics:

	Development Estimate	Approved Program Goal	Approved Program Threshold	Demonstrated Performance	Current Estimate
AS AMENDED a. (U) Technical					
(1) (U) Range					
(a) (U) Minimum (KM)	100	100	110	121	100
(b) (U) Maximum (KM)	1800	1800	1620	1620	1800
(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)					
(3) (U) Erector Launcher	M790 (Modified)	M790 (Modified)	M790 (Modified)	Demonstrated in System Tests, Flight Tests, and OT III	M790 (Modified)
AS AMENDED b. (U) Operational					
(b)(1)					
(2) (U) Reaction Time (Minimum) (3 missiles in QRA Role)	Not shown due to classification - demonstrated performar is within system requirement. (See March 31, 197 SAR for data.)				
(3) (U) Mean Time to Repair					
(a) (U) Organizational (hrs)	.8	.8	1.5	1.15	1.19
(b) (U) DS/GS (hrs)	2.0	2.0	3.0	2.94	2.80
(4) (U) Fault Isolation to Single Module-Organizational (%)	100	100	90	88	92
(5) (U) Fault Isolation to Single Card-Intermediate (%)	100	100	90	21.4 (Ch-1)	90
(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)					

2/ (U) MICOM's assessment based on warhead scoring committee results, flight reliability computed using AMSAA Discrete Model (Grouped), remote phase reliability based on DT/OT III and A/O data. The pre-remote phase reliability is based on European field operations. Current estimate is based upon expected capability at maturity with identified reliability improvements being incorporated.

10. (U) Technical/Operational Characteristics (Cont'd):

c. Previous Change Explanations: Previous changes based on OT/DT testing.

d. Current Change Explanations:

(Ch-1) The results of the scoring conference for the automatic fault isolation to a single module during the 1984 SCTS demonstration was 21.4 percent. Some systematic problems with the software have since been corrected, which will improve this figure. By testing all suspected defective modules as individual tests, the SCTS should have the capability to determine the defective modules 90 percent of the time.

e. References:

Approved program: DCP number 132A, April 21, 1980.

11. (U) Program Acquisition Cost: (Current Estimate in Millions)

a. (U) Cost:

	Development Estimate (FY 74-93)	Changes	Current Estimate
Development (RDTE)	$ 582.6	$ -0.7	$ 581.9
Procurement	615.6	425.3	1040.9
Weapon System	(582.9)	(402.8)	(985.7)
Prop Section	(194.6)	(134.4)	(329.0)
Reentry Vehicle	(266.0)	(183.7)	(449.7)
GSE	(88.4)	(61.3)	(149.7)
Total Flyaway	(549.0)	(379.4)	(928.4)
Oth Wpn Sys Cost	(33.9)	(23.4)	(57.3)
Initial Spares	(32.7)	(22.5)	(55.2)
Construction (MILCON)	0.0	+2.7	2.7
Total FY 79 Base Year $	$ 1198.2	$ +427.3	$1625.5
Escalation	385.0	+572.0	957.0
Development (RDTE)	61.1	+49.6	110.7
Procurement	311.7	+533.5	845.2
Construction (MILCON)	0.0	+1.1	1.1
Total Then-Year $	$ 1571.0	$ +1011.5	$2582.5

b. (U) Quantity:

(U) Development (RDTE)	34	-6	28
(b)(1)			
(U) GSE (Btry Equiv)	16 2/3	-	16 2/3
Total	(b)(1)		

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11. [redacted] Program Acquisition Cost: (Current Estimate in Millions)

Cost Estimate (FY 74-93)	Development Estimate	Changes	Current Estimate
c. [redacted] Unit Cost			
[redacted] Procurement:			
FY 79 Base Year $			
(b)(1)			
(U) GSE	5.303	3.677	8.980
(U) Btry Equiv	36.9	25.5	62.4
(b)(1)			
(U) GSE	7.978	8.303	16.281
Btry Equiv	55.6	45.3	100.9
Program			
FY79 Base-Year $			
(U) Btry Equiv	71.1	26.4	97.5
Then-Year $			
(U) Btry Equiv	94.2	60.7	154.9

11. (U) Program Acquisition Cost Cont'd): (Current Estimate in Millions)

d. (U) Approved Design-to-Cost-Goal:

		Average Unit Flyaway Cost Development Estimate	Approved Program	Current Estimate	Latest Approved Threshold
(b)(1) AS AMENDED					
(U)	Launcher Mod	166 @ 5/mo	166 @ 5/mo	166 @ 7/mo	
	FY 79 Base-Year $	0.258	0.271	0.271	0.325
	Then-Year $	0.389	0.423	0.423	0.508
(U)	Ref Scene Gen Fac	16 @ 1/mo	16 @ 1/mo	9 @ 1/mo	
	FY 79 Base-Year $	0.949	0.966	0.966	1.159
	Then-Year	1.429	1.554	1.554	1.715
(U)	Plt Ctrl Central	69 @ 3/mo	69 @ 3/mo	36 @ 2/mo	
	FY 79 Base-Year $	0.210	0.220	0.220	0.412
	Then-Year $	0.316	0.343	0.343	0.412
(U)	Btry Equivalent	16 2/3 Sets	16 2/3 Sets	16 2/3 Sets	
	FY 79 Base-Year $	14.5	15.3	26.8	18.4
	Then-Year $	22.0	23.9	48.3	28.7

e. (U) Foreign Military Sales: None.

f. (U) Nuclear Costs: This cost is borne by the Department of Energy. It is omitted here due to classification.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Current Estimate	UCR Baseline Estimate
a. (U) Program Acquisition			
(1) (U) Cost	2582.5	2665.7	2582.5
(2) (U) Quantity	16 2/3	16 2/3	16 2/3
(3) (U) Unit Cost	154.9	159.9	154.9
b. (U) Current Procurement	(FY 1986)	(FY 1986)	(FY 1987)
(1) (U) Cost	227.5	334.7	32.2
Less CY Adv Proc	-	-	-
Plus FY Adv Proc	-	-	-
Net Total	227.5	334.7	32.2
(2) (U) Quantity	24	54	0
(3) (U) Unit Cost	9.5	6.2	NA

13. (U) Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Development Estimate	643.7	927.3	0.0	1571.0
Previous Changes:				
Economic	+51.4	+256.4	0.0	+307.8
Quantity	-20.0	-184.9	0.0	-204.9
Schedule	0.0	+239.1	0.0	+239.1
Engineering	-2.8	+73.5	0.0	+70.7
Estimating	+20.3	+618.1	+4.7	+643.1
Support	+0.7	+68.2	0.0	+68.9
Other	0.0	-30.0	0.0	-30.0
Subtotal	+49.6	+1040.4	+4.7	+1094.7
Current Changes:				
Economic	0.0	- 5.8	0.0	- 5.8
Quantity	0.0	-124.6	0.0	-124.6
Schedule	0.0	0.0	0.0	0.0
Engineering	0.0	+26.2	0.0	+26.2
Estimating	-0.7	+ 32.1	-0.9	+30.5
Support	0.0	-9.5	0.0	-9.5
Other	0.0	0.0	0.0	0.0
Subtotal	-0.7	-81.6	-0.9	-83.2
Total Changes	+48.9	+958.8	+3.8	+1011.5
Current Estimate	692.6	1886.1	3.8	2582.5

13. (U) Cost Variance Analysis (Cont'd):
(FY 79 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	582.6	615.6	0.0	1198.2
Previous Changes:				
Economic	0.0	0.0	0.0	0.0
Quantity	-14.2	-94.6	0.0	-108.8
Schedule	0.0	+145.4	0.0	+145.4
Engineering	-1.8	+42.1	0.0	+40.3
Estimating	+15.1	+356.5	+3.4	+375.0
Support	+0.5	+41.0	0.0	+41.5
Other	0.0	-18.4	0.0	-18.4
Subtotal	-0.4	+472.0	+3.4	+475.0
Current Changes:				
Economic	0.0	0.0	0.0	0.0
Quantity	0.0	-63.6	0.0	-63.6
Schedule	0.0	0.0	0.0	0.0
Engineering	0.0	+13.4	0.0	+13.4
Estimating	-0.3	+8.4	-0.7	+7.4
Support	0.0	-4.9	0.0	-4.9
Other	0.0	0.0	0.0	0.0
Subtotal	-0.3	-46.7	-0.7	-47.7
Total Changes	-0.7	+425.3	+2.7	+427.3
Current Estimate	581.9	1040.9	2.7	1625.5

b. (U) Previous Change Explanations

(1) (U) RDTE

Economic: Revised inflation/escalation indices; and addition of $12.2M (in base-year chart only) for HQ DA adjustment to FY 75, 76, 7T, 77 and 78 to reflect true FY 79 base-year dollars.

Quantity: Reduction of six missiles due to restructuring of the ED program.

Engineering: Direction from OSD to cancel earth penetrator (EP) warhead; thrust-reversal design changes; impact of maintaining a single-stage option; and extension of ED program in FY 84 which required reprogramming of $3.999M.

Estimating: OSD directed - decrement in current estimate; and deobligation of FY 81 dollars.

Support: Addition of the command control interface unit.

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

(2) (U) Procurement

Economic: Revised inflation/escalation rates; and transfer of $85.M to estimating.

Quantity: Directed decrease in total missiles by 116 which caused reductions in FY 84, 85 and 86.

Schedule: Acceleration of the production program as directed by the Amended Program Decision Memorandum; stretchout of the production program due to: (a) funding constraints for 16 months in FY 82-84 and (b) insufficient funding to procure the FY 84 missile quantity; and reduced quantity resulted in decrease in production period required.

Engineering: Cancellation of EP warhead effort by OSD; changes in thrust-reversal design; and the impact of maintaining a single-stage configuration option.

Estimating: Transfer of $85.0M from economic; OSD-directed decrement in current estimate; increase due to revision of the PII acquisition strategy to not "breakout" major subcontractor hardware/components; Congressional decrement of $25.0M in the FY 83 procurement program; adjustment to the FY 84 program due to inflation indices; increase in contractor overhead rates; refinement of prior year (FY 83-84) estimates, including net adjustments for spares and reprogramming costs for FY 82-83 AVCO overrun; refinement of projected FY 87-93 program requirements; and adjustments due to FY 84-85 contract negotiations.

Support: Transfer of DMPE to PII budget; incorporation of SWAP program; addition of PCC/RSGF shelters; reestimation of spares; and increase in initial spares.

Other: Due to the original "zero out" of the FY 83 procurement program by Congress, $30.0M FY 83 OMA funds was provided by the Joint House/Senate Conference in Dec 82 in order to meet IOC and cover engineering services, refurbishment of training missiles and project SWAP.

(3) (U) MILCON

Estimating increase for addition of refurbishment of launch site, Shoofly, Idaho and maintenance project, Frankfurt, Germany.

c. (U) Current Charge Explanations:

	(Dollars in Millions) Base-Year	Then-Year
(1) (U) RDTE		
Deobligation of funds in FY 82 and 83. (Estimating)	-0.3	-0.7

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

	(Dollars in Millions) Base-Year	Then-Year
(2)(4) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	- 5.8
Congressionally-directed reduction in FY 86 of 30 missiles. (Quantity)	-63.6	-124.6
Due to quantity decrease, reduction of four months of support. (Support)	-4.9	-9.5
Addition of funding to partially support implementation of safety and security provisions. (Engineering)	+13.4	+26.2
Adjustments for inflation, learning curve adjustment due to reduced total quantity and smaller lot size, and refinement of out-year projections. (Estimating)	+8.4	+32.1
(3)(4) MILCON		
Assistant Secretary of the Army decision to close PERSHING II long-range test facility. (Estimating)	-0.7	-0.9

d. (U) References: Secretary Defense Memo dated February 20, 1979, subject, "Pershing II DSARC II Decision Memo"; Draft DCP 132A, 13 March 1979.

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

Initial SAR Estimate to Current Baseline Estimate:

PAUC (Initial SAR Dev)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
94.2	+18.1	-19.7	+13.8	+5.8	+40.5	+4.0	-1.8	+60.7	154.9

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

a. (U) RDTE - Not applicable.

b. (U) Procurement

(1) (U) Production Buy I and II:

Martin Marietta Aerospace, Orlando, FL
DAAH01-82-C-A132, CPIF
Award: December 31, 1981 (Basic)
Definitized: June 29, 1982 (FY 82)
and October 1982 (Option FY 83)

Initial Contract Price		
Target	Ceiling	Qty
192.0	N/A	21
413.9	N/A	91
605.9		112

Current Target	Contract Ceiling	Price Qty	Estimated Price at Completion	
			Contractor	Program Manager
192.0	N/A	21	580.6	187.2
409.4	N/A	91		390.4
601.4		112		577.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	23.7	-13.7
Cumulative Variances to Date (10-27-85)	33.2	0.0
Net Change	9.5	13.7

Explanation of Change: The improved cost variance is mainly due to subcontract effort, greater efficiency in prime contractor factory and test effort, and favorable pricing variances in prime contractor materiel. The schedule variance improvement is primarily attributable to complete recovery by subcontractor Hercules and delivery of all remaining motors.

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

(2) (U) Production Buy III:

Martin Marietta Aerospace, Orlando, FL
DAAH01-84-C-0039, FPIF
Award: December 29, 1983
Definitized: April 30, 1985

Initial Contract Price		
Target	Ceiling	Qty
330.1	N/A	72

Current Target	Contract Ceiling	Price Qty	Estimated Price at Completion Contractor	Program Manager
331.0	N/A	72	331.0	331.0

	Cost Variance	Schedule Varinace
Previous Cumulative Variances	2.7	1.1
Cumulative Variances to Date (10-27-85)	12.8	-11.0
Net Change	10.1	-12.1

Explanation of Change: The increase in the favorable cost variance is primarily due to the support effort requiring fewer resources than planned and favorable trends in factory and test labor. The addition to the unfavorable schedule variance is principally due to material not being drawn from inventory, and subcontractor Hercules slowdown due to the PF-102 investigation and problems with motor casings.

(3) (U) Production Buy IV: 1/

Martin Marietta Aerospace, Orlando, FL
DAAH01-85-C-A027, FFP
Award: December 7, 1984
Definitized: April 29, 1985

Initial Contract Price		
Target	Ceiling	Qty
N/A	N/A	70

Current Target	Contract Ceiling	Price Qty	Estimated Price at Completion Contractor	Program Manager
N/A	N/A	70	263.6	263.6

1/ Because this is an FFP contract, no CPR data including cost and schedule variances are computed.

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

(4) (U) Engineering Services: 1/

Martin Marietta Aerospace, Orlando, FL
DAAH01-85-C-A022, CPFF
Award: November 1, 1985
Definitized: November 1, 1985

Initial Contract Price		
Target	Ceiling	Qty
50.4	N/A	N/A

Current Target	Contract Ceiling	Price Qty	Estimated Price at Completion Contractor	Program Manager
50.4	N/A	N/A	50.4	50.4

(5) (U) PII SWAP: 2/

Martin Marietta Aerospace, Orlando, FL
DAAH01-83-C-A043, CPFF
Award: December 10, 1982
Definitized: December 10, 1982 (FY 83)
October 28, 1983 (FY 84)
October 30, 1984 (FY 85)
October 18, 1985 (FY 86)

Initial Contract Price		
Target	Ceiling	Qty
9.1	N/A	N/A
12.8		
13.3		
2.4		
37.6		

Current Target	Contract Ceiling	Price Qty	Estimated Price at Completion Contractor	Program Manager
9.0	N/A	N/A	38.1	38.1
13.4				
13.3				
2.4				
38.1				

1/ This is a level of effort contract; no cost and schedule variances are computed. The total includes $4.6M OMA and RDTE funds as well as $45.8M MIPA funds.

2/ This is a level of effort contract; no cost and schedule variances are computed. The total includes $9.1M OMA (FY 83) funds that were provided to meet scheduled IOC as well as $29.0M MIPA funds.

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

(6)(U) Warhead Adaption Kits:1/

AVCO, Wilmington, MA
DAAK10-84-C-0069, FFP
Award: March 8, 1984 (Basic)
Definitized: August 31, 1984 (Basic)
January 10, 1985 (Option FY 85)
(Option FY 86)

Initial Contract Price		
Target	Ceiling	Qty
N/A	N/A	76
		76
		70
		222

Current Target	Contract Ceiling	Price Qty	Estimated Price at Completion Contractor	Program Manager
N/A	N/A	76	18.0	18.0
		54	15.6	15.6
		25	9.5	9.5
		155	43.1	43.1

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

a. (U) Program Status:

(1)(U) Percent Program Completed: 52.4% (11 yrs/21 yrs)

(2)(U) Percent Program Cost Appropriated: 95.0% (2454.1/2582.5)

1/ Project Manager for this contract is Nuclear Munitions, Dover, NJ. Because this is an FFP contract, there are no target prices and the completion price is the same as the negotiated price. The FY 86 option, which includes approximately 30 equivalent SAFS components for the stockpile reliability program, is expected to be exercised in February 1986 at quantities and dollars shown.

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

b. (U) Appropriation Summary:

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY 75-86)	Budget Year (FY 87)	Balance to Complete FYDP (FY 88-91)	Balance to Complete Beyond FYDP (FY 92-TC)	Total
(b)(1)					

AS AMEN

c. (U) Annual Summary:

Fiscal Year	Qty	FY 79 Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Debit	Proc Credit	Total	Escl Rate (%)
(U) Appropriation: RDTE								
1975				2.7			2.0	10.9
1976				23.2			19.0	6.6
197T				7.1			6.0	2.9
1977				40.0			36.3	2.6
1978				32.1			29.6	6.8
1979				17.5			18.0	8.4
1980				137.2			145.4	9.3
1981				116.9			149.1	11.9
1982	8			112.0			154.5	7.6
1983	20			78.4			111.0	4.9
1984				14.8			21.7	3.8
Subtotal	28			581.9			692.6	N/A

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16. ~~(U)~~ Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

(b)(1)

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(U) Appropriation: Military Construction

1981		2.2	3.0	11.9
1982		0.0	0.0	7.6
1983		0.5	0.8	4.9
1984		0.0	0.0	3.8
1985		0.0	0.0	3.6
1986		0.0	0.0	3.2
Subtotal	0	2.7	3.8	N/A

(b)(1)

[redacted]

AS AMENDED

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

d. (U) Obligations and Expenditures:

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: RDTE		
1975	2.0	2.0	2.0
1976	19.0	19.0	19.0
197T	6.0	6.0	6.0
1977	36.3	36.3	36.3
1978	29.6	29.6	29.6
1979	18.0	18.0	18.0
1980	145.4	145.4	145.4
1981	149.1	149.1	148.9
1982	154.5	154.5	154.4
1983	111.0	111.0	109.1
1984	21.7	21.7	20.6
Total	692.6	692.6	689.3
	Appropriation: Procurement		
1981	1.9	1.9	1.9
1982	244.2	244.2	242.5
1983	463.6	463.2	424.0
1984	433.3	427.5	290.5
1985	387.2	379.4	107.4
1986	227.5	93.9	0.2
1987	32.2	0.0	0.0
1988	7.1	0.0	0.0
1989	7.0	0.0	0.0
1990	7.0	0.0	0.0
1991	12.0	0.0	0.0
1992	14.7	0.0	0.0
1993	15.6	0.0	0.0
1994	16.4	0.0	0.0
1995	16.4	0.0	0.0
Total	1886.1	1610.1	1066.5

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

. Appropriation: Military Construction

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
1981	3.0	3.0	3.0
1982	0.0	0.0	0.0
1983	0.8	0.8	0.8
1984	0.0	0.0	0.0
1985	0.0	0.0	0.0
1986	0.0	0.0	0.0
Total	3.8	3.8	3.8

17. (U) Production Rate Data

a. (U) Annual Production Rates:

Fiscal Year	Production Rates (Quantity/Year) Development Estimate	Production Estimate	Current Estimate	Maximum
1982			25.2	84
1983			68	84
1984	10.1		72	84
1985	13.0		70	84
1986	12.8		72	84

b. (U) Cost Variance: (Dollars in Millions)

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	1770.3	-144.8	1625.5	+81.3	1544.2
	(TY $)	2810.0	-227.5	2582.5	+129.1	2453.4
PAUC	(BY $)	106.2	- 8.7	97.5	+4.9	92.6
	(TY $)	168.6	- 13.7	154.9	+7.7	147.2

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

c. (U) Schedule Variance:

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)			12/81	N/A	12/81
Duration (in months)			54	+ 7	47
End Date (Mo/Yr)			10/87	N/A	3/87

d. (U) Deliveries (Plan/Actual):1/

RDTE	To Date
Propulsion Section	28/28
Reentry Vehicle	28/28
Procurement	
Propulsion Section	136/140
Reentry Vehicle	128/134

18. (U) Operating and Support Costs: Not required.

1/ Quantities shown are as of the end of October 1985 to agree with data presented in Section 15, Contract Information.

A-9 HELLFIRE

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85-027

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823) (U)
PROGRAM: HELLFIRE MODULAR MISSILE SYSTEM (HMMS)

AS OF DATE: DECEMBER 31, 198

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Concur in Classification as marked
18 MAR 1986
SECURITY REVIEW, OASD, HQDA

1. (U) Designation: Not applicable - subsystem of the AH-64 APACHE Weapon System.

Nomenclature: Armament System Helicopter: HELLFIRE

2. (U) DOD Component: Department of Army

3. (U) Responsible Office and Telephone Number:
HELLFIRE/GLD PM Office
RSA,AL 35898-5610
PM: COL W. J. Schumacher
Assigned: 5 Jul 84
AUTOVON: 746-1365

4. (U) Program Elements/Procurement Line Items:
RDTE: PE 64310 (No shared funding)
MIPA: APPN 2032 SSN C70000 (No shared funding)
MILCON: (PE not assigned)

5. (U) Related Programs: AH-64 APACHE Helicopter; UH-60 BLACK HAWK Helicopter; Ground/Vehicular Laser Locator Designator

6. (U) Mission and Description: HELLFIRE is an air-to ground missile system designed to defeat individual hardpoint targets and to minimize exposure of the delivery vehicle to enemy fire. HELLFIRE utilizes semi-active laser terminal homing guidance and is designed to accept various other guidance packages. HELLFIRE can be employed in a wide variety of modes including autonomous, ground remote, airborne remote, direct or indirect fire, and rapid or ripple fire. HELLFIRE will be employed from helicopters against heavy armored vehicles at longer standoff ranges than missiles currently in the inventory. In

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AS AMENDED pp 4, 11

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addition, HELLFIRE is being considered for a surface-to-surface role as candidate to satisfy the close combat anti-armor mission element need. HELLFIRE does not replace another missile system in the air-to-ground role

7. (U) Program Highlights:

a. (U) Significant Historical Development -- In 1972, the Army initiated an Advanced Development (AD) Program to demonstrate critical subsystems of the HELLFIRE Missile System. The AD Program included competitive contractor development of a modular missile, launcher, and control and display systems, including prototype hardware. It also included extensive technical and operational tests of the laser guided HELLFIRE Missile System, warhead development tests, and countermeasure tests. On 30 Mar 76, OSD approved entry into full-scale engineering development (ED) of HELLFIRE with fielding to be concurrent with the Advanced Attack Helicopter (AH-64). The ASARC directed that development of the fire and forget seekers applicable to the HELLFIRE Modular Missile be continued. Operational testing of HELLFIRE as a subsystem of the AH- 64 Weapon System was completed in Aug 81. After successfully completing the ASARC III milestone decision review in Nov 81, the Army was delegated authority to approve production. The Vice Chief of Staff, Army granted approval for full scale production on 30 Mar 82 and FY82 production contracts were awarded to Rockwell International Corporation and Martin Marietta Corporation.

b. (U) Significant Developments Since Last Report - - The first production missile deliveries were completed in Sep 85, approximately one year behind schedule. Problems associated with early production, delays in completion of First Article Tests (FAT), humidity problems and seeker guidance noise were root causes for the late completion of deliveries.

Fifty-two production rounds were fired in 1985. The firings included those launched in the Attack Helicopter Improvement Program (AHIP) operational tests, AH-64 FAT, Martin and Rockwell all-up round FAT, periodic environmental tests (PET) and fly before deployment.

Six HELLFIRE Missiles were launched from the AH-60 BLACK HAWK Helicopter in engineering development qualification tests in Dec 85. All of the launches were successful with regard to the BLACK HAWK launches, however one missile failed after launch.

The HELLFIRE Missile System satisfies all mission requirements except missile weight. Weight reduction from the current nominal weight of 99.8 pounds to the required 95 pounds is not considered feasible without degrading system performance.

c. (U) Changes Since "As of" Date - - None

. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There re currently no DCP (DCP #118, dated 7 Jan 82) threshold breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate/ Approved Program	Current Estimate
Advanced Development		
Start	Dec 72/Dec 72	Dec 72
Complete	Oct 75/Oct 75	Oct 75
Competitive AD Contracts		
Start	Jun 74/Jun 74	Jun 74
Complete	Oct 75/Oct 75	Oct 75
ASARC/DSARC II	Feb 76/Feb 76	Feb 76
ED Contract award	Oct 76/Oct 76	Oct 76
PQT-C (Contractor)		
Start	Mar 79/Mar 79	Mar 80
Complete	Aug 79/Aug 79	Mar 82
Operational Test (OT)(Cobra)		
Start	Aug 79/Aug 79	Apr 80
Complete	Dec 79/Dec 79	Jul 80
ASARC/DSARC III	Feb 80/Mar 82	Mar 82
Production Contr Award	Apr 80/Mar 82	Mar 82
Prod Val Tests Complete	Oct 81/Mar 84	Oct 84
ASARC/DSARC IIIA	Nov 81/N/A	N/A
Full-Scale Production	Jan 82/Mar 82	Mar 82
Initial Operational Capability (IOC) (on AH-64)	May 83/FY85	Aug 86 (Ch-1)

b. (U) Previous Change Explanations --

The program experienced an accumulation of approximately 2 years in schedule slippage during full-scale development. Schedule changes resulted from reduction of RDTE funding, delays in procurement funding, and delays in testing caused by late delivery of hardware and correction of deficiencies revealed in earlier tests. The completion of production validation testing was delayed six months because of problems that occurred in production start-up. Initial operating capability (IOC) was changed from FY85 to Apr 86 for synchronization with the APACHE program.

c. (U) Current Change Explanations --

(Ch-1) The AH-64 IOC is changed from Apr 86 to Aug 86.

d. (U) References --

Development Estimate: DCP #118, dated 12 Nov 76.

Approved Program: DCP #118, dated 7 Jan 82.

10. (U) Technical/Operational Characteristics:

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a. (U) Technical --			
Missile Weight Maximum (lbs)	95/95	99.8	99.8
b. (U) Operational--			
(U) Missile Range (km) 1/	(b)(1)		
(U) Time of Flight (Sec)	(b)(1)		
(U) Reliability			
(U) Missile (in-flight)	.92-.95/.92-.95	.94	.92-.95
(U) Launcher	.95-.99/.95-.99	1.0	.95-.99
(U) Prob of Hit (PH/R) 2/	(b)(1)		

(U) NOTES:

1/ Direct fire launch mode.
2/ Probability of hit in the direct fire mode, given reliability.

c. (U) Previous Change Explanations --

(b)(1)

d. (U) Current Change Explanations --

(b)(1)

e. (U) References --

(U) Development Estimate: Materiel Need (MN) for Advanced Antitank Missile, Air-to-Ground (HELLFIRE), Dec 72; Materiel Need (MN) for Advanced Attack Helicopter; DCP #118, 12 Nov 76

(U) Approved Program: MN for Advanced Antitank Missile, Air-to-Ground (HELLFIRE), Oct 81; MN for Advanced Attack Helicopter; DCP #118, 7 Jan 82.

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. (U) Cost --	Development Estimate	Changes	Current Estimate
Development 1/	$ 211.9	$+ 18.4	$ 230.3
Procurement 2/	276.7	+ 538.9	815.6
Missile Bus	(143.1)	(+ 292.4)	(435.5)
Laser Seeker	(109.4)	(+ 249.4)	(358.8)
Total Flyaway	(252.5)	(+ 541.8)	(794.3)
Other W Sys Cost 3/	(4.0)	(+ 12.9)	(16.9)
Initial Spares	(20.2)	(- 15.8)	(4.4)
Construction	0.0	+ 0.9	0.9
Total: Constant FY75$	488.6	+ 558.2	1046.8
Escalation	214.8	+1292.7	1507.5
Development	(54.3)	(+ 33.0)	(87.3)
Procurement	(160.5)	(+1258.6)	(1419.1)
Construction	(0.0)	(+ 1.1)	(1.1)
Total Program Cost	$703.4	$1850.9	$2554.3
b. (U) Quantities --			
Development			
Missile	241	-12	229
Laser Seeker	241	+140	381
Launcher	74		74
Procurement			
Missile	24,600	+24,096	48,696
Laser Seeker 4/	24,600		N/A
Launcher 5/	2,000		N/A
Total Missiles	24,841	+24,084	48,925
c. (U) Unit Cost --			
Procurement: Missile			
FY 75 Base-Year $	$.011	+.006	$.017
Then-Year $	.018	+.028	.046
Program: Missile			
FY 75 Base-Year $	.020	+.002	.021
Then-Year $	$.028	$+.024	$.052

d. (U) Approved Design to Cost Goal -- (Average Flyaway Cost for DE

of 24,600 missiles at a production rate of 500 per month and PM's current estimate for 24,600 missiles at a production rate of 500 per month.

	Dev Est/ Approved Program		Current Estimate	Latest Approved Threshold
FY75 Base-Year $	10123	6/	18,342	N/A
Then-Year $	17,796		46,372	N/A

(U) NOTES:

1/ Development estimate revised from $210.3 due to conversion of Pre-Base Year Actuals to Base Year 75.

2/ Revision of HELLFIRE DE in Jun 84 SAR transferring $21.2M ($31.7M escl) previously in the HELLFIRE DE for the launcher to the APACHE program.

3/ Other includes data, training, support and test equipment.

4/ Missiles are being procured as all-up-rounds. Seekers were not procured as a GFE item after the second buy.

5/ Procurement funding for launchers was transferred to the APACHE program in the Jun 84 SAR.

6/ DCP Flyaway Cost, computed in accordance with DODI 5000.33, dated Aug 77, is revised from $9,977 to $10,123 for consistency with revision of HELLFIRE DE in Jun 84 SAR.

e. (U) Foreign Military Sales -- None

f. (U) Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Millions Dollars)

			Current Year		Budget Year
			SAR Current Estimate	UCR Baseline Estimate (FY 1986)	UCR Baseline Estimate (FY 1987)
a.	(U)	Program Acquisition --			
	(1)	(U) Cost	$ 2,554.3	$ 2,555.8	$ 2,554.3
	(2)	(U) Quantity	48,925	48,925	48,925
	(3)	(U) Unit Cost	$.052	$.052	$.052
b.	(U)	Current Procurement	(FY 86)	(FY 86)	(FY 87)
	(1)	(U) Cost	$ 225.9	$ 253.0	0
		Less CY Adv Proc	0	0	0
		Plus FY Adv Proc	0	0	0
		Net Total	$ 225.9	$253.0	0
	(2)	(U) Quantity	5,750	6,576	0
	(3)	(U) Unit Cost	$.039	$.038	0

3. (U) Cost Variance Analysis:

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

	DEV	PROC	CONSTR	TOTAL
Development Estimate	$266.2	$437.2	-	$703.4
Previous Changes:				
Economic	+8.8	+272.7	-0.3	+281.2
Quantity	-3.5	+465.8	-	+462.3
Schedule	+14.6	+359.5	+0.4	+374.5
Engineering	+28.3	+180.2	-	+208.5
Estimating	+17.0	+499.2	+1.9	+518.1
Other	-	-	-	-
Support	+18.4	-10.6	-	+7.8
Subtotal	+83.6	+1766.8	+2.0	+1852.4
Current Changes:				
Economic	-0.7	-100.5	-0.1	-101.3
Quantity	-	-	-	-
Schedule	-	+72.2	-	+72.2
Engineering	-14.1	+122.9	-	+108.8
Estimating	-3.1	-72.8	+0.1	-75.8
Other	-	-	-	-
Support	-14.3	+8.9	-	-5.4
Subtotal	-32.2	+30.7	-	-1.5
Total Changes	+51.4	+1797.5	+2.0	+1850.9
Current Estimate	317.6	2234.7	2.0	2554.3

(FY 1975 Constant Dollars (Base Year) in Millions)

	DEV	PROC	CONSTR	TOTAL
Development Estimate	$211.9	$276.7	-	$488.6
Previous Changes:				
Quantity	-2.7	+153.6	-	+150.9
Schedule	+9.1	+42.1	-	+51.2
Engineering	+15.1	+78.8	-	+93.9
Estimating	+3.2	+241.8	+0.9	+245.9
Other	-	-	-	-
Support	+8.2	-6.1	-	+2.1
Subtotal	+32.9	+510.2	+0.9	+544.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+11.4	-	+11.4
Engineering	-6.4	+40.2	-	+33.8
Estimating	-1.9	-26.0	-	-27.9
Other	-	-	-	-
Support	-6.2	+3.1	-	-3.1
Subtotal	-14.5	+28.7	-	+14.2
Total Changes	+18.4	+538.9	+0.9	+558.2
Current Estimate	+230.3	+815.6	+0.9	+1046.8

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices

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

Schedule: Increase due to budget reduction in FY78; slips in validation test

Engineering: Increase due to addition of competitive low cost seeker program and autopilot improvements

Estimating: Increase due to exercise of the metric option in the contract, additional effort for shelf life surveillance, C/CM analysis, and hardware improvements. Decreases due to reduction of FY81 RDTE funding, and FY83 Congressional decrement to TRACE.

Support: Decrease due to reduction in missile test requirement and FY78 budget adjustment. Increase due to addition of two ATAFCS for use in DT/OT with Cobra, requirement for battlefield obscuration test, and requirement for use of AN/USM-410 test set

Procurement

Economic: Revised escalation indices

Quantity: Addition of 24,096 missiles

Schedule: Increase due to delays in start of production and impact of RDTE funding constraints

Engineering: Increase due to requirement changes in missile bus, warhead and seeker; incorporation of minimum smoke motor in FY84

Estimating: Revised production cost estimates. The major increases occurred prior to FY84. Cost estimates decreased with introduction of competitive procurement strategy in FY84

Support: Increase due to addition of training hardware, depot capital equipment, and changes in support hardware. Decreases due reduction in initial spares requirement, and test set quantity

MILCON
Economic: Revised escalation indices

Estimating: Addition of ammunition storage bunkers not in DE

c. (U) Current Change Explanations --

			(Dollars in Millions) Base Year	Then Year
(1)	(U)	RDT&E		
		Revised Jan 86 economic escalation rates. (Economic)	N/A	-0.7
		Removal of funds from Basic Laser HELLFIRE budget line from FY87 out. Funding established in a new line for Improved HELLFIRE system to meet an evolving threat.	-12.6	-28.4
		o Engineering changes eliminated. (Engineering)	(-6.4)	(-14.1)
		o Support changes eliminated (Missile Test Program Sets) (Support)	(-6.2)	(-14.3)
		Deobligation of prior year funds and application of OSD historical deflator. (Estimating)	-1.9	-3.1
(2)	(U)	Procurement		
		Revised Jan 86 economic escalation rates. (Economic)	N/A	-100.5
		Program stretch out resulting from zeroing FY87 procurement funds precipitated by production problems. (Schedule)	11.4	72.2
		Provision for hardware improvements planned for production cut-in during FY89 and subsequent buys, to meet evolving threat. These funds also include incorporation of the Fire and Forget seeker into the missile system. (Engineering)	40.2	122.9

1/ Planned to be returned to basic Hellfire in FY88.

Revised estimates for outyear production costs based on actuals to date, largely due to increased savings from competition. (Estimating)	-26.0	-72.8
Addition of 10,000 deicing kits, 100 dummy missiles, and 30 training missiles to support APACHE program, and refinements of cost based on actuals to date. (Support)	3.1	8.9

(3) (U) MILCON

Revised Jan 86 economic escalation rates. (Economic)	N/A	-0.1
Application of revised OSD historical deflator. (Estimating)	.0	0.1

d. (U) References --

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

(2) (U) Current Estimate: FY 87 President's Budget.

14. (U) Program Acquisition Unit Cost (PAUC) History:

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

PAUC (Initial SAR DE) 1/	Changes (Current (Then Year) Dollars)								PAUC (REVISED DEV ESTIMATE) 2/
	ECON	QTY	SCH	ENGR	EST	SPT	OTHER	TOTAL	
$29,592	-	-	-	-	-	-	-1276	-1276	$28,316

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

PAUC (Revised Dev Est) 2/	Changes (Current (Then Year) Dollars)								PAUC (CURRENT ESTIMATE)
	ECON	QTY	SCH	ENGR	EST	SPT	OTHER	TOTAL	
$28,316	+3677	-4490	+9131	+6485	+9040	+49	-	+23892	$52,208

NOTES:
1/ Initial SAR date: 30 Jun 76.
2/ Revision of HELLFIRE development estimate in the Jun 84 SAR transferring $31.7M previously in the HELLFIRE DE for the HELLFIRE launcher to the APACHE program.

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

a. (U) RDT&E -- None

b. (U) Procurement --

Second Production Buy	Initial Contract Price Target	Ceiling	Qty
Rockwell Int. Corp., Duluth, GA, DAAH01-83-C-A039, FPI, Award: February 4, 1983 Definitized: August 31, 1983	$ 96.4	$110.1	3024 1/

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Prog Mgr
$106.7	$119.7	3024	(b)(4)	

AS AMENDED

	Cost Variance	Sch Variance
Previous Cumulative Variances	$+1.987	-11.122
Cumulative Variances To Date (11/01/85)	$-4.569	-45.844
Net Change	$-6.556	-34.722

Explanation of Change: Negative cost and schedule variances are caused by production problems and schedule delays in the first production contract. Production problems have resulted from humidity failures in the periodic environmental tests (PET).

NOTE 1/: Deliverables under this contract also include 338 launchers.

Second Production Buy	Initial Contract Price Target	Ceiling	Qty
Martin Marietta, Orlando, FL DAAH01-83-C-A040, FPI Award: January 14, 1983 Definitized: September 1, 1983	$96.6	$107.4	947 1/

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Prog Mgr
$ 97.9	$107.2	947	(b)(4)	

AS AMENDED

	Cost Variance	Sch Variance
Previous Cumulative Variances	$+5.239	- 8.148
Cumulative Variances To Date (10/27/85)	$+6.390	-10.571
Net Change	$+1.151	- 2.423

Explanation of Change: The negative schedule variance is due to delays caused primarily by the autopilot circuit card assemblies. The positive cost variance is due to less use of LOE than planned. The PM's estimate of cost at completion reflects the PM's estimate of the cost of overcoming production problems.

NOTE 1/: Deliverable items include 2077 seekers.

Third Production Buy
Rockwell Int. Corp., Duluth, GA,
DAAH01-84-C-A162, FFP,
Award: June 29, 1984
Definitized: June 29, 1984

Initial Contract Price

Target	Ceiling	Qty
$113.2	N/A	2651

Current Contract Price

Target	Ceiling	Qty
$117.8	N/A	2651

Estimated Price at Completion

Contractor	Prog Mgr
$116.8	$116.8

	Cost Variance	Sch Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (N/A)	N/A	N/A
Net Change	N/A	N/A

Explanation of Change: N/A

Third Production Buy
Martin Marietta, Orlando, FL
DAAH01-84-C-A163, FFP
Award: June 29, 1984
Definitized: June 29, 1984

Initial Contract Price

Target	Ceiling	Qty
$98.9	N/A	2000

Current Contract Price

Target	Ceiling	Qty
$ 99.6	N/A	2000

Estimated Price at Completion

Contractor	Prog Mgr
$ 99.6	$ 99.6

	Cost Variance	Sch Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (N/A)	N/A	N/A
Net Change	N/A	N/A

Explanation of Change: N/A

Fourth Production Buy
Rockwell Int. Corp., Duluth, GA,
DAAH01-85-C-A040, FFP,
Award: March 15, 1985
Definitized: March 15, 1985

Initial Contract Price

Target	Ceiling	Qty
$ 72.2	N/A	1676

Current Contract Price

Target	Ceiling	Qty
$ 72.2	N/A	1676

Estimated Price at Completion

Contractor	Prog Mgr
$ 72.1	$ 72.1

	Cost Variance	Sch Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (N/A)	N/A	N/A
Net Change	N/A	N/A

Explanation of Change: N/A

Fourth Production Buy	Initial Contract Price Target	Ceiling	Qty
Martin Marietta, Orlando, FL	$126.2	N/A	4104
DAAH01-85-C-A041, FFP			
Award: March 15, 1985			
Definitized: March 15, 1985			

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Prog Mgr
$136.5	N/A	4104	$136.5	$136.5
			Cost Variance	Sch Variance
Previous Cumulative Variances			N/A	N/A
Cumulative Variances To Date (N/A)			N/A	N/A
Net Change			N/A	N/A

Explanation of Change: N/A

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

a. (U) Program Status --

(1) (U) Percent Program Completed: 71.4% (15 yrs/21 yrs)

(2) (U) Percent Program Cost Appropriated: 53.3% ($1361.5/$2554.3)

b. (U) Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY72-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92-93)	Total
RDT&E	317.6	0	0	0	317.6
Procurement	1043.9	0	864.9	325.9	2234.7
MILCON	0	0	2.0	0	2.0
Total	1361.5	0	866.9	325.9	2554.3

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

c. (U) Annual Summary --

Fiscal Year	Qty	Fy 75 Base Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollar Advance Proc Debit	Advance Proc Credit	Total	Escl Rate (%)
Appropriation: RDT&E								
1972				5.9			4.9	5.5
1973	14			5.7			5.0	6.1
1974				6.5			6.1	7.9
1975				13.6			14.0	8.4
1976				3.6			3.9	5.4
1977T				.6			.7	3.3
1977	215			16.4			19.1	3.8
1978				41.0			51.4	7.8
1979				48.1			66.2	9.7
1980				38.1			57.8	10.2
1981				26.5			43.9	9.0
1982				12.6			22.2	6.5
1983				8.3			15.3	4.4
1984				.8			1.6	3.9
1985				.2			.5	3.6
1986				2.4			5.0	2.2
Subtotal	229			230.3			317.6	
Appropriation: Procurement								
1981	LLI	9.9	1.5	11.5			23.1	12.6
1982	680	9.4	36.1	49.3			109.3	10.2
1983	3971	3.3	94.8	102.0			241.7	6.8
1984	4651		84.8	88.0			218.6	4.8
1985	5780		84.0	87.1			225.3	4.1
1986	5750		80.9	84.0			225.9	4.1
1987	0		0	0			0	4.1
1988	4800		65.5	67.5			192.9	3.9
1989	4800	1.7	64.4	66.7			195.4	3.4
1990	4800		63.1	63.2			189.7	2.9
1991	5000		93.4	93.5			286.9	2.3
1992	5000		60.7	60.8			191.0	2.3
1993	3464		41.0	42.0			134.9	2.3
Subtotal	48696	24.3	770.2	815.6			2234.7	
Appropriation: MILCON								
1988				.9			2.0	3.9
Subtotal				.9			2.0	
Total	48925	24.3	770.2	1046.8			2554.3	

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: RDT&E		
1972	4.9	4.9	4.9
1973	5.0	5.0	5.0
1974	6.1	6.1	6.1
1975	14.0	14.0	14.0
1976	3.9	3.9	3.9
1977T	.7	.7	.7
1977	19.1	19.1	19.1
1978	51.4	51.4	51.4
1979	66.2	66.2	65.7
1980	57.8	57.8	57.6
1981	43.9	43.9	43.5
1982	22.2	22.2	21.2
1983	15.3	15.3	14.1
1984	1.6	1.6	1.4
1985	.5	.5	.4
1986	5.0	.1	0.0
To Complete	-	-	-
Total	317.6	312.7	309.0
	Appropriation: Procurement		
1981	23.1	23.1	22.6
1982	109.3	109.3	102.2
1983	241.7	241.7	158.0
1984	218.6	214.9	54.0
1985	225.3	208.9	10.1
1986	225.9	3.3	.1
To Complete	1190.8	-	-
Total	2234.7	801.2	347.0
	Appropriation: MILCON		
To Complete	2.0	-	-
Total	2554.3	1113.9	656.0

17. (U) Production Rate Data:

a. (U) Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1980	281			
1981	1050			
1982	5225	680	680	680
1983	6000	3971	2978	2978
1984	6000	6218	6201	6201
1985	4262	5683	6305	6305
1986		6853	4312	6720
1987		6351		6720
1988		6000	4800	6720
1989			4800	6720
1990			4800	6734
1991			5000	
1992			5000	
1993			4618	
1994				
1995				

b. (U) Cost Variance -- (NOTE: The production estimate tracks to the 31 Dec 81 SAR which was the first SAR after the Milestone III production decision review. HELLFIRE launcher costs are included in the production estimate, however the HELLFIRE and APACHE SARs were rebaselined in Jun 84 to transfer launcher costs to the APACHE program.

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $M)	922.4	+124.4	1046.8	- 47.1	999.7
(TY $M)	2047.6	+506.7	2554.3	-178.9	2375.4
PAUC (BY $)	$ 25,632	$-4236	$21,396	-963	$20433
(TY $)	$ 56,902	$-4694	$52,208	3657	$48552

c. (U) Schedule Variance --

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	2/82	N/A	2/82	N/A	2/82
Duration (in Months)	103	55	158	-33	125
End Date (Mo/Yr)	9/90	N/A	4/95	N/A	7/92

18. (U) Operating and Support Costs: N/A

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SAR-85-102

AF-2 ALCM

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

PROGRAM: (Air Launched Cruise Missile)

AS OF DATE: December 31, 1985

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MAR 14 1986 18
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Popular Name): AGM-86B — Air Launched Cruise Missile

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

ALCM Program Office
Deputy for Strategic Systems
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433

Col Herbert L. Bevelhymer
Assigned: 10 August 1984
AV 785-5080, COMM (513) 255-5080

SAF/PAS
86-181

4. Program Elements/Procurement Line Items:

RDT&E: PE 64361F (No Shared Funding)

PROCUREMENT: APPN 3020 ICN#: MALCBG (No Shared Funding)

MILCON: PE 11122F (No Shared Funding)

Related Programs: Ground Launched Cruise Missile (GLCM), Sea Launched Cruise Missile (SLCM), B-52 Offensive Avionics System/Cruise Missile Integration (OAS/CMI), B-1B, Common Strategic Rotary Launcher (CSRL), and the Advanced Cruise Missile (ACM).

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86 0620

RESTRICTED DATA
THIS MATERIAL CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954.
UNAUTHORIZED DISCLOSURE SUBJECT TO ADMINISTRATIVE AND CRIMINAL SANCTIONS

6. Mission and Description:

The Air Launched Cruise Missile is a subsonic, winged turbofan-powered air-to-surface missile designed to deliver a nuclear warhead. ALCM carriage and launch is from a B-52 aircraft, both from the internal launcher and external pylons. The capability to launch an ALCM from a B-1B is under development. ALCM navigation to the target is achieved by means of an internal navigation system with periodic position update in free flight by utilizing terrain correlation. The ALCM does not replace any existing USAF weapon systems.

7. Program Highlights:

a. The Milestone II review in January 1977 approved the Boeing AGM-86B for Full Scale Engineering Development (FSED) and directed that a Joint Cruise Missile Project Office be established to manage all cruise missile programs. In February 1978, the General Dynamics AGM-109 entered into a system competition with the Boeing AGM-86B. The Boeing Aerospace Company was announced as the ALCM prime contractor on 25 March 1980. At DSARC III program management responsibility transferred to the Air Force. Eleven DT&E/FOT&E flights were accomplished between 12 June 1980 and 30 April 1981. By 30 September 1981, thirteen preproduction missiles were at Griffis AFB NY to support First Alert Capability (FAC). On 24 November 1981, rollout ceremonies for the first production ALCM were held at the Boeing Aerospace Company at Seattle, Washington. The second B-52G/ALCM base, Wurtsmith AFB MI, received its first two ALCM's on 12 June 1982. Twenty Integrated Weapon System launches using the B-52G modified with the Offensive Avionics System were successfully accomplished between 25 July 1981 and 10 October 1982. In December 1982, the B-52/ALCM Initial Operational Capability (IOC) was succesfully met on time at Griffis AFB, NY.

ALCM deliveries during CY83 and CY84 totaled 457 and 414 respectively. ALCM bases achieving Total Alert Capability (TAC) included Wurtsmith AFB (Sep 83), Grand Forks (Jan 84), and Fairchild AFB (Jun 84). ALCM/B-1B integration efforts were initiated.

b. Significant Developments Since Last Report -- 11 Global Cruise missions were flown by SAC. 3 missiles carried a Department of Energy payload and successfully impacted the target as planned. Blytheville AFB achieved Total Alert Capability as an ALCM base in February 1985. PMRT to Oklahoma City, ALC, was successfully accomplished on 1 October 1985. 329 missiles were delivered to the Air Force bringing the total delivered to 1536. The ALCMs are 90% delivered. Remaining deliveries on contract in FY86 will bring the total to 1715 missiles.

ALCM is meeting current mission requirements.

This will be the final ALCM SAR since the program is more than 90% delivered. The final SAR will not be used for the UCR.

c. Changes Since "As Of" Date - - 22 ALCM missiles have been delivered since 31 December 1985 to the Air Force. This brings the total deliveries to 1558 ALCM's. There has been one Global Cruise mission flown by SAC so far this year.

8. Decision Coordinating paper (DCP) Threshold Breaches:
DCP #136, dated 3 March 1980 (approved on 19 May 1980)
No DCP threshold breached.

9. Schedule:

a. Milestones --

	Development Estimate/ Approved Program	Current Estimate
1. DSARC I (AGM-86A)	Feb 74 / Feb 74	Feb 74
2. First Flight (AGM-86A)	Mar 76 / Mar 76	Mar 76
3. First Guided Flight (AGM-86A)	Sep 76 / Sep 76	Sep 76
4. DSARC II (AGM-86)	Jan 77 / Jan 77	Jan 77
5. AGM-86B/AGM-109 Competition directed	Jul 77 / Jul 77	Jul 77
6. First FSD Test Flight		
a). AGM-86B	May 79 / Jun 79	Aug 79
b). AGM-109	May 79 / Jun 79	Jul 79
7. IOT&E Start		
a). AGM-86B	Jul 79 / Aug 79	Oct 79
b). AGM-109	Jul 79 / Aug 79	Oct 79
8. First Operational Platform Launch		
a). AGM-86B	May 79 / Jun 79	Aug 79
b). AGM-109	May 79 / Jun 79	Jul 79
9. IOT&E Complete	Apr 80 / Nov 79	Feb 80
10. DSARC III	Feb 80 / Feb 80	Apr 80
11. IOC (First Squadron of fully modified B-52G's equipped with externally carried ALCM's)	Jun 81 / Dec 82	Dec 82
12. FOC (Full Operational Capability)	FY 90 / FY 90	FY 90

b. Previous Change Explanations --

1). Schedule Milestone Nos. a-6, a-7, a-8 reflect a four month delay in FY78 supplemental budget authorization.

2). Schedule Milestone Nos. a-6, a-8 reflect late GFE delivery and test aircraft difficulties.

3). Schedule Milestone No. a-9 moved to coincide with test flight prior to DSARC III. Revised due to behind schedule conditions of the competition. Actual date of accomplishment.

9. Schedule (Cont'd):

b. Previous Change Explanations (Cont'd):

4). Schedule Milestone No. a-10 revised due to behind schedule condition of the competition.

5). Schedule Milestone No. a-11 changed to reflect new definition of IOC outlined in 2 June 1978 Secretary of Defense memo.

c. Current Change Explanations -- N/A

d. References --

Development Estimate: FY79 RDT&E - Descriptive Summary (PE 64361F), January 1978

Approved Program: SDDM, dated 20 April 1980

10. (U) Technical/Operational Characteristics:

a. (U) Technical --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD) [redacted]			

b. (U) Operational --

(1) (U) Range: System Operational (KM)2/	2500	2500	2500	2500
(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD) [redacted]				

(b)(1) [redacted]

c. (U) Previous Change Explanations -- None

d. (U) Current Change Explanations --

(Ch-1) (U) Median value recalculated based on 26 Operational Test Launches.

e. (U) References --

Development Estimate: FY79 RDT&E Descriptive Summary (PE 64361) Jan 1978, ALCM System Specification, 1 Oct 77.

Approved Program: HQ USAF/RDP PMD 4084 (19) PE 64361/11122F, Air Launched Cruise Missile, 3 Nov 83.

~~CLASSIFIED BY: Joint ERDA/DOD NWCG CG W-4 and ALCM Classification Guide 5 May 81~~
~~Review On: OADR~~

~~RESTRICTED DATA~~
~~THIS MATERIAL CONTAINS RESTRICTED DATA AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954. UNAUTHORIZED DISCLOSURE SUBJECT TO ADMINISTRATIVE AND CRIMINAL SANCTIONS.~~

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate	Change	Current Estimate
a. (U) Cost --			
Development (RDT&E)	708.0	+263.9	971.9
Procurement	2311.6	-746.2	1565.4
Air Vehicle	(2094.4)	(-865.0)	(1229.4)
Total Flyaway	(2094.4)	(-865.0)	(1229.4)
Peculiar Support	(188.6)	(+104.7)	(293.3)
Initial Spares	(28.6)	(-14.1)	(42.7)
Construction (MILCON)	121.4	+37.7	159.1
Total FY77 Base-Year $	3141.0	-444.6	2696.4
Escalation	1043.0	+378.3	1421.3
Development (RDT&E)	(43.6)	(+150.7)	(194.3)
Procurement	(970.2)	(+136.4)	(1106.6)
Construction (MILCON)	(29.2)	(+91.2)	(120.4)
Total Then-Year $	4184.0	-66.3	4117.7
b. (U) Quantities --			
Development (RDT&E)	35	-11	24
Procurement	3424	-1661	1763
Total	3459	-1672	1787
c. (U) Unit Cost --			
Procurement:			
FY77 Base-Year $	0.675	+0.213	0.888
Then-Year $	0.958	+0.558	1.516
Program:			
FY77 Base-Year $	0.908	+0.601	1.509
Then-Year $	1.210	+1.094	2.304

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

e. (U) Foreign Military Sales -- None

(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)

~~SECRET~~

"FORMERLY RESTRICTED DATA"
"Unauthorized disclosure subject to administrative and criminal sanctions. Handle as Restricted Data in foreign dissemination. Section 144.b, Atomic Energy Act, 1954."

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition —			
(1) Cost	4117.7	4295.3	4117.7
(2) Quantity	1787	1787	1787
(3) Unit Cost	2.304	2.404	2.304

b. Current Procurement —

No procurement quantities or cost in the current year or budget year. Acquisition completed with an FY84 buy.

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	751.6	3281.8	150.6	4184.0
Previous Changes:				
Economic	+27.7	+710.3	+36.2	+774.2
Quantity	-7.5	-1653.4	—	-1660.9
Schedule	+109.4	+143.7	+100.5	+353.6
Engineering	+279.5	-12.9	+10.4	+277.0
Estimating	-27.5	-266.9	-65.0	-359.4
Other	-0.2	—	—	-0.2
Support	+67.4	+549.6	+110.0	+727.0
Subtotal	+448.8	-529.6	+192.1	+111.3
Current Changes:				
Economic	-0.9	-22.0	-1.0	-23.9
Quantity	—	—	—	—
Schedule	+0.1	—	—	+0.1
Engineering	-28.8	—	—	-28.8
Estimating	-4.6	+290.3	-71.1	+214.6
Other	—	—	—	—
Support	—	-348.5	+8.9	-339.6
Subtotal	-34.2	-80.2	-63.2	-177.6
Total Changes	+414.6	-609.8	+128.9	-66.3
Current Estimate	1166.2	2672.0	279.5	4117.7

3. Cost Variance Analysis (Cont'd):

(FY77 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	708.0	2311.6	121.4	3141.0
Previous Changes:				
Quantity	-6.4	-786.7	--	-793.1
Schedule	+83.3	-29.5	+37.3	+91.1
Engineering	+195.1	-3.1	+5.9	+197.9
Estimating	-25.6	-142.6	-33.8	-202.0
Other	-0.2	--	--	-0.2
Support	+36.7	+244.7	+57.0	+338.4
Subtotal	+282.9	-717.2	+66.4	-367.9
Current Changes:				
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	-15.8	--	--	-15.8
Estimating	-3.2	+125.1	-33.2	+88.7
Other	--	--	--	--
Support	--	-154.1	+4.5	-149.6
Subtotal	-19.0	-29.0	-28.7	-76.7
Total Changes	+263.9	-746.2	+37.7	-444.6
Current Estimate	971.9	1565.4	159.1	2696.4

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations:

RDT&E
- Economic: Revised escalation indices
- Quantity: Support FOT&E with production missiles, deletion of 11 missiles
- Schedule: Four month competition delay due to late FY78 supplemental appropriation
- Engineering: Expand flight test program from 11 to 19 flights, Deletion of Uprated thrust engine
- Estimating: Refinement of missile development estimate
- Other: ASD FY77 contract underrun
- Support: Engine and guidance depot support equipment development, flight testing, fuel, and software efforts

PROCUREMENT
- Economic: Revised escalation indices
- Quantity: Adjustment for quantity reduction from 3424 to 1763
- Schedule: Change in lot sizes from 480 per year to 440 per year
- Engineering: Recategorization of HAVE RUST Program
- Estimating: More reliable cost data provided at production decision (April 1980). Update based on recently negotiated contract options
- Support: Refinement of support equipment estimate due to receipt of firm contract proposal

MILCON
- Economic: Revised escalation indices
- Schedule: Planned ALCM efforts slipped to out years; caused by the B-52 modernization program, rephasing the B-52G/H for the ALCM beddown, and retiring of the B-52D
- Engineering: Road upgrade due to Munitions Handling Equipment weight
- Estimating: Refinement of military construction estimate to actual requirements being less than originally planned
- Support: Adjustment for revised basing requirements

13. Cost Variance Analysis (Cont'd):

	(Dollars In Millions) Base Year	Then Year
c. Current Change Explanations:		
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-0.5
Correction to the 31 Dec 84 SAR economic category since the wrong ALCM escalation indices were used. (Economic)	N/A	-0.4
Correction to the 31 Dec 84 SAR slip of the uprated engine effort from FY86 to FY87 due to improper rounding. (Schedule)	0.0	+0.1
Correction to the 31 Dec 84 SAR prior year escalation since the wrong ALCM escalation indices were used. (Estimating)	0.0	+0.3
Deletion of uprated thrust engine. (Engineering)	-13.7	-24.8
Deletion of Service Star. (Engineering)	-2.1	-4.0
Adjustment for prior year escalation. (Estimating)	+0.3	+0.3
Refinement of missile development estimate based on actual contract values (Estimating).	-3.5	-5.2
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-24.4
Correction to the 31 Dec 84 SAR economic category since the wrong ALCM escalation indices were used. (Economic)	N/A	+2.4
Correction to the 31 Dec 84 SAR prior year escalation since the wrong ALCM escalation indices were used. (Estimating)	-1.4	-2.8

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanations:

	(Dollars In Millions) Base Year	Then Year
(2) Procurement (Cont'd)		
Correction to the 31 Dec 84 SAR refinement of Support Equipment estimate since the wrong ALCM escalation indices were used. (Support)	+1.3	+0.4
Correction to the 31 Dec 84 SAR deletion of support equipment since the wrong ALCM escalation indices were used. (Support)	+0.1	0.0
Adjustment for prior year escalation. (Estimating)	+2.9	+5.7
Refinement of procurement estimate due to actual contract values. (Estimating)	-30.8	-59.4
Refinement of initial spares estimates. (Support)	-1.1	-2.1
Adjustment to refine the mix of previous support and estimating category changes primarily related to the impact of escalation changes on current and prior years.	0.0	0.0
-Changes to estimating category. (Estimating)	(+154.4)	(+346.8)
-Changes to support category. (Support)	(-154.4)	(-346.8)
(3) MILCON		
Revised economic escalation indices. (Economics)	N/A	-1.6
Correction to the 31 Dec 84 SAR economic category since the wrong ALCM escalation indices were used. (Economic)	N/A	+0.6
Correction to the 31 Dec 84 SAR prior year escalation since the wrong ALCM escalation indices were used. (Estimating)	0.0	-0.6

13. Cost Variance Analysis (Cont'd):

	(Dollars In Millions) Base Year	Then Year
c. Current Change Explanations:		
(2) MILCON (Cont'd)		
Deletion of planning wedge for additional facilities to house ALCM and ACM storage and maintenance facilities at B-1B bases. (Estimating)	-6.4	-14.3
Refinement of military construction estimate due to actual requirements less than originally planned. (Estimating)	-27.1	-56.5
Adjust for prior year escalation. (Estimating)	+0.3	+0.3
Additional ALCM Igloo Storage at a B-52 base. (Support)	+4.5	+8.9

d. References --

Development Estimate: FY79 PB and FY78 DOD Supplemental Appropriation

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

Initial SAR/Development Estimate (DE) to Current Estimate (CE)

PAUC (Initial SAR/DE)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.210	+0.420	+0.202	+0.198	+0.139	-0.081	0.000	+0.216	+1.094	2.304

15. Contract Information: (Then Year Dollars In Millions)

a. RDT&E -- N/A

b. Procurement -- N/A

c. MILCON -- N/A

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

a. Program Status --

(1) Percent Program Completed: 80.0% (12 yrs/15 yrs)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 99.4% (4091.8/4117.7)
(Funds Appropriated To Date/Total Program Funding)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY75-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	1156.4	6.1	3.7	-	1166.2
Procurement	2655.9	12.4	3.7	-	2672.0
MILCON	279.5	-	-	-	279.5
Total	4091.8	18.5	7.4	-	4117.7

ALCM, December 31 ,1985

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

c. Annual Summary - -

Fiscal Year	Qty	FY 77 Base Year			Then Year			Escl Rate (%)*
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1975				67.4			58.6	9.4
1976				52.3			49.1	8.0
197T				14.9			15.0	4.7
1977				76.6			78.4	4.2
1978				252.5			278.5	7.6
1979				281.1			340.4	8.4
1980				67.3			90.6	9.4
1981				71.4			106.4	11.9
1982				42.3			67.5	9.2
1983				10.9			18.2	4.9
1984				13.8			23.9	3.8
1985				10.5			18.9	3.6
1986				5.9			10.9	3.2
1987				3.2			6.1	4.1
1988				1.8			3.7	3.9
Subtotal	24			971.9			1166.2	

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

c. Annual Summary —

Fiscal Year	Qty	FY 77 Base Year			Then Year			Escl Rate (%)*
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1978	24	13.7	67.7	88.1	—	—	104.6	7.5
1979	24	4.4	54.0	68.5	—	—	90.8	8.7
1980	225	31.8	183.1	248.5	+0.5	—	375.7	9.7
1981	480	21.4	245.2	339.7	+1.0	-0.5	563.9	11.9
1982	440	10.8	265.0	312.7	+1.2	-1.0	551.9	9.6
1983	330	10.0	183.7	237.4	+4.9	-1.2	446.1	9.0
1984	240	7.1	128.1	210.1	—	-4.9	413.0	8.0
1985	—	—	3.4	37.9	—	—	77.3	4.1
1986	—	—	—	15.3	—	—	32.6	4.1
1987	—	—	—	5.6	—	—	12.4	4.1
1988	—	—	—	1.1	—	—	2.5	3.9
1989	—	—	—	0.5	—	—	1.2	3.4
Subtotal	1763	99.2	1130.2	1565.4	+7.6	-7.6	2672.0	—

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

c. Annual Summary —

Fiscal Year	Qty	FY 77 Base Year			Then Year			Escl Rate (%)*
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: MILCON								
1980				9.2			14.2	10.4
1981				40.2			66.3	11.9
1982				59.4			102.3	9.2
1983				0.0			0.0	4.9
1984				10.8			20.0	3.8
1985				24.8			47.5	3.6
1986				14.7			29.2	3.2
Subtotal				159.1			279.5	-
Total				2696.4			4117.7	-

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures --

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	Total	Obligated*	Expended*
Appropriation: RDT&E			
1975	58.6	58.6	58.6
1976	49.1	49.1	49.1
197T	15.0	15.0	15.0
1977	78.4	78.4	78.4
1978	278.5	278.5	278.5
1979	340.4	340.4	340.4
1980	90.6	90.6	90.6
1981	106.4	106.4	106.4
1982	67.5	67.5	67.5
1983	18.2	18.2	17.5
1984	23.9	23.9	16.3
1985	18.9	8.7	4.6
1986	10.9	1.9	0.1
To Comp	9.8	N/A	N/A
Total	1166.2	1137.2	1123.0

* Reflects Program Office records as of 31 DEC 85

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

d. Obligations and Expenditures —

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	Total	Obligated*	Expended*
Appropriation: PROCUREMENT			
1978	104.6	104.6	104.6
1979	90.8	90.8	90.8
1980	375.7	375.7	375.7
1981	563.9	552.9	513.2
1982	551.9	543.4	528.6
1983	446.1	443.1	396.7
1984	413.0	311.4	170.4
1985	77.3	18.9	9.5
1986	32.6	2.0	-
To Comp	16.1	N/A	N/A
Total	2672.0	2442.8	2189.7

* Reflects Program Office records as of 31 DEC 85

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

d. Obligations and Expenditures --

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	Total	Obligated*	Expended*
Appropriation: CONSTRUCTION			
1980	14.2	10.8	10.8
1981	66.3	53.7	53.7
1982	102.3	62.2	61.4
1983	0.0	0	0
1984	20.0	19.1	16.6
1985	47.5	38.2	8
1986	29.2	0	0
To Comp	-	0	0
Total	279.5	-184	150.5

* Reflects USAF/LE records as of 30 Nov 85.

17. Production Rate Data: (Not Applicable)

NOTE: FY84 Last Production Buy

Deliveries (Plan/Actual)--

	To Date
RDT&E	24/24
Procurement	1515/1534

18. Operating and Support Costs: (Not Applicable)

A-7 CH-47D

UNCLASSIFIED

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

Program: CH-47D

85-024

AS OF DATE: December 31, 1985

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FOR OPEN PUBLICATION

MAR 21 1986

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

AS AMENDED
Fr 3

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

2. DoD Component: Department of the Army

3. Responsible Office and Telephone Number

Project Manager's Office
CH-47 Modernization Program
St. Louis, MO 63120-1798

PM: Colonel Norbert I. Patla
Assigned: July 1, 1983
AUTOVON: 693-1411

No SECURITY Objection to PUBLIC RELEASE

18 MAR 1986

SECURITY REVIEW, OACS/HQI

4. Program Elements/Procurement Line Items:

RDT&E: PE 64213A
PROCUREMENT: APPN 2031 SSN AA0250

5. Related Programs: None.

6. Mission and Description: The CH-47 is a transport helicopter used for artillery movement, missile transport, personnel movement, aircraft recovery, medical evacuation, transport of liquid and dry bulk cargo, etc. It has the capability of carrying cargo internally or externally depending on cargo configuration. Employment of 1950 technology and the age of current CH-47 fleet dictated modernization to sustain Army fleet capability. Modernization provides substantial improvements in reliability, availability and maintainability (RAM), productivity, flight safety and survivability. CH-47A, B, and C model airframes are updated and improved with seven newly designed and developed components. These systems include the Fiberglass Rotor Blades, Drive System, Hydraulic System, Auxiliary Power Unit (APU), Electrical System, Advanced Flight Control System (AFCS), and the Multi-Cargo Hook Load Suspension System. The modernized aircraft

6. Mission and Description (Cont'd):

have a lift capability of 15,000 lbs at design conditions of 4,000 feet/95°F. Fleet compatibility is improved, logistics support enhanced, maintenance support simplified, and operational costs reduced. The modernized CH-47 replaces the current CH-47 fleet on a one-for-one basis.

7. Program Highlights:

a. Significant Historical Developments--ASARC III, held at DA on 19 Aug 80, directed that the program enter production to modernize the current available fleet. The Council directed the aircraft be type classified standard. The SECDEF Decision Memorandum (SDDM) was signed 20 Oct 80. The quantity of aircraft to be modernized to CH-47Ds is 436 combined A, B, and C models.

b. Significant Developments Since Last Report--A 5-year multiyear procurement contract for the modernization of 240 CH-47A, B, and C model aircraft to the CH-47D configuration was awarded to Boeing Vertol on 8 April 1985. Included in the total contract price were other contract requirements such as: system project management, peculiar ground support equipment, high dollar value spare parts and warranty of primary and secondary aircraft components and spare parts for the lesser of 24 months or 200 hours of operation. Aircraft will be delivered thru October 1990 at the rate of four per month.

New CH-47D fieldings occurred during 1985 with aircraft deliveries to Hunter Stewart, GA in August 1985 and Fort Bragg, NC in December 1985.

Since 31 December 1984, 40 production helicopters have been delivered to the Army.

c. Changes Since "As Of" Date-- None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 15 August 1980), or Secretary of Defense Decision Memorandum (SDDM) (dated 20 October 1980) threshold breaches.

9. Schedule:

a. Milestones --	Development Estimate/ Approved Program	Current Estimate
DSARC III	Sep 80/Sep 80	Oct 80
Initial Prod Contr Award	Sep 80/Sep 80	Oct 80

9. Schedule (Cont'd):

	Development Estimate/ Approved Program	Current Estimate
Prod Validation Testing		
(1) Start	Oct 81/May 82	May 82
(2) Complete	Mar 83/Jul 83	Aug 83
Initial Production Delivery	May 82/May 82	May 82
IOC (24th Aircraft 1st Unit)	Aug 83/Aug 83	Feb 84

b. Previous Change Explanations -- No change since Dec 84 SAR.

c. Current Change Explanations -- None.

d. References --

Development Estimate: DCP, number 139, as revised 5 January 1977.

Approved Program: DCP, unnumbered, 15 August 1980.

10. Technical/Operational Characteristics

a. Technical --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
System Operational Reliability (SOR) (MTBF)			
(1) DSARC III Objective	.96/.96	1.38 2/ (CH-1)	1.33 (CH-1)
(2) Maturity Objective (100K hrs)	1.4/1.4		1.33
Hardware System Reliability (MTBF)			
(1) DSARC III Objective	2.06/2.06	3.14 1/	3.41
(2) Maturity Objective (100K hrs)	3.0 /3.0		3.58
Maintenance Man-Hour/Flight Hour	17.66/17.66	15.10 1/	15.10
b. Operational --			
Vertical Rate of Climb (fpm)	200/200	200 2/	200
Mission Radius (NM)	30/30	30 2/	30
Mission Payload (lb)	15,775/15,775	16,529 2/ (Ch-1)	16,529 (Ch-1)
Maximum Cruise Speed at Design Gross Weight (kt)	155/155	163 2/	163
Service Ceiling at Design Gross Weight (ft) (1 engine inoperative)	10,000/10,000	13,200 2/ (Ch-1)	13,200 (Ch-1)

Footnotes:

1/ Demonstrated performance reflects prototype testing.

2/ Demonstrated performance reflects production testing.

10. Technical/Operational Characteristics (Cont'd):

c. Previous Change Explanations -- Reflects results of production testing vice prototype testing.

d. Current Change Explanations -- (Ch-1) Reflects results of production testing vice prototype testing.

e. References -- Same as 9d.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate	Changes	Current Estimate
Development (RDT&E)	$ 76.1	$+ 10.2	$ 86.3
Procurement	806.4	+ 437.5	1243.9
(Initial Spares)	(26.0)	(+ 9.8)	(35.8)
Total FY 75 Base -Year$	$ 882.5	$+ 447.7	$1330.2
Escalation	680.3	+1093.3	1773.6
Development (RDT&E)	(22.5)	(+ 4.7)	(27.2)
Procurement	(657.8)	(+1088.6)	(1746.4)
Total Then-Year$	$ 1562.8	+1541.0	$3103.8
b. Quantities --			
Development (RDT&E)	3	-	3
Procurement	361	+ 75	436
Total	364	+ 75	439
c. Unit Cost --			
Procurement:			
FY 75 Base-Year$	$ 2.23	$ + .62	$ 2.85
Then-Year$	4.06	+2.80	6.86
Program:			
FY 75 Base-Year$	2.42	+ .61	3.03
Then-Year$	$ 4.29	$ +2.78	$ 7.07

d. Approved Design-to-Cost Goal --
(Average Unit Flyaway Cost at a production rate of 5/month)

	Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
CH-47A			
Qty: 104			
Peak Rate: N/A			
FY 75 Base-Year$	2.764/	N/A	N/A
Then-Year$	4.600/	N/A	N/A

11. Program Acquisition Cost (Cont'd):

	Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
CH-47B			
Qty: 74			
Peak Rate: N/A			
FY 75 Base-Year$	2.357/	N/A	N/A
Then-Year$	4.195/	N/A	N/A
CH-47C			
Qty: 183			
Peak Rate: N/A			
FY 75 Base-Year$	1.567/	N/A	N/A
Then-Year$	2.900/	N/A	N/A
CH-47D			
Qty: 436			
Peak Rate: N/A			
FY 75 Base-Year$	NA/2.39	2.65	2.63
Then-Year$	NA/7.19	6.39	

e. Foreign Military Sales -- None.

f. Nuclear Costs -- None.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition--			
(1) Cost	3103.8	3224.4	3103.8
(2) Quantity	439	439	439
(3) Unit Cost	7.07	7.35	7.07
b. Current Procurement--	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	326.5	371.5	272.0
Less CY Adv Proc	76.9	70.8	43.3
Plus PY Adv Proc	54.3	36.3	66.9
Net Total	303.9	337.0	295.6
(2) Quantity	48	48	48
(3) Unit Cost	6.33	7.02	6.16

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	98.6	1464.2	-	1562.8
Previous Changes:				
Economic	-	+ 334.3	-	+ 334.3
Quantity	-	+ 545.5	-	+ 545.5
Schedule	-	- 7.6	-	- 7.6
Engineering	-	-	-	-
Estimating	+ 14.9	+ 755.6	-	+ 770.5
Other	-	-	-	-
Support	-	+ 18.9	-	+ 18.9
Subtotal	+ 14.9	+1646.7	-	+1661.6
Current Changes:				
Economic	-	- 142.9	-	- 142.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	- 20.9	-	- 20.9
Other	-	-	-	-
Support	-	+ 43.2	-	+ 43.2
Subtotal	-	- 120.6	-	- 120.6
Total Changes	+ 14.9	+1526.1	-	+1541.0
Current Estimate	113.5	2990.3	-	3103.8

Cost Variance Analysis (Con't):

(FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	76.1	806.4	-	882.5
Previous Changes:				
Quantity	-	+ 154.7	-	+ 154.7
Schedule	-	+ 41.4	-	+ 41.4
Engineering	-	-	-	-
Estimating	+ 10.2	+ 219.9	-	+ 230.1
Other	-	-	-	-
Support	-	+ 16.4	-	+ 16.4
Subtotal	+ 10.2	+ 432.4	-	+ 442.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	- 11.0	-	- 11.0
Other	-	-	-	-
Support	-	+ 16.1	-	+ 16.1
Subtotal	-	+ 5.1	-	+ 5.1
Total Changes	+ 10.2	+ 437.5	-	+ 447.7
Current Estimate	86.3	1243.9	-	1330.2

b. Previous Change Explanations --

(1) RDT&E
Estimating: Reflects actual RDT&E program.

(2) Procurement
Economic: Application of CH-47D historical, and OSD inflation guidance through February 1986.

Quantity: ASARC/DSARC III decision added 75 aircraft. Program quantity increased from 361 to 436.

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

Estimating: Refinement of estimate for production costs.

Support: Refinement of prior estimate.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year $	Then-Year $
(1) RDT&E	N/A	N/A
(2) Procurement Revised 20 Feb 86 economic escalation rates. (Economic)	N/A	-142.9
Elimination of multiyear contingency funds for Economic Price Adjustment and airframe preparation/Materiel Requirements List; elimination of small business set-aside and Engineering Change Proposals (ECPs). (Estimating)	-11.0	-20.9
Revised spares policy definition. (Support)	+16.1	+43.2

d. References --

(1) Development Estimate: Same as 9d.

(2) Current Estimate: HQ DA direction.

14. Program Acquisition Unit Cost (PAUC) History: (Millions of Then-Year dollars).

Development Estimate to Current Estimate --

(Dev Estimate)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
4.29	+.44	+.55	-.02	-	+1.67	+.14	-	+2.78	7.07

Contract Information: (Then-Year Dollars in Millions)

Procurement --

Airframe
Boeing Vertol Co., Ridley Park, PA,
DAAK50-84-C-0004, FPIF,
Award: March 14, 1984
Definitized: March 14, 1984

Initial Contract Price

Target	Ceiling	Qty
$362.4	$344.9	36

Current Contract Price

Target	Ceiling	Qty
$182.6	$194.4	36

Estimated Price at Completion

Contractor	Program Manager
$182.7	(b)(4)

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$ 2.1	$ -3.6
Cumulative Variances To Date	$ .5	$ -2.8
Net Change	$ 2.6	$ +0.8

Explanation of Change: The unfavorable cost variance is due to increased overhead rates. The unfavorable schedule variance is due to late delivery of vendor material. The variance is to Boeing Vertol's internal schedule, which is 30 to 60 days ahead of the contract dule. The first thirty aircraft have been delivered on or ahead of schedule. On 1 21, 1985, contractual deliveries were suspended for ten weeks due to an incident in uras. This resulted in a program slippage of ten aircraft, when production acceptance was resumed. Contractor's new delivery schedule projects that deliveries will be back on schedule by March 1986. The program manager's assessment is based on cost trends derived from cost performance to date and available contractor management reserve.

Airframe
Boeing Vertol Co., Ridley Park, PA,
DAAK50-83-C-0003, FPIF
Award: September 30, 1983
Definitized: September 30, 1983

Initial Contract Price

Target	Ceiling	Qty
$131.5	$142.1	24

Current Contract Price

Target	Ceiling	Qty
$131.5	$145.6	24

Estimated Price at Completion

Contractor	Program Manager
$129.4	(b)(4)

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$1.6	$ -1.9
Cumulative Variances To Date	$1.6	$ -1.7
Net Change	0	$ -0.2

Explanation of Change: The CPR for this contract was terminated in September 1985. contract is 98 percent complete with all contract deliveries complete. The Cost ance is due to better labor efficiency and lower vendor material cost. The Schedule ances is a paper variance only since all aircraft have been delivered. This contract will not be reported in future reports because it is essentially complete.

15. Contract Information (Cont'd): CH-47D, December 31, 1985

Airframe	Target Price	Qty
Boeing Vertol Co., Ridley Park, PA, DAAK50-85-C-A005, FFP, 5-year Multiyear Contract, Award: April 8, 1985 Definitized: April 8, 1985	$1,172.7	240

Engine	Target Price	Qty
AVCO Lycoming Co., Stratford, CT, DAAJ09-85-C-A485, FFP Award: September 30, 1984	$70.4	169

Auxiliary Power Unit	Target Price	Qty
Turbomach Div. of Solar Turbines, Inc., San Diego, CA, DAAJ09-84-C-A939 Award: August 31, 1984	$3.2	64

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

a. Program Status --

(1) Percent Program Completed: 61.1% (11 yrs/18 yrs)

(2) Percent Program Cost Appropriated: 47.3% (1469.3/3103.8)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Years (FY76-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP FY92)	Total
RDT&E	113.5	-	-	-	113.5
Procurement	1682.3	272.0	964.0	72.0	2990.3
MILCON	-	-	-	-	-
Total	1795.8	272.0	964.0	72.0	3103.8

Program Funding Summary (Cont'd):
(Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty	FY 75 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 1/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1976				10.1			11.3	8.7
197T				2.1			2.4	2.2
1977				19.9			25.8	8.1
1978				24.2			32.0	8.5
1979				13.9			19.1	7.7
1980				15.7			22.4	7.7
[illegible]				.4			.5	7.7
Subtotal	3 2/			86.3			113.5	
Appropriation: Procurement								
1980	-	6.3	7.7	15.5	5.3	.0	28.6	13.4
1981	9	8.1	55.9	79.0	8.5	5.3	159.3	10.8
1982	19	1.6	91.8	104.2	21.3	8.5	219.0	7.9
1983	24	1.4	99.0	107.4	58.9	21.3	247.4	3.1
1984	36	1.4	126.1	136.0	26.4	18.0	316.4	4.0
1985	48	.6	145.7	162.2	82.3	67.3	385.1	3.1
1986	48		132.4	137.1	76.9	54.3	326.5	4.1
1987	48		103.2	110.4	43.3	66.9	272.0	4.1
1988	48		94.9	97.9	52.0	58.7	248.7	3.9
1989	48		92.8	96.3	56.9	59.2	251.1	3.4
1990	48		87.6	93.9	41.0	52.2	250.7	2.9
[illegible]	48		75.7	78.2	10.2	53.2	213.5	2.3
	12		23.8	25.8	.0	18.1	72.0	2.3
Subtotal	436	19.4	1136.6	1243.9	483.0	483.0	2990.3	
Total	439	19.4	1136.6	1330.2	483.0	483.0	3103.8	

Program Funding Summary (Cont'd:

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended 3/
Appropriation: RDT&E			
1976	11.3	11.3	11.3
197T	2.4	2.4	2.4
1977	25.8	25.8	25.8
1978	32.0	32.0	32.0
1979	19.1	19.1	19.1
1980	22.4	22.4	22.4
1981	.5	.5	.5
Total	113.5	113.5	113.5
Appropriation: Procurement			
1980	28.6	28.6	28.6
1981	159.3	159.3	159.3
1982	219.0	219.0	219.0
1983	247.4	247.4	247.4
1984	316.4	288.8	104.9
1985	385.1	333.5	28.8
1986	326.5	-	-
To Complete	1308.0	N/A	N/A
Total	2990.3	1276.6	788.0

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite indices.

2/ Cannot be identified to a specific fiscal year, as these prototypes were worked simultaneously.

3/ Represents disbursements.

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1980	N/A	N/A	N/A	N/A
1981	9	9	9	9
1982	19	19	19	19
1983	24	24	24	24
1984	36	36	36	36
1985	36	48	48	48
1986	36	48	48	60
1987	36	48	48	60
1988	36	48	48	60
1989	36	48	48	60
1990	36	48	48	60
1991	36	48	48	-
1992	21	12	12	-

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less DE)	Current Estimate	Variance (CE less Max)	Maximum 1/
Prog Acq Cost (BY $)	1325.1	+ 5.1	1330.2		
(TY $)	3224.4	- 120.6	3103.8		
PAUC (BY $)	3.02	+ 0.1	3.03		
(TY $)	7.35	- 0.28	7.07		

1/Information currently unavailable. Information (cost) relevant to maximum economic production rate is currently not estimated. It has been established by HQDA message 091720Z January 1984, subject: CH-47 Modernization Program Acquisition Strategy update that the "procurement quantity to be 48 aircraft per year through completion". Consequently, this office ceased to maintain up-to-date cost estimates on the maximum economic rate.

17. Production Rate Data (Cont'd):

c. Schedule Variance --

	Development Estimate	Variance (CE vs DE)	Current Estimate	Variance (CE vs Max)	Maximum*
Start Date	10/81	N/A	10/81		
Duration	168	-33	135		
End Date	9/94	N/A	12/92		

*Information currently unavailable.

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	3/3
Procurement	96/92

18. Operating and Support Costs: N/A

N-7 C/MH-53E
(6)

SAR-85-010

UNCLASSIFIED

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

AS OF DATE: December 31, 1985*

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1. Designation and Nomenclature (Popular Name): CH-53E Heavy Transport/Assault Helicopter (Super Stallion); MH-53E Airborne Mine Countermeasures/Vertical Onboard Delivery (Sea Dragon)

2. DoD Component: U.S. Navy

3. Responsible Office and Telephone Number:

H-53E Program Office
Naval Air Systems Command
Washington, DC 20361

Col J. R. Gentry
Assigned: February 1, 1981
AV 222-3151; COMM (202) 692-3151

4. Program Elements/Procurement Line Items:

RDT&E: PE 64260N
PE 64714N

PROCUREMENT: APPN: 1506 ICN 0148
PE 24453N, PE 26122M, PE 24303N, PE 24156N

MILCON: PE 26496M

APR 1 1986

5. Related Programs: SH-60B LAMPS MK III Sea Hawk; Army UH-60A Black Hawk; Air Force HH-60D Night Hawk.

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OASD(PA) DPOISR 86-0824

6. Mission and Description: The CH-53E is a shipboard-compatible helicopter configured for the lift movement of cargo and troops/passengers internally, the tactical recovery of downed or damaged aircraft, including self-retrieval, the lift of heavy bulky equipment and supplies by external suspension from the aircraft, and the towing of craft, vehicles and mine countermeasures devices. CH-53E is similar to the basic CH-53D with the following exceptions: three T-64-GE-416 turbine engines vs two T-64-GE-413 turbine engines; 79 ft. vs 72 ft. main rotor diameter; 7 titanium spar vs 6 aluminum spar main rotor blades; 20 ft. vs 16 ft. tail rotor diameter and canted 20 degrees; 13,140 SHP vs 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 of forty-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 (7) CH-53E Airborne Mine Countermeasure capable aircraft that will replace the RH-53D losses. The FY 83 President's Budget increased production aircraft from 126 to 160 which include 25 additional AMCM capable aircraft designated MH-53E. Multiyear procurement for C/MH-53E was approved for FY 86 through FY 89 in the FY 85 DOD Appropriations Acts and includes 56 C/MH-53E'S. First flight of the MH-53E development prototype occurred in September 1983, DT-IIB testing completed June 1984, and OT-IIA testing completed in July 1984.

b. Significant Developments Since Last Report --

The CH-53E final phase of POT&E was completed 3 July 1985. The Air Characteristics Improvement Board recommended an increase from the present procurement program of 160 C/MH-53E'S to 225 aircraft on 2 July 1985, and was approved by the Chief of Naval Operations 26 July 1985. This increase will be addressed in POM 88.

The MH-53E was approved for limited production (ALP) in March 1985. Techeval was completed for the MH-53E 8 November 1985.

The C/MH-53E is expected to meet all mission requirements approved in Decision Coordinating Paper #94.

c. Changes Since "As of Date" -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: Schedule threshold for Approval for Service Use breached DCP #94 dated February 14, 1978.

9. Schedule:

a. Milestones --

	Development Estimate/ Approved Program	Current Estimate	
CH-53E			
Program Initiation	NA/NA	Jun 69	
First Navy Flight Development Prototype #1	Mar 74/Mar 74	Mar 74	
DSARC II	Oct 74/Apr 75	Apr 75	
IOT&E Complete	Feb 76/Jul 78	May 79	
BIS Initial Report	Mar 76/Mar 77	Jul 77	
DNSARC	NA/Jan 78	Jan 78	
DSARC III	Mar 76/Jan 78	Jan 78	
Navy Technical Evaluation	NA/Dec 77	Jan 78	
Approval for Service Use (ASU)	NA/Sep 79	Apr 80	
Acceptance First Production Aircraft	Jun 77/May 80	Dec 80	
Fleet Introduction	Jul 77/Sep 80	Jun 81	
FOT&E	NA/FY 80	Apr 83	
BIS-FTP	NA/FY 80	Dec 82	
IOC	NA/FY 81	FY 82	
Navy Support Date	NA/FY 83	FY 83	
MH-53E			
First Flt Development Prototype	NA/Oct 83	Sep 83	
OPEVAL	NA/Mar 85	Apr 86	CH-1
AFP	NA/Dec 85	Jun 86	CH-2
Acceptance First Production Aircraft	NA/Nov 86	Nov 86	

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. Approval for Full Production was delayed to reflect current planning for test and evaluation completion and report from OPTEVFOR.

c. Current Change Explanations --

(CH-1) OPEVAL extended 6 months because of weather, unplanned maintenance delays, and administrative problems with the contractor.

(CH-2) AFP delayed 4 months because of extended OPEVAL.

9. Schedule (Cont'd):

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: FY 1987 President's Budget

10. Technical/Operational Characteristics:

a. Technical --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Weight (lbs)			
Maximum Gross Weight (lbs)			
Weight Empty (lbs)	34,000/34,000	33,226	33,226
w/Ext Payload, HIGE SL/90°F	73,500/73,500	75,100	72,500
Dimensions (Spread/Folded configuration)			
Length	*99.0/60.3	99.5/60.5	99.5/60.5
Width	*79.0/29.4	79.0/28.5	79.0/28.5
Height	*28.4/18.6	28.4/18.7	28.4/18.7

*Dev estimate same as Approved Program

Engine Maximum SHP, Sea Level Static (10 min)	4380/4380	4380	4380
b. Operational --			
Speed (KTS)			
Vmax (KTS Level FLT, MAX continuous power S.L.)			
1. 46.5K lbs GW (Internal Load)	170/170	176	170
2. 56K lbs GW (Internal Load)	140/140	170	140
3. 70K lbs GW (External Load)	100/100	125	100
Rate of Climb (ft/min) One Engine Inop @ 69,750 lbs GW	150/150	400	200
Radius/Range (NM)			
Range (NM)			
Internal payload (1000 cu. ft. cargo, not to exceed gross weight limits) with full internal and full external aux fuel tanks (10% reserve)	550/500	560	500
Payload (lbs)			
Payload (lbs)			
External, 50 NM radius. S/L90°F, HIGE (20 min. fuel reserve) 3000' MSL 91.5°F, HOGE	32,000/32,000	32,000	32,000
Internal Payload (10% reserve) 500 NM Range	20,000/16,000	16,000	16,000

10. Technical/Operational Characteristics (Cont'd):

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Reliability (%)			
Mission reliability 1 hr mission @ 90% confidence	.93/.88	.94	.93
Aircraft MFHBA (1 hour mission)	13.7/7.82	16.8	13.8
Aircraft MFHBF	.77/.70	.97	.70
Maintainability			
Aircraft MMH/FH (org. corrective)	8.0/9.50	7.72	9.50
Availability	.85/.85	.93	.93
AMCM (MH-53E)			
Tow Tension (x 1,000 lbs.)	N/A	--	30.0
Time on Station (hrs.)	N/A	--	3.3

c. 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.

d. Current Change Explanations -- None

e. References --

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

Approved Program: Same as above.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate	Changes	Current Estimate
Development (RDT&E)	$ 93.3	$ +97.1	$ 190.4
Procurement	371.1	+776.2	1147.3
Airframe	(250.2)	(+494.5)	(744.7)
Engine	(46.9)	(+79.1)	(126.0)
Avionics	(5.4)	(+16.3)	(21.7)
Other GFE	(1.9)	(+8.5)	(10.4)
Total Flyaway	(304.4)	(+598.4)	(902.8)
Other Wpn Sys Cost	(29.4)	(+98.4)	(127.8)
Initial Spares	(37.3)	(+79.4)	(116.7)
Construction (MILCON)	-	+2.6	2.6
Total FY 73 Base-Year $	464.4	+875.9	1340.3
Escalation	114.0	+1844.7	1958.7
Development RDT&E	(7.0)	(+108.8)	(115.8)
Procurement	(107.0)	(+1731.3)	(1838.3)
Construction (MILCON)	-	(+4.6)	(4.6)
Total Then-Year $	578.4	+2720.6	3299.0

11. Program Acquisition Cost (Cont'd): (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
b. Quantities --			
Development (RDT&E)	4	-	4
Procurement	70	+90	160
Total	74	+90	164
c. Unit Cost --			
Procurement:			
FY 73 Base-Year $	$5.3	$+1.9	$7.2
Then-Year $	6.8	+11.9	18.7
Program:			
FY 73 Base-Year $	6.3	+1.9	8.2
Then-Year $	$7.8	$+12.3	$20.1

d. Approved Design to Cost Goal --

	(Average Unit Flyaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty: 49			
@ Peak Rate: 2/Mo			
FY 78 Base-Year $	(1)/8.4	9.1(2)	9.3
Then-Year $	(1)/9.9	14.6(2)	-

(1) D.E. established as 4.4 FY 73 $ and 5.6 TY $ at DSARC II for 70 aircraft but DCP not approved until DSARC III, which established approved program and threshold in FY 78 $.

(2) C.E. based on 160 aircraft program.

e. Foreign Military Sales -- None

f. Nuclear Cost -- None

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	3299.0	3366.4	3299.0
(2) Quantity	164	164	164
(3) Unit Cost	20.1	20.5	20.1
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	283.2	318.1	236.6
Less CY Adv Proc*	-33.3	-33.3	-30.9
Plus PY Adv Proc*	+21.5	+19.0	+30.5
Net Total	271.4	303.8	236.2
(2) Quantity	14	14	14
(3) Unit Cost	19.4	21.7	16.9

*Advance procurement in FY 85-FY 88 reflects multiyear procurement FY 86-FY 89.

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	+7.0	-41.9	-	-34.9
Quantity	-	+2545.2	-	+2545.2
Schedule	+1.5	+63.9	-	+65.4
Engineering	+162.7	+294.6	-	+457.3
Estimating	+2.8	-904.9	-	-902.1
Other	+3.0	-	-	+3.0
Support	+18.6	+631.3	+4.2	+654.1
Subtotal	+195.6	+2588.2	+4.2	+2788.0
Current Changes:				
Economic	-0.9	-92.1	-	-93.0
Estimating	+11.2	+58.7	-	+69.9
Support	-	-47.3	+3.0	-44.3
Subtotal	+10.3	-80.7	+3.0	-67.4
Total Changes	+205.9	+2507.5	+7.2	+2720.6
Current Estimate	306.2	2985.6	7.2	3299.0

13. Cost Variance Analysis (Cont'd)

(FY 1973 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	93.3	371.1	-	464.4
Previous Changes:				
Quantity	-	+694.9	-	+694.9
Schedule	+1.6	+33.2	-	+34.8
Engineering	+77.1	+96.1	-	+173.2
Estimating	+1.3	-246.5	-	-245.2
Other	+2.4	-	-	+2.4
Support	+10.5	+193.2	+1.6	+205.3
Subtotal	+92.9	+770.9	+1.6	+865.4
Current Changes:				
Estimating	+4.2	+20.7	-	+24.9
Support	-	-15.4	+1.0	-14.4
Subtotal	+4.2	+5.3	+1.0	+10.5
Total Changes	+97.1	+776.2	+2.6	+875.9
Current Estimate	190.4	1147.3	2.6	1340.3

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation rates.

Schedule: Extend RDT&E beyond FY 76 and restructure development effort.

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

Estimating: Refinement of R&D estimates.

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 rates.

Quantity: Reduction of 70 to 49 aircraft, increase from 49 to 126 aircraft, increase from 126 to 160 aircraft.

Schedule: Production delay resulting from development stretchout and numerous production changes with net result of stretchout of procurement.

Engineering: Design changes to airframe, increase in production non-recurring costs, AMCM configuration changes and tooling refurbishment, configuration change for Helicopter Night Vision System.

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.

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.

MILCON

Support: Construction of composite trainer buildings.

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-0.9
Revised estimates for development of composite rotor blade and MH-53E development adjustments (Estimating)	+4.2	+11.2
(2) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-92.1
Estimating adjustments in 56 aircraft multiyear program FY 86 through FY 89 to accommodate revised escalation rates. (Estimating)	+20.7	+58.7
Revised estimates for support and spares (Support)	-15.4	-47.3
(3) MILCON		
Construction of trainer buildings (Support)	+1.0	+3.0

d. References --
Development Estimate: Development Concept Paper (DCP) #94, dated 25 April 1973, subject "CH-53E Prototype Development Approval".

Approved Program: Decision Coordinating Paper (DCP) #94, dated 14 February 1978, subject "CH-53E Production Approval."

Current Estimate: President's FY 87 Budget.

14. Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate--

(1) Same as Current Baseline Estimate.

b. Current Baseline Estimate to Current Estimate--

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
7.8	-0.8	+11.2	+0.4	+2.8	-5.0	0.0	+3.7	+12.3	20.1

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

a. RDT&E--

MH-53E Airframe:	Initial Contract Price Target	Ceiling	Qty
Sikorsky Aircraft, Stratford, CT. N00019-82-C-0127, CPA/IF, Award: February 26, 1982 Not yet definitized	$37.4	N/A	-

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$51.5	N/A	--	$61.4	61.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-3.0	-1.4
Cumulative Variances to Date (11/30/85)	-3.9	-1.4
Net Change	-.9	0

Explanation of Change: Current cost and schedule variances are not significant.

b. Procurement --

Airframe:	Initial Contract Price Target	Ceiling	Qty
Sikorsky Aircraft, Stratford, CT. N00019-82-C-0230/FFP * Award: 20 June 1982 Definitized: 27 April 1983	$118.0	N/A	11.0

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$118.0	N/A	11.0	$118.0	$118.0

FFP Contract - no variance analysis required

	Initial Contract Price Target	Ceiling	Qty
Sikorsky Aircraft, Stratford, CT. N00019-83-C-0074/FFP * Award: April 30, 1983 Definitized: May 16, 1984	115.0	N/A	11.0

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$115.0	N/A	11.0	$115.0	$115.0

FFP Contract - no variance analysis required

* Shown for the last time

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

	Initial Contract Price		
	Target	Ceiling	Qty
Sikorsky Aircraft, Stratford, CT. N00019-83-C-0308/FFP Award: May 24, 1984 Partially definitized	105.0	N/A	10.0

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$105.0	N/A	10.0	$111.0	$111.0

FFP Contract - no variance analysis required

	Initial Contract Price		
	Target	Ceiling	Qty
Sikorsky Aircraft, Stratford, CT. N00019-85-C-0066/AAC Multiyear Award: April 30, 1985 **Not yet definitized	$116.6	N/A	56.0

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$116.6	N/A	56.0	**	**

Engine	Initial Contract Price		
	Target	Ceiling	Qty
General Electric Co., West Lynn, MA, F33657-82-C-0017/FFP Award: June 19, 1984 Definitized: January 15, 1985	66.5	N/A	101.0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$66.5	N/A	101.0	66.5	66.5

FFP Contract - No variance analysis required

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

a. Program Status --

(1) Percent Program Completed: 73.7% (14 yrs/19 yrs)

(2) Percent Program Cost Appropriated: 66.8% ($2203.6/$3299.0)

16. Program Funding Summary (Cont'd): (Curent Estimate in Millions of Dollars)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY 73-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP	Total
RDT&E	254.9	3.5	47.8	-	306.2
Procurement	1944.5	236.6	804.5	-	2985.6
MILCON	4.2	-	3.0	-	7.2
Total	2203.6	240.1	855.3		3299.0

c. Annual Summary --

Fiscal Year	Qty	FY 73 Base-Year Dollars			Then-Year Dollars			Escl Rate(%)
		Flyaway		TOTAL	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1973				14.0			14.6	4.4
1974	2			26.8			30.3	8.0
1975	2			38.2			47.0	10.9
1976				9.6			12.5	6.6
197T				16.0			21.7	2.9
1977				8.6			11.9	2.6
1978				13.6			20.4	6.8
1979				0.2			0.4	8.4
1980				7.9			14.5	10.6
1981				4.7			9.4	10.6
1982				5.8			12.1	7.6
1983				6.9			15.2	4.9
1984				12.6			28.7	3.8
1985				6.3			15.0	3.6
1986				0.5			1.2	3.2
1987				1.4			3.5	4.1
1988				3.3			8.7	3.9
1989				3.8			10.4	3.4
1990				5.1			14.1	2.9
1991				5.1			14.6	2.3
Subtotal	4			190.4			306.2	--

16. Program Funding Summary (Cont'd) (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty	FY 73 Base-Year Dollars			Then-Year Dollars			Escl Rate(%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1977	6	23.6	47.8	74.7	0.0	0.0	120.8	3.8
1978	0	0.0	0.0	0.0	0.0	0.0	0.0	6.8
1979	14	1.9	76.0	104.0	2.4	0.0	190.4	8.7
1980	13	0.0	82.5	104.9	1.9	2.4	211.0	11.8
1981	14	0.0	80.7	99.2	1.7	1.9	222.6	11.6
1982	14	0.0	71.8	91.4	6.5	1.7	227.9	14.3
1983	11	5.3	56.4	88.0	7.3	6.5	229.0	9.0
1984	11	2.9	51.5	74.2	9.8	7.3	205.1	8.0
1985	10	10.8	48.7	79.3	41.3	9.8	254.5	4.1
1986	14	0.0	68.3	91.4	33.3	21.5	283.2	4.1
1987	14	1.4	63.5	76.8	30.9	30.5	236.6	4.1
1988	14	1.6	66.5	81.8	22.5	37.5	244.1	3.9
1989	14	3.6	65.5	82.9	26.3	38.5	257.5	3.4
1990	11	3.9	68.6	90.7	0.0	26.3	275.7	2.9
1991	0	0.0	0.0	8.0	0.0	0.0	27.2	2.3
Subtotal	160	55.0	847.8	1147.3	183.9	183.9	2985.6	--
Appropriation: MILCON								
1983				0.3			0.8	4.9
1984				0.0			0.0	3.8
1985				0.0			0.0	3.6
1986				1.3			3.4	3.2
1987				0.0			0.0	4.1
1988				1.0			3.0	3.9
Subtotal				2.6			7.2	
Total	164			1340.3			3299.0	

16. Program Funding Summary (Cont'd)

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)			
	Total	Obligated		Expended
Appropriation: RDT&E				
1973	14.6	14.6		14.6
1974	30.3	30.3		30.1
1975	47.0	47.0		47.0
1976	12.5	12.5		12.5
197T	21.7	21.7		21.7
1977	11.9	11.9		11.5
1978	20.4	20.4		20.1
1979	0.4	0.4		0.4
1980	14.5	14.5		13.6
1981	9.4	9.4		8.8
1982	12.1	12.1		11.7
1983	15.2	15.2		14.5
1984	28.7	28.7		28.0
1985	15.0	11.4		5.5
1986	1.2	0.8		0.8
To Complete	51.3	N/A		N/A
Subtotal	306.2	250.9		240.8
Appropriation: Procurement				
1977	120.8	120.8		119.1
1978	0.0	0.0		0.0
1979	190.4	190.3		189.6
1980	211.0	210.9		206.4
1981	222.6	222.5		222.1
1982	227.9	227.1		214.6
1983	229.0	227.9		201.9
1984	205.1	193.0		168.3
1985	254.5	227.2		140.2
1986	283.2	83.7		31.5
To Complete	1041.1	N/A		N/A
Subtotal	2985.6	1703.4		1493.7
Appropriation: MILCON				
1983	0.8	0.8		0.8
1984	0.0	0.0		0.0
1985	0.0	0.0		0.0
1986	3.4	0.0		0.0
To Complete	3.0	N/A		N/A
Subtotal	7.2	0.8		0.8
Total	3299.0	1955.1		1735.3

17. Production Rate Data:

a. Annual production Rates -- (NOTE: The C/MH-53E is an approved multiyear program from FY 1986 through FY 1989 where the quantities of aircraft are fixed. The current program has only one procurement year beyond FY 1989 for a quantity of 11 aircraft, thus a maximum production rate computation is not applicable.)

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1976	5			
1977	10	6	6	6
1978	18	0	0	0
1979	20	14	14	14
1980	17	15	13	13
1981		14	14	14
1982			14	14
1983			11	11
1984			11	11
1985			10	10
1986			14	14
1987			14	14
1988			14	14
1989			14	14
1990			11	11

b. Cost Variance -- Dollars in Millions (NOTE: Subject to limitations on production rates above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	476.0	+864.3	1340.3	0.0	1340.3
(TY $)	768.5	+2530.5	3299.0	0.0	3299.0
PAUC (BY $)	9.0	-0.8	8.2	0.0	8.2
(TY $)	14.5	+5.6	20.1	0.0	20.1

c. Schedule Variance -- (NOTE: Subject to limitations on production rates above.)

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	2/78	NA	2/78	0	2/78
Duration (in months)	44	108	152	0	152
End Date (Mo/Yr)	9/81	NA	9/90	0	9/90

17. Production Rate Data (Cont'd):

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	4/3*
Procurement	89/89

*R&D prototype #1 lost in accident prior to delivery.

18. Operating and Support Costs: N/A

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SAR-85-092

A-8 COPPERHEAD

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

PROGRAM: COPPERHEAD

AS OF DATE: December 31, 1985

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FOR OPEN PUBLICATION

MAR 21 1986

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

AS AMENDED pp 4, 11

1. (U) **Designation/Nomenclature (Popular Name):** M712/155MM Cannon Launched Guided Projectile (Copperhead)

2. (U) **DoD Component:** Department of the Army

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

Cannon Artillery Weapons Systems/
Joint Project Manager, Guided Projectiles
Armament Research Center
Dover, New Jersey

PM: COL Joseph R. Cote

Assigned: July 1985

Autovon: 880-2572

4. (U) **Program Elements:**

RDTE: PE64621, Proj D073
Procurement: APPN 2034, SSN E67600

5. (U) **Related Programs:** Ground Laser Designator Program, Remotely Piloted Vehicle Program, and the Navy 5 Inch Guided Projectile Program

Concur in Classification as marked

18 MAR 1986

Copperhead SAR dtd 22 Aug 80

CLASSIFIED BY
DECLASSIFY ON

~~CONFIDENTIAL~~

REGRADED UNCLASSIFIED WHEN SEPARATED FROM CLASSIFIED ENCLOSURES

86-I-0723

6. (U) Mission and Description: The 155mm Cannon Launched Guided Projectile Copperhead (CLGP) is an artillery projectile with terminal homing capability. It is compatible with current developmental 155mm Howitzers and uses standard propelling charges. This projectile is employed in indirect fire by 155mm (M198 and M109) units to destroy or neutralize moving and stationary hard-point targets such as armored and mechanized vehicles and field fortifications. Point targets are illuminated with either a ground or airborne laser which will provide reflective energy to enable the projectile to home in on the target. The CLGP provides a high probability of neutralization or destruction. The CLGP is included in the basic ammunition loads of appropriate field artillery units. The basic designator for the CLGP is the Ground Locator Designator (GLLD) and the performance characteristics stated in the SAR relate to operation with that equipment. However, designation by other systems is envisioned, e.g., Remotely Piloted Vehicles, Airborne Designator, etc. In addition, the CLGP is designed to accept Pulse Repetition Frequency (PRF) laser signal coding and will provide growth potential to adapt to other forms, if necessary. Designator developments are being accomplished under separate programs.

7. (U) Program Highlights:

2800 Copperhead Projectiles were delivered by the contractor in the year ending 31 December 1985. Total delivery to date is 10495.

System Reliability is 94.5% based on 1985 calendar year Lot Acceptance Testing. The projectile reliability is defined as the probability that the projectile will function properly from the time of launch until it intercepts and impacts the target with the required accuracy. Cumulative reliability since LAT tracking began in July 1982 is 84%.

Copperhead firings in Korea by the 2nd ID and in Germany by the 11th ACR has demonstrated that Copperhead is a reliable, compatible, and effective system for use as a deterent against enemy mobile and stationary targets.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: None

9. (U) Schedule	Develop Estimate/ Approved Program	Current Estimate
a. (U) Milestones	Jul 75	Jul 75
(U) Award ED Contract		
(U) Engineering Design Tests		
(1) Baseline Flight Test		
(A) Start	Apr 76	Mar 77
(B) Complete	Sep 76	Jul 78
(2) Safety/Warhead Fuze Qual		
(A) Start	Nov 76	Nov 76
(B) Complete	Mar 77	Jan 79
(3) System Qualification		
(A) Start	Oct 76	Apr 78
(B) Complete	Mar 77	Jan 79
(U) DT II/OT II		
(1) Start	Jul 77/Sep 77	Mar 78/Feb 79
(2) Complete	Jun 78/Nov 77	Dec 79/Jun 79
(U) ASARC/DSARC (Milestone III)	Feb 78	Sep 79/Nov 79
(U) Initial Prod Deliveries	Mar 79	Oct 81
(U) Prod Validation Test		
(1) Start	Mar 79	Nov 81
(2) Complete	Aug 79	Aug 82
(U) Second Source Procurement	Nov 79	N/A
(U) ASAC/DSARC (Milestone IIIa)	Nov 79	N/A
(U) Initial Oper Capability (IOC)	Nov 79	Dec 82

b. (U) Previous Change Explanations - -
Restructuring of the program, correction of hardware deficiencies, correction of manufacturing difficulties.

c. (U) Current Change Explanations - -

None

d. (U) References - -

Developmental Estimate: DCP No. 119, dated Sep 1975

Approved Program: SDDM, dated 15 Dec 1979

10. (U) Technical/Operational Characteristics:

			Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a.	(U) Technical				
	(U) Projectile Weight	(lbs)	96-150	137.7	138
		(kg)	43.5-68.0	62.4	62.6
	(U) Projectile Length	(in)	28-54	54.2	54.2
		(cm)	71.1-137.2	137.7	137.7
	(U) Warhead Weight	(lbs)	49.6	48.8	48.8
		(kg)	22.5	22.1	22.1
	(U) Explosive Weight	(lbs)	14.0	14.0	14.0
		(kg)	6.4	6.4	6.4
b.	(U) Operational				
	(b)(1)				
	(U) Maximum Range (km)		16-24	16.0	16.0
	(U) Minimum Range (km)				
	(1) (U) High Angle		3.5	5.0	5.0
	(2) (U) Low Angle		1.5-3.0	3.0	3.0
	(b)(1)				
	(U) Oper Prob of Proper Launch (P(L))		--	.98	.98
	(U) Oper Prob of Proper Des (P(D))		--	.98	.98

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c. (U) Previous Change Explanations - -
Previous changes based on demonstrated performance.

d. (U) References - -

Development Estimate: DCP No. 119, dated Sep 1975

Approved Program: DCP No. 119, dated Sep 1975

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. (U) Cost - -			
Development (RDT&E)	109.3	+25.3	134.6
Procurement	738	-98.8	639.2
Total Flyaway	(731.6)	(-107.3)	(624.3)
Other Wpn Sys Cost	(6.4)	(+8.5)	(14.9)
Total: Const FY75 $	847.3	-73.5	773.8
Escalation	393.4	+253.4	646.8
Development	(8.9)	(+7.0)	(15.9)
Procurement	(384.5)	(+246.4)	(630.9)
Total Then-Year $	1240.7	+179.9	1420.6
b. (U) Quantities - -			
Development	408	-88	320
Procurement	132650	-100806	31844
Total	133058	-100894	32164
c. (U) Unit Cost - -			
Procurement:			
FY75 Base-Year $	.0056	+.0145	.0201
Then-Year $	.0085	+.0315	.0400
Program:			
FY75 Base-Year $	.0064	+.0177	.0241
Then-Year $	.0093	+.0349	.0442

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

	(Average Unit Flyaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty:			
@ Peak Rate: 3000/mo			
FY75 Base-Year $	.0055/.0225	.0200	.0225
Then-Year $	.0082/.0490	.0403	.0490

e. (U) Foreign Military Sales - - Sales to date total 25 projectiles to Japan (all fired in test).

f. (U) Nuclear Costs - - None

COPPERHEAD, December 31, 1985

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. (U)	Program Acquisition			
	(1) Cost	1420.6	1448.0	1420.6
	(2) Quantity	32164	31252	32164
	(3) Unit Cost	.0442	.0463	.0442
b. (U)	Current Procurement	(FY86)	(FY86)	(FY87)
	(1) Cost	219.1	235.0	8.2
	Less CY Adv Proc	-	-	-
	Plus PY Adv Proc	-	-	-
	Net Total	219.1	235.0	8.2
	(2) Quantity	5874	6900	220
	(3) Unit Cost	.0373	.0341	.0373

COPPERHEAD, December 31, 1985

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	118.2	1122.5	-	1240.7
Previous Changes:				
Economic	-4.2	88.4	-	84.2
Quantity	-2.2	-698.4	-	-700.6
Schedule	-9.6	271.3	-	261.7
Engineering	25.5	1.3	-	26.8
Estimating	6.5	507.7	-	514.2
Other	6.3	-	-	6.3
Support	10.0	4.7	-	14.7
Subtotal	32.3	175.0	-	207.3
Current Changes:				
Economic	-	-8.8	-	-8.8
Quantity	-	+9.6	-	+9.6
Schedule	-	+9.0	-	+9.0
Engineering	-	-	-	-
Estimating	-	-37.2	-	-37.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-27.4	-	-27.4
Total Changes	32.3	147.6	-	179.9
Current Estimate	150.5	1270.1	-	1420.6

13. (U) Cost Variance Analysis: (cont'd)
(FY1975 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	109.3	738.0	-	847.3
Previous Changes:				
Quantity	-1.7	-458.5	-	-460.2
Schedule	-8.8	129.5	-	120.7
Engineering	15.4	0.8	-	16.2
Estimating	7.8	237.4	-	245.2
Other	4.6	-	-	4.6
Support	8.0	2.9	-	10.9
Subtotal	25.3	-87.9	-	-62.6
Current Changes:				
Quantity	-	+5.6	-	+5.6
Schedule	-	+5.3	-	+5.3
Engineering	-	-	-	-
Estimating	-	-21.8	-	-21.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-10.9	-	-10.9
Total Changes	25.3	-98.8	-	-73.5
Current Estimate	134.6	639.2	-	773.8

b. (U) Previous Change Explanations - -

RDT&E

Economic: application of Jan 82 OSD indices

Quantity: reduction of ED units to be manufactured to off-set contractor cost growth

Schedule: congressional reduction of FY76/7T funding and budget shortfall in FY78-80. OSD decrement to FY78 program and FY78 funding delay

Engineering: resolution of technical problems discovered during baseline firings and during fabrication and firings of DT II projectiles. Establishment of backup/alternate designs for the fuze and components. Enhanced warhead PIP; and DT II fixes

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

Estimating: additional DT III testing. Increased budgets to finance Congressional directed TDP validation. Change from RDTE funded DT/OT to PAA funded PVT/FOE. Prior year programs adjusted to reflect actual costs. Elimination of 4th DTUPC award fee. Deletion of $.6M in FY82 and $2.1M in FY83 for warhead enhancement

Other: reprogrammed from M198 Howitzer and Ammunition Compatibility Program FY78$ to fund a portion of ED contract cost growth due to technical problems FY78/79; provision for final DTUPC award fee

Support: increased program in FY78 to include 8" CLGP and Army/Navy testing. Note: Subsequently, this requirement was waived and funds reprogrammed have been utilized for basic program requirement

Procurement

Economic: application of revised indices

Quantity: reduction in quantity from 132,650 to 44,386 and approved quantity from 44,386 to 44,666 for FAT/IPT. Elimination of FY83-87 buys (3671 rds). Recomputation of quantity change after re-institution of program and reduction of 134 rounds from Sep 83 SAR due to constrained funding

Schedule: elimination of educational buy and schedule adjustment; revised procurement strategy and additional escalation due to slip in targeted type classification data and budget constraints in FY80-83; stretchout of IPF contract and expand proveout requirements. Production cost increased because shared procurement plan was eliminated and unit cost estimate for projectiles was revised; increased costs due to budget constraints FY83-86 and subsequent stretchout of program; schedule adjustment required due to descoping FY80 contracts. FY83-87 program revised for economical rate production. Finalized negotiations did not obtain full anticipated quantities, remaining quantities were not forecasted in FY84-87 and budget year quantities were shifted to provide an executable profile. Change in delivery quantities for FY83 (from 5200 to 1100) and FY84 (from 7629 to 1415). Recomputation of incorrect quantity change categorization.

Estimating: revised production concept requires additional facilities/tooling; change from RDTE funded DT/OT II to PAA funded PVT/FOE; revised estimate of costs to complete based on increased costs in FY80 contract. Prior year reprogramming to test IPF prove-out rounds. Estimating change due to decrements resulting from a directed change in methodology for inflation computation and projected efficiencies from the use of the Ammunition Working Capital Fund. $7.9M in FY81 funds were reprogrammed to partly cover FY81 cost growth. FY84-87 adjusted to reflect a viable program based

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

on the contractor's proposal. Reprogramming of $5.4M FY80 and $5.0M FY81 funds to partially cover contractor cost growth under Buys 1 and 2. Increase in FY82 procurement funding. Reprogrammed FY83 from $15M to $55M and $75M stand alone funding for FY84 program. Re-estimation of procurement costs due to production rate change.

Support: ancillary equipment for artillery battalions (M804 training profile, extractors)

Construction: None

c. (U) Current Change Explanations - -

	(Dollars in Millions) FY75 (Base-Year)	Current (Then-Year)
(1) Development	--	--
(2) Procurement		
Result of revised OSD/OMB inflation indices (Economic)	--	-8.8
Addition of 912 projectiles (Quantity)	+5.6	+9.6
Final procurement in FY89 rather than FY88(Schedule)	+5.3	+9.0
Revised estimates (Estimating)	-21.8	-37.2
(3) Construction	--	--

d. (U) References - -

Note: Additional quantities do not include SDAF program requirements.

COPPERHEAD, December 31, 1985

14. (U) Program Acquisition Unit Cost (PAUC) History:

a. (U) Initial SAR estimate to Current Estimate

PAUC (Initial SAR Est)*	Changes (Current (Then Year) Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
.0093	+.0024	+.0078	+.0080	+.0009	+.0160	+.0005	+.0002	+.0357	.0451

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

a. (U) RDT&E - None

b. (U) Procurement - -

COPPERHEAD
Martin Marietta Aerospace, Orlando, FL
DAAK10-84-C-0014
Award: 30 Apr 84
Definitized: 29 Mar 85

Initial Contract Price		
Target	Ceiling	Qty
$114.8	N/A	2800

Current Contract Price		
Target	Ceiling	Qty
$116.9		2800

Estimated Price at Completion	
Contractor	Program Manager (AS AMENDED)
$116.9	(b)(4)

COPPERHEAD
Martin Marietta Aerospace, Orlando, FL
DAAK10-85-C-0015
Award: 30 Oct 84
Definitized: 31 Jul 85

Initial Contract Price		
Target	Ceiling	Qty
$118.2	N/A	3653

Current Contract Price		
Target	Ceiling	Qty
$163.5		5250

Estimated Price at Completion	
Contractor	Program Manager (AS AMENDED)
$163.5	(b)(4)

c. (U) Construction - None

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

a. (U) Program Status - -

(1) Percent Program Completed: 16/19 (84.2%)

(2) Percent Program Cost Appropriated: $1110.9 /$1420.6 (78.2%)

b. Appropriation Summary - -

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY71-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	150.5	-	-	-	150.5
Procurement	960.4	8.2	301.5	-	1270.1
MILCON	-	-	-	-	-
Total	1110.9	8.2	301.5	-	1420.6

COPPERHEAD, December 31, 1985

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

c. (U) Annual Summary - -

Fiscal Year	Qty	FY75 Base-Year Dollars			Then-Year Dollars		Escl Rate (%)
		Flyaway		Total	Advance Proc	Total	
		Nonrec	Rec				
Appropriation: RDT&E							
FY71				2.1		1.6	3.8
FY72				9.1		7.3	4.2
FY73				9.6		8	5.8
FY74	24			6.2		5.6	8.8
FY75				6.1		6.1	6.6
FY76				13.1		17	3.5
FY77				36.5		38	3.8
FY78				30		36	6.8
FY79	296			11.5		15	8.4
FY80				6.2		9	9.4
FY81				2.6		4.2	11.9
FY82				1.6		2.7	7.6
FY83				0		0	4.9
FY84				0		0	4.3
Subtotal	320	0	0	134.6		150.5	
Appropriation: Procurement							
FY78		22.2		22.2		27.2	6.8
FY79		15.9	1.5	17.4		23.2	8.7
FY80	1114		52.4	52.4		76.5	9.7
FY81	2624		79.9	79.9		130.4	11.9
FY82	3957		86.7	86.7		154.5	7.6
FY83	1220		27.1	27.1		55.0	4.9
FY84	1580		34.7	34.7		73.7	3.8
FY85	5250		92.0	93.0		200.8	3.6
FY86	5874		97.7	97.7		219.1	3.2
FY87	220		3.5	3.5		8.2	4.1
FY88	5832		79.3	79.3		190.1	3.9
FY89	4173		45.2	45.2		111.4	3.4
FY90				0.0		0.0	2.9
FY91				0.0		0.0	2.3
Subtotal	31844	38.1	601.0	639.2		1270.1	
Total	32164	38.1	601.0	773.8		1420.6	

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

d. Obligations and Expenditures - -

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: RDT&E		
FY71	1.6	1.6	1.6
FY72	7.3	7.3	7.3
FY73	8	8	8
FY74	5.6	5.6	5.6
FY75	6.1	6.1	6.1
FY76	17	17	17
FY77	38	38	38
FY78	36	36	36
FY79	15	15	15
FY80	9	9	9
FY81	4.2	4.2	4.2
FY82	2.7	2.7	2.7
FY83	0	0	0
FY84	0	0	0
Total	150.5	150.5	150.5
	Appropriation: Procurement		
FY78	27.2	26.7	26.7
FY79	23.2	22.3	22.3
FY80	76.5	75.9	75.9
FY81	130.4	129.9	129.9
FY82	154.5	154.5	153.7
FY83	55.0	54.1	44.9
FY84	73.7	71.5	64.4
FY85	200.8	121.2	0.6
FY86	219.1		
FY87	8.2		
FY88	190.1		
FY89	111.4		
FY90	0.0		
FY91	0.0		
Total	1270.1	656.1	518.4

17. (U) Production Rate Data

a. (U) Annual Production Rates:

Fiscal Yr	Production Rates/(Quantity/Year)			
	Dev Est	Prod Est	Current	Maximum
78	7125			
79	3636			
80	9600	2100	1114	1114
81	21200	4300	2624	2624
82	24000	3900	3957	3957
83	36000	8400	1220	1220
84	31090	8400	1580	1580
85		8400	5250	16800
86		8886	5874	16800
87			220	16800
88			5832	16800
89			4173	16800
90				
91				
TOTAL	132650	44386	31844	

COPPERHEAD, December 31, 1985

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

b. (U) Cost Variance - - Dollars in Millions

Item	Prod Est	Variance (CE less PdE)	Current Est	Variance (CE less Max)	Max
Prog Acq Cost BY $	618.3	+155.5	773.8		
TY $	1114.9	+305.7	1420.6		
PAUC BY $	.0139	+.0102	.0241		
TY $	.0249	+.0193	.0442		

c. Schedule Variance - -

	Prod Est	Variance (CE less PdE)	Current Est	Variance (CE vs Max)	Max
Start Date (mo/yr)	3/78	N/A	12/80	N/A	12/80
Duration (months)	80	+52	132	+12	120
End Date (mo/yr)	11/84	N/A	7/91	N/A	7/90

d. Deliveries (Plan/Actual) - -

	To Date
RDT&E	408/320
Procurement	10495/10495

18. (U) Operating and Support Costs: N/A

AF-13 (6) DSCS III

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SAR-85-071

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: DSCS III (SPACE SEGMENT)

AS OF DATE: December 31, 1985

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1.(U) Designation and Nomenclature (Popular Name): Defense Satellite Communications System Phase III/Super High Frequency (SHF) Space Segment (DSCS III)

2.(U) DoD Component: U.S. Air Force

3.(U) Responsible Office and Telephone Number:

DSCS Program Office
Space Division
Los Angeles AFS, CA 90009-2949

Colonel Joseph Rutter
Assigned: September 4, 1984
AV 833-2096; COMM (213) 643-2096

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

RDT&E: PE 33110F (Shared funding)

PROCUREMENT: APPN 3020 ICN MS0777 (Shared funding)

5.(U) Related Programs: Air Force Satellite Communications Program (AFSATCOM), Space Boosters Program, Space Shuttle Operations, DoD and NASA Space Transportation System (STS) Programs, Communication Security Program.

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6.(U) Mission and Description: The Defense Satellite Communications System (DSCS III) ovides super high frequency satellite communications for secure voice and high data te transmissions. DSCS supports unique and vital national security requirements r worldwide military command and control, crisis management, wideband data relay, treaty monitoring and surveillance information, diplomatic and Presidential traffic. Operational DSCS III satellites will replace DSCS II satellites on a replenishment basis as the DSCS II satellites reach the end of their orbital lifetimes. DSCS III satellites operate in the 7/8 GHz frequency band from synchronous equatorial orbital positions. Four active satellites and two on-orbit spares will maintain the DSCS Space Segment at near 100% availability.

7.(U) Program Highlights:

a.(U) Significant Historical Developments — Initiated planning in 1973 for the third generation of SHF defense communications satellites. The December 1974 DSARC I recommended a dual DSCS III development program. DSARC II in December 1976 led to OSD approval for the Full Scale Development (FSD) of DSCS III. An FSD contract was awarded to General Electric (GE) in February 1977. Critical Design Review (CDR) was accomplished in May 1978. In March 1979 a special DSCS Air Force Systems Acquisition Review Council (AFSARC) recommended revision of the DCP cost and schedule thresholds due to increased production costs and the impact of production delays caused by the extended development schedule. In December 1979, the development program was again extended delaying production an additional year. The qualification satellite (A3) completed system level testing in February 1981 and the first development flight satellite (A1) was accepted in June 1981 and placed in storage by JCS direction. DSARC III in December 1981 approved the acquisition of DSCS III production satellites. A ontract was awarded for two satellites (B4/B5) in January 1982 and for two additional atellites (B6/B7) in December 1982. The first development flight satellite (A1) was aunched October 1982, completed Independent Joint Operational Test and Evaluation (IJOT&E), and was turned over to operational use in May 1983. A contract was awarded for the refurbished qualification satellite (A3) in October 1980 for shuttle compatibility. JCS directed the launch delay of the A2 spacecraft because of schedule conflicts with high priority programs. An advance procurement contract for economic order parts and materials was awarded in January 1984, with the award of the multiyear contract (B8-B14) in November 1984.

(b)(1)

c.(U) Changes Since "As Of" Date — None

8.(U) Decision Coordinating Paper (DCP) Threshold Breaches: DCP #144, Revision 4, 8 May 1981. As directed by the DSCS III (DSARC) Production Program Review, new DCP cost goals and thresholds for the DSCS III satellite acquisition program were submitted n January 1982, and subsequently approved. There are currently no DCP threshold reaches.

9.(U) Schedule:

a.(U) Milestones —	Development Estimate/ Approved Program	Current Estimate
(U) DSARC II (Full Scale Dev)	Dec 76/Dec 76	Dec 76
(U) Full-Scale Development (Phase 2) Contract Award	Feb 77/Feb 77	Feb 77
(U) Critical Design Review (CDR)	Apr 78/May 78	May 78
(U) First Development Flight Satellite (III-A1) Launch	Jul 79/Oct 82	Oct 82
(U) DSARC III (Production Decision)	Jan 80/Dec 81	Dec 81
(b)(1)		
(U) First Production Satellite Delivery (III-B4)	Mar 82/Apr 85	Apr 85

b.(U) Previous Change Explanations —

Satellite System level CDR was delayed one month to allow collection and analysis of test data from the Integrated Satellite Development Test Model. Delay in the delivery of A1 until June 1981 was caused by delays in design definition, parts and materials, and shared test equipment. A September 1982 launch was directed with an additional month delay due to nonavailability of an upper stage. The extended FSD program delayed DSARC III until December 1981 which approved the acquisition of two satellites (B4/B5) in FY82 and planned for two additional satellites in FY83 (B6/B7). The A1 delays impacted A2 availability. Contractual delivery dates were realigned to match Initial Launch Capability (ILC) of the Inertial Upper Stage (IUS). First Production satellite (B4) delivery delayed due to slip in the FSD program, revised production schedules, and a slip in DSARC III. By JCS direction, the second FSD launch was delayed due to nonavailability of boosters.

c.(U) Current Change Explanations —

(b)(1)

d.(U) References —

Development Estimate:
Decision Coordinating Paper (DCP) #144, Revision 2, 17 Nov 1976.
Program Management Directive (PMD) R-S 2146-(6)/PE 33110F, 24 May 1977.

Approved Program:
Decision Coordinating Paper (DCP) # 144, Revision 4, 8 May 1981.
Program Management Directive (PMD) R-S 2146-(21)/PE 33110F, 27 Jun 1985.

10.(U) Technical/Operational Characteristics:

a.(U) Technical —	Dev Estimate/ Appr Program	Demonstrated Performance /A	Current Estimate
(U) Frequency (GHz)	7.25-8.4/7.25-8.4	7.25-8.4	7.25-8.4
(U) Bandwidth (MHz) per channel	50-85/50-85	50-85	50-85
(b)(1)			
(U) Effective Isotropic Radiated Power (EIRP) (dBW) C/			
Channels			
1 & 2 (EC:Spot:AC)	29:39:43/29:40:44	29:40:44	29:40:44
3 (EC:EC:Spot)	24:23:33/25:25:34	25:25:34	25:25:34
4 (EC:EC:Spot:AC)	24:23:33:37/25:24:35:38	25:24:35:38	25:24:35:38
5 & 6 (EC)	24/25	25	25
Beacons (EC)	11/12	12	12
(U) Signal Gain to System Noise Temp Ratio (G/T) (dB/degrees K)			
EC Horn	-15/-15	-13	-14 (Ch-1)
EC MBA	-16/-16	-15	-16 (Ch-1)
Spot MBA	- 1/-1	-0.5	-1 (Ch-1)
b.(U) Operational —			
(U) Quantities (per satellite)			
40 Watt Channels (1&2)	2/2	2	2
10 Watt Channels (3-6)	4/4	4	4
SHF Command Links	2/2	2	2
Protected Beacons	2/2	2	2
(U) Satellite Reliability D/	.7/.7	N/A	.7
(U) Weight (lbs)E/	1650	N/A	1866
(U) Launch Vehicle (types)			
	Titan IIIC / T34D:Trnstg	N/A	T34D:Trnstg
	Titan IIID:IUS / T34D:IUS	N/A	T34D:IUS
	STS:IUS / STS:IUS	N/A	STS:IUS

A/ (U) Actual values observed during Qualification Test.(Maximum)
B/ (U) Based on single null anywhere in the satellite field of view created within a Multi Beam Antenna (MBA) earth coverage pattern (dB below EC reference)
C/ (U) EC - Earth Coverage; Spot - 1.0 degree minimum diameter; AC - Area Coverage (Dish) - 3.0 degree beam diameter switchable on orbit to desired channel
D/ (U) Probability of survival at 7 years
E/ (U) Satellite weight less expendables (dry weight)

10.(U) Technical/Operational Characteristics (Cont'd):

c. Previous Change Explanations --

EIRP, Signal Gain to Signal Noise, and Nulling characteristics revised based upon Al acceptance test data. Beacon EIRP reflects DCA requested specification change to the SHF beacon power output. Launch vehicle types revised due to nonavailability. Net increase in satellite dry weight as a result of actual weight measurements superseding estimates of the weight of satellite components.

d. Current Change Explanations --

(Ch-1) Signal Gain to Signal Noise current estimate revised based upon analysis of the B4/B5 CDR data and resulting specification change. EC Horn improved from -13 to -14, EC MBA improved from -15 to -16, and the Spot MBA improved from -.5 to -1.

e. References --

Development Estimate:
Decision Coordinating Paper (DCP) #144, Revision 2, 17 Nov 1976.
DSCS III Space Segment Specification 07868 DSCS III-1, Rev 1, 1 Aug 1975.

Approved Program:
Decision Coordinating Paper (DCP) #144, Revision 4, 8 May 1981.
Program Management Directive (PMD) R-S 2146-(21)/PE 33110F, 27 Jun 1985.
DSCS III Space Segment Specification 07868 DSCS III-1, Rev A, 19 Sep 1979.
DSCS III Space Segment Specification SVS-8950-II-A, 2 Jul 84, SCN-5 approved in June 85.

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate	Changes	Current Estimate
Development (RDT&E)	$134.3	$ +237.8	$372.1
Procurement	496.8	+107.9	604.7
Satellites	(313.1)	(+253.6)	(566.7)
Launch Vehicles	(183.7)	(-145.7)	(38.0)
Construction (MILCON)	-	-	-
Total FY 77 Base-Year $	631.1	+345.7	976.8
Escalation	262.5	+540.5	803.0
Development (RDT&E)	(17.5)	(+204.3)	(221.8)
Procurement	(245.0)	(+336.2)	(581.2)
Construction (MILCON)	-	-	-
Total Then-Year $	$893.6	$+886.2	$1779.8

11. (U) Program Acquisition Cost (Cont'd): (Current Estimate in Millions of Dollars)

b. Quantities —	Development Estimate	Changes	Current Estimate
Development (RDT&E)	2	-	2
Procurement	12	+1	13
Total	14	+1	15

c. Unit Cost —			
Procurement:			
FY 77 Base-Year $	$ 41.400	$+5.115	$ 46.515
Then-Year $	61.817	+29.406	91.223
Program:			
FY 77 Base-Year $	45.079	+20.041	65.120
Then-Year $	$ 63.829	$+54.824	$118.653

d. Approved Design to Cost Goal — (Average Unit Flyaway Cost)

	Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty: 12			
@ Peak Rate: .028/mo			
FY 77 Base-Year $	20.000/49.058	43.633	56.417
Then-Year $	28.500/97.900	85.850	112.585

e. Foreign Military Sales — None

f. Nuclear Costs — None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition —			
(1) Cost	1779.8	2032.6	1779.8
(2) Quantity	15	17	15
(3) Unit Cost	118.653	119.565	118.653
b. Current Procurement —	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	141.1	149.2	122.7
Less CY Adv Proc	13.7	13.7	5.5
Plus PY Adv Proc	52.2	52.2	51.9
Net Total	179.6	187.7	169.1
(2) Quantity	2	2	2
(3) Unit Cost	89.800	93.850	84.550

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	151.8	741.8	-	893.6
Previous Changes:				
Economic	+2.5	+141.8	-	+144.3
Quantity	-	+412.4	-	+412.4
Schedule	+29.8	+79.4	-	+109.2
Engineering	+83.4	+114.6	-	+198.0
Estimating	+110.8	+86.9	-	+197.7
Other	-	+77.4	-	+77.4
Support	-	-	-	-
Subtotal	+226.5	+912.5	-	+1139.0
Current Changes:				
Economic	-1.3	-37.8	-	-39.1
Quantity	-	-360.9	-	-360.9
Schedule	-	+14.5	-	+14.5
Engineering	+221.5	-36.8	-	+184.7
Estimating	-4.6	-47.4	-	-52.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+215.6	-468.4	-	-252.8
Total Changes	+442.1	+444.1	-	+886.2
Current Estimate	593.9	1185.9	-	1779.8

(FY 1977 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	134.3	496.8	-	631.1
Previous Changes:				
Quantity	-	+163.2	-	+163.2
Schedule	+16.3	+31.3	-	+47.6
Engineering	+53.6	+51.0	-	+104.6
Estimating	+64.8	+4.0	-	+68.8
Other	-	+38.4	-	+38.4
Support	-	-	-	-
Subtotal	+134.7	+287.9	-	+422.6
Current Changes:				
Quantity	-	-141.9	-	-141.9
Schedule	-	+2.7	-	+2.7
Engineering	+105.7	-17.2	-	+88.5
Estimating	-2.6	-23.6	-	-26.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+103.1	-180.0	-	-76.9
Total Changes	+237.8	+107.9	-	+345.7
Current Estimate	372.1	604.7	-	976.8

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

b. Previous Change Explanations --

RDT&E
Economic: Revised escalation indices
Schedule: Production extension, Launch delays, III-A1 Storage
Engineering: Jammer Location Electronics (JLE) upgrade, Traveling Wave Tube Amplifier (TWTA), Solid State Amplifier (SSA), Launch Vehicle (LV) Integration costs
Estimating: Revised production costs, First time integration

PROCUREMENT
Economic: Revised escalation indices
Quantity: Reflects addition of 3 satellites
Schedule: Revised buy strategy, one year production delay
Engineering: 10 Watt SSA, Generic TWTA, III-A3 STS compatibility
Estimating: FCRC requirements, LV integration, Production costs
Other: Single Channel Transponder hardware funding transfer, DSARC III adjustment

c. Current Change Explanations --

(Dollars in Millions)

(1) RDT&E	Base-Year	Then-Years
Revised economic escalation indices (Economic)	N/A	-1.3
Initiates development of transitional satellite and upper stage (Engineering)	+105.7	+221.5
Lower III-A2 Storage/Reactivation costs due to cancelled launch (Estimating)	-2.7	-4.9
Adjustment for prior year escalation (Estimating)	+0.1	+0.3
(2) Procurement		
Recategorization of 31 Dec 84 SAR changes	-	-
Adjustment to Quantity (Quantity)	(-99.3)	(-250.9)
Adjustment to Engineering (Engineering)	(+68.3)	(+172.7)
Adjustment to Estimating (Estimating)	(+31.0)	(+ 78.2)

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

(2) Procurement	(Dollars in Millions) Base-Year	Then-Years
Revised economic escalation indices (Economic)	N/A	-57.6
Deletion of two post-multiyear satellites	-167.0	-394.5
Deletion of satellites (Quantity)	(-42.6)	(-110.0)
Engineering changes applicable to 2 satellites since baseline (Engineering)	(-85.5)	(-209.5)
Estimating reductions due to deletion of two satellites (Estimating)	(-38.9)	(-94.8)
Economic change applicable to deleted satellites (Economic)	(N/A)	(+19.8)
Three year schedule delay of transitional satellite (Schedule)	—	+7.5
Storage and sustaining costs associated with directed Multiyear satellite launch deferment (Schedule)	+2.7	+7.0
Adjustment for prior year escalation (Estimating)	+8.8	+17.5
Revised Production estimate based on DSCS III-B4/B5 actual costs (Estimating)	-24.5	-48.3

d. References —

Development Estimate:
Decision Coordinating Paper (DCP) #144, Revision 2, 17 Nov 1976.

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

Initial SAR/Development Estimate (DE) to Current Estimate —

PAUC (Initial SAR/DE)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
63.829	+7.013	-0.822	+8.247	+25.513	+9.713	+5.160	—	+54.824	118.653

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

a. RDT&E --

First Time Integration:	Initial Contract Price Target	Ceiling	Qty
General Electric Co., King of Prussia, PA, F04701-81-C-0004, CPFF, Award: March 15, 1982 Definitized: October 12, 1982	$25.3	N/A	N/A

	Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
(Ch-1)	$25.9	N/A	N/A	$24.7	$25.9 (Ch-1)

Changes Since Previous Report:

(Ch-1) Increase of $1.3M in Current Contract Price and Estimate Price At Completion is due to the addition of the DSCS II-B15/III-A2 mission.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+2.4	$-0.4
Cumulative Variances To Date (12/31/85)	$+1.9	$+0.0
Net Change	$-0.5	$+0.4

Explanation of Change: Change in the favorable cost variance is due to the design, test and implementation of the propellant latch valve modification. The change in schedule variance is due to the addition of the DSCS II-B15/III-A2 mission. Because of the additional work, this will cause a proportional increase in the program manager's estimate at completion. These variances are not impacting the program. This effort is 95.6% complete, therefore, this is the final SAR submission for this contract.

b. Procurement

Refurbishment of Qualification Satellite:	Initial Contract Price Target	Ceiling	Qty
General Electric Co., King of Prussia, PA F04701-80-C-0058, FPIF, Award: October 31, 1980 Definitized: October 31, 1980	$13.2	$14.5	1

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
	$64.4 (Ch-2)	$69.9	1	$59.4 (Ch-2)	$64.4 (Ch-2)

Changes Since Previous Report:

(Ch-2) Decrease of $0.5M in the Current Contract Prices and in the Estimated Price At Completion is a result of an Economic Price Adjustment (EPA) credit to the contract.

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

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+4.5	$-1.5
Cumulative Variances To Date (12/31/85)	$+7.6	$-0.9
Net Change	$+3.1	$+0.6

Explanation of Change: Increase in the favorable cost variance is due to greater than planned labor efficiency and a favorable labor rate. Improvement in schedule variance is due to completion of Subsystem Integration Tests and efficiencies within the Communications sub-system. The Program Manager's assessment reflects the increase in target cost and is within approved funding. These variances are not impacting the program.

	Initial Contract Price		
DSCS III Production B4-7:	Target	Ceiling	Qty
General Electric Co., King of Prussia, PA, F04701-81-C-0004, FPIF	$46.0	$50.5	4

Award: November 26, 1980
Definitized: June 30, 1981

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$335.2 (Ch-3)	$362.4	4	$330.5 (Ch-3)	$335.2 (Ch-3)

Changes Since Previous Report:

(Ch-3) Increase of $4.4M in Current Contract Price and Estimated Price At Completion is due to additional launch operation activities.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+2.0	$-5.9
Cumulative Variances To Date (12/31/85)	$+6.9	$-2.0
Net Change	$+4.9	$+3.9

Explanation of Change: Increase in the favorable cost variance is due to favorable labor rates and less than anticipated material attrition. Improvement in schedule variance is due to delivery of overdue subcontracted components and the delivery of DSCS III-B4/B5. Schedule contingency and residual components are mitigating the impact of late component deliveries and are not reflected in the Program Manager's assessment.

	Initial Contract Price		
Advance Buy B8-14:	Target	Ceiling	Qty
General Electric Co., King of Prussia, PA F04701-84-C-0009, FFP	$70.1	N/A	0

Award: January 23, 1984
Definitized: December 31, 1983

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$80.9	N/A	N/A	$80.9	$80.9

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

Changes Since Previous Report: None. No CPR/CFSR reporting required.

DSCS III Production B8-14:	Initial Contract Price Target	Ceiling	Qty
General Electric Co., King of Prussia, PA, F04701-84-C-0072, FFP,	$423.0	N/A	7

Award: November 16, 1984
Definitized: November 16, 1984

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
(Ch-4)	$435.3	N/A	7	$435.3 (Ch-4)	$435.3 (Ch-4)

Changes Since Previous Report:

(Ch-4) Increase of $12.3M in Current Contract Price and Estimated Price At Completion is due to addition of the TWTA fabrication to the contract. No CPR/CFSR reporting required.

Recurring Integration:	Initial Contract Price Target	Ceiling	Qty
General Electric Co., King of Prussia, PA, F04701-81-C-0004, CPFF,	$6.0	N/A	N/A

Award: August 1, 1985
Definitized: August 15, 1985

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$6.0	N/A	N/A	$6.0	$6.0

Changes Since Previous Report:

No Changes. Initial submission of contract.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+0.0	$+0.0
Cumulative Variances to Date (12/31/85)	$+0.0	$+0.0
Net Change	$+0.0	$+0.0

Explanation of Change: None

+ = Favorable
- = Unfavorable

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

a. Program Status —

(1) Percent Program Completed: 52.4% (11 yrs/21 yrs)

(2) Percent Program Cost Appropriated: 68.0% ($1209.9/$1779.8)

b. Appropriation Summary —

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY76-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP (FY92-96)	Total
RDT&E	336.9	14.0	223.9	19.1	593.9
Procurement	873.0	122.7	175.1	15.1	1185.9
MILCON	-	-	-	-	-
Total	1209.9	136.7	399.0	34.2	1779.8

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

c. Annual Summary —

Fiscal Year	Qty	FY 77 Base-Year Dollars			Then-Year Dollars			Escl Rate1/ (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1976	-	-	-	11.3	-	-	10.5	7.0
197T	-	-	-	2.8	-	-	2.8	3.6
1977	-	-	-	28.1	-	-	28.7	4.7
1978	-	-	-	54.5	-	-	59.5	7.0
1979	-	-	-	24.3	-	-	29.3	8.4
1980	-	-	-	14.8	-	-	19.8	9.4
1981	-	-	-	19.6	-	-	29.0	11.9
1982	-	-	-	32.8	-	-	52.0	9.2
1983	-	-	-	23.9	-	-	39.7	4.9
1984	-	-	-	17.9	-	-	30.8	3.8
1985	-	-	-	15.7	-	-	28.0	3.6
1986	-	-	-	3.7	-	-	6.8	3.2
1987	-	-	-	7.3	-	-	14.0	4.1
1988	-	-	-	6.3	-	-	12.5	3.9
1989	-	-	-	27.4	-	-	56.3	3.4
1990	-	-	-	51.7	-	-	108.8	2.9
1991	-	-	-	21.5	-	-	46.3	2.3
1992	-	-	-	3.4	-	-	7.4	2.3
1993	-	-	-	2.8	-	-	6.4	2.3
1994	-	-	-	1.0	-	-	2.3	2.3
1995	-	-	-	.7	-	-	1.6	2.3
1996	-	-	-	.6	-	-	1.4	2.3
Subtotal	2	-	-	372.1	-	-	593.9	
Appropriation: Procurement								
1978	-	35.7	-	35.7	-	-	43.0	7.0
1979	-	.3	-	4.7	5.8	-	6.2	8.7
1980	-	.4	-	7.4	10.5	-	11.1	9.7
1981	1	.6	41.0	47.2	48.8	16.3	77.9	11.9
1982	2	.5	82.0	66.9	-	24.1	117.6	9.6
1983	2	.1	94.0	74.5	-	24.7	139.3	9.0
1984	-	.1	-	55.0	81.6	-	107.7	8.0
1985	2	.3	98.4	113.0	52.4	23.2	229.1	4.1
1986	2	-	86.0	66.7	13.7	52.2	141.1	4.1
1987	2	-	80.1	55.5	5.5	51.9	122.7	4.1
1988	1	-	42.1	28.4	-	25.9	65.4	3.9
1989	-	-	-	3.5	-	-	8.3	3.4
1990	-	-	-	16.4	-	-	40.2	2.9
1991	1	-	43.1	24.2	-	-	61.2	2.3
1992	-	-	-	.7	-	-	1.9	2.3
1993	-	-	-	4.6	-	-	12.4	2.3
1994	-	-	-	.3	-	-	.8	2.3
Subtotal	13	38.0	566.7	604.7	218.3	218.3	1185.9	
Total	15			976.8			1779.8	

1/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated 1/	Expended 1/
Appropriation:RDT&E			
1976	10.5	10.5	10.5
197T	2.8	2.8	2.8
1977	28.7	28.7	28.7
1978	59.5	59.5	59.5
1979	29.3	29.3	29.3
1980	19.8	19.8	19.8
1981	29.0	29.0	29.0
1982	52.0	52.0	50.0
1983	39.7	39.7	37.2
1984	30.8	30.8	27.1
1985	28.0	18.6	13.7
1986	6.8	0.4	0.1
To Complete	257.0	N/A	N/A
Total	593.9	321.1	307.7
Appropriation:Procurement			
1978	43.0	43.0	43.0
1979	6.2	6.2	6.2
1980	11.1	11.1	11.1
1981	77.9	77.9	71.3
1982	117.6	110.8	108.9
1983	139.3	138.2	94.1
1984	107.7	100.1	55.4
1985	229.1	200.9	35.1
1986	141.1	110.4	1.5
To Complete	312.9	N/A	N/A
Total	1185.9	798.6	426.6

1/Reflects program office records as of 31 Dec 85.

17. (U) Production Rate Data:

a. Annual Production Rates — (NOTE: The annual production rates shown differ from the annual funded quantities because the funded delivery periods exceed 12 months. Most satellite delivery periods exceed 36 months (3 Years) with planned deliveries of two per year. Attainment of the maximum production rate may be limited to related program production rates.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1980	.50	-	-	-
1981	1.50	.31	-	-
1982	2.00	.70	.68	.81
1983	2.00	1.48	1.02	1.36
1984	2.00	1.32	1.27	1.67
1985	2.00	1.50	1.63	1.31
1986	2.00	1.38	1.77	1.53
1987	-	1.77	1.96	1.97
1988	-	1.77	1.96	1.97
1989	-	1.77	1.96	1.97
1990	-	1.77	1.96	1.97

b. Cost Variance — Dollars in Millions (NOTE: Subject to limitations on production rates above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	1071.4	-94.6	976.8	-	976.8
(TY $)	2021.1	-241.3	1779.8	-	1779.8
PAUC (BY $)	76.529	-11.409	65.120	-	65.120
(TY $)	144.364	-25.711	118.653	-	118.653

c. Schedule Variance — (NOTE: Subject to limitations on production rates above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)*	11/80	N/A	11/81	N/A	11/81
Duration (in Months)	122	-15	107	-8	99
End Date (Mo/Yr)**	12/90	N/A	09/90	N/A	01/90

* Start Date reflects production start
** End Date refects last delivery

d. Deliveries (Plan/Actual) —

	To Date
RDT&E	2/2
Procurement	2/2

18. (U) Operating and Support Costs: N/A

AF-16 · F-15

~~CONFIDENTIAL~~

SAR-85-058

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: F-15

AS OF DATE: December 31, 1985

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MAR 18 1986 18
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation/Nomenclature (Popular Name): F-15/Tactical Fighter (Eagle)

2. (U) DoD Component: U.S. Air Force

3. (U) Responsible Office and Telephone Number:

F-15 Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433

Col M. Butchko
Assigned: 4 Sep 84
AV 785-3111; Comm (513)255-3111

4. (U) Program Elements:

RDT&E: PE 27130F (No Shared Funding)
PE 64739F (Shared Funding)
PROCUREMENT: APPN 3010, ICN F015AD; PE 27130F (No Shared Funding)

5. (U) Related Programs: F100 Engine, AMRAAM (Advanced Medium Range Air-to-Air Missile), JTIDS (Joint Tactical Information Distribution System), AIM-7, AIM-9, LANTIRN, Tactical Protective Systems, Simulator Development

Classified by [illegible], dtd 1 Jan 83
Declassify On: OADR

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6. (U) Mission and Description: The F-15 is an advanced tactical fighter being developed and procured for the air superiority mission. It replaces the F-4 as the USAF's primary air superiority aircraft. It is a twin engine, single crew, fixed swept wing aircraft. It is characterized by high thrust to weight and low wing loading for maximum turnability, acceleration, and agility.

The F-15E is a two crewmember aircraft, designed to provide a long range, large payload capability to strike second echelon targets at night and under the weather while retaining superior theater air defense capability.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- In December 1969, McDonnell Douglas Corporation was selected as prime contractor for development and production of the F-15 aircraft. In March 1970, Pratt and Whitney was selected to develop and produce an engine jointly for the Air Force F-15 and Navy F-14 Programs. The F-14 Program was redirected and the Navy did not exercise its production option. This caused a major restructuring of the engine program. Although the original F-15 Production Rate was scheduled to be 12 aircraft per month, actual procurement reached a high of nine aircraft per month. The FY 1978 procurement introduced the F-15 C/D models, which had an additional 2000 lbs of internal fuel capacity and provisions for Conformal Fuel Tanks (CFTs). The latest F-15 C/D models include the Programmable Signal Processor (PSP), allowing radar enhancement through software changes. This provides a less costly and faster radar upgrade capability. The first PSP equipped F-15 C/D aircraft were delivered to Camp New Amsterdam, NL (CNA) in June 1980. A new PSP software tape containing a Raid Assessment Mode (RAM) as well as a host of other improvements was fielded in Europe in May 1981. F-15 Program Management Directive (PMD) R-P2060(33)/27130F, dated 18 November 1981, directed initial planning for implementation of the Multistaged Improvement Program (MSIP). The F-15 MSIP provides a long range acquisition/modification plan to satisfy the all weather, day or night Air Defense, and Air Superiority requirements of the Tactical Air Forces. Major program elements include enhancements to Fire Control and Weapons Delivery Systems, Tactical Electronic Warfare Systems (TEWS), and secure Communications Systems. The contract for MSIP Phase I, involving the study effort for full scale development was awarded to McDonnell Douglas Corporation 13 August 1982. Planning for development of an F-15 derivative configuration with Air-to-Ground capability was also directed. On 1 October 1982, management responsibility for all fielded F-15 aircraft was transferred to AFLC under the F-15 Program Management Responsibility Transfer (PMRT) Agreement. AFSC still maintains responsibility for all production and R&D efforts on the F-15 Program.

F-15 PMD R-P2060(37)/27130F, dated 14 Apr 1983, directed a comparison be made between the derivative versions of the F-15 and F-16 as possible choices to meet the Tactical Air Force's need for a long-range dual-role fighter. Both aircraft demonstrated not only their ability to fulfill Air-to-Air combat requirements, but also Air-to-Ground mission capabilities. The flight demonstration was completed in July 1983.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- (continued)

The F-15E was selected as the new Dual Role Fighter for the Air Force in early CY 1984. The Pratt & Whitney F100-PW-220 engine will be incorporated into the F-15 C/D fleet beginning with the FY85 buy.

b. (U) Significant Developments Since Last Report -- During the CY 1985, the F-15 MSIP Program experienced a number of successes, beginning with the delivery of the first MSIP aircraft in June 1985. Four MSIP aircraft participated in a two week Green Flag exercise at Nellis AFB in August, flying a total of 61 sorties. Of these 61 sorties, only 1 MSIP failure was noted, with 50 of the remaining 60 sorties having no write-ups at all.

Following this success, the program began flight testing the ALR-56C in October 1985. To date in testing the ALR-56C, no insurmountable problems have been noted. ASAT (Anti-Satellite Missile System) successfully tested in November 1985, hitting the targets designated. Additionally, the QRC (Quick Reaction Capability) ALQ-135 is anticipated to begin flight testing in April 1986. The test program lost aircraft D-50 (MSIP test aircraft) in December 1985, however, a replacement aircraft (D-53) has been identified. The loss of D-50 will cause some minor impacts to the F-15 test program.

The F-15E program completed its PDR (Preliminary Design Review) on 25 March 1985 and its CDR (Critical Design Review) on 4 November 1985. First production delivery of an F-15E is scheduled for January 1987. Incorporation of the Ring Laser Gyro Inertial Navigation Unit (INU) is expected to increase the MTBF (Mean Time Between Failure) of the INS system to 1300 hours versus 65 hours.

The F-15 currently satisfies its mission requirements.

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

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: DCP #19, Revision C, 5 May 1977, as amended 21 February 1980. DCP Procurement Cost Threshold nas been breached.

9. (U) Schedule:

a. (U) Milestones

	Development Estimate/ Approved Program	Current Estimate
F-15A/B/C/D		
Award Total System Development Contract	Jan 70/Jan 70	Jan 70
Preliminary Design Review (PDR)	Sep 70/Sep 70	Sep 70

9. (U) Schedule:

a. (U) Milestones

	Development Estimate/ Approved Program	Current Estimate
F-15A/B/C/D		
Critical Design Review (CDR)	Apr 71/Apr 71	Apr 71
Engine Preliminary Flight Rating Test (PFRT)	Feb 72/Feb 72	Feb 72
First Flight	Jul 72/Jul 72	Jul 72
Long Lead Release (Production Approval)	Oct 72/Oct 72	Oct 72
Engine Qualification Test (MQT)	Feb 73/Feb 73	Oct 73
First Wing Full Release	Feb 73/Feb 73	Feb 73
Fatigue Test - Three Life Times	Nov 73/Dec 73	Oct 73
Increase Production Rate	Jan 74/Jan 74	Jan 74
Begin AFDT&E Tests	Mar 74/Mar 74	Feb 74
Fatigue Test - Four Life Times	Jul 74/Oct 74	Feb 74
First Aircraft to TAC	Nov 74/Nov 74	Nov 74
Exercise Option for 2nd Wing	Dec 74/Dec 74	Oct 74
Initial Operational Capability (IOC) A/	Jul 75/Jul 75	Sep 75
F-15E		
Contract Award (Letter Contract)	Apr 84/Apr 84	Apr 84
System Integration PDR	Mar 85/Mar 85	Mar 85
System Integration CDR	Nov 85/Nov 85	Nov 85
Begin Flight Test (F-15E)	Jan 87/Jan 87	Jan 87
IOC (F-15E) B/	Jun 89/Jun 89	Jun 89

A/ (U) IOC is the point at which the first squadron received over 50% of its primary aircraft authorization (PAA)

B/ (U) IOC occurs when the First Operational Squadron achieves mission readiness status.

b. (U) Previous Change Explanations --

(U) The Engine Qualification Test was reprogrammed for completion by October 1973 versus February 1973 by the Deputy Secretary of Defense in September 1973.

(U) The completion dates for Fatigue Test to Three and Four Life Times were rescheduled (from November 1973 and July 1974 to December 1973 and October 1974 respectively) to accomodate increased fatigue spectrum requirements identified by the Scientific Advisory Board. This rescheduling was accomplished in the spring of 1970. These two milestones were then successfully completed ahead of the revised schedule (October 1973 and February 1974 respectively) as no F-15 structural deficiencies were revealed which would require a major redesign and retesting.

(U) The initiation of Air Force Development, Test and Evaluation (DT&E) activities occurred ahead of schedule (February 1974 versus March 1974) because Contractor DT&E progressed satisfactorily, allowing aircraft and support resources to be available earlier than planned for the AF DT&E effort.

9. (U) Schedule:

b. (U) Previous Change Explanations --

(U) The date to exercise Option for the Second Wing was rescheduled to October 1974 because the full funding date for the FY75 buy was 1 November 1974.

(U) The IOC for the first training squadron was delayed from July 1975 to September 1975 due to the strike at McDonnell Douglas.

(U) F-15E milestones were added to the SAR in December 1984.

c. (U) Current Change Explanations -- NONE

d. (U) References --

(U) Development Estimate:
(1) F-15 A/B/C/D
DCP #19, 15 September 1968; modified by Program Schedule briefed to Secretary of Defense in 1969 and DCP #19B, 24 January 1973.
(2) F-15E
PMD R-P2060(43)/27130F/F-15, dated 19 September 1985.

(U) Approved Program:
(1) F-15 A/B/C/D
PMD R-P2060(43)/27130F/F-15, dated 19 September 1985 and DCP #19C, dated 5 May 1977 (as amended 21 February 1980).
(2) F-15E
PMD R-P2060(43)/27130F/F-15, dated 19 September 1985.

10. (U) Technical/Operational Characteristics:

	Development Estimate/ Approved Program		a/ Demonstrated Performance	Current Estimate
a. (U) Technical				
(U) F-15 A/B/C/D				
(U) Thrust to Weight Ratio Take-Off	1.17/	1.17	1.15	1.15
(U) Take-Off Thrust Engine (lbs)				
(U) Max Rated	23470	/23470	23759	23759
(U) Mil Rated	14120	/14120	14626	14626
(U) Take-Off Gross Weight (Lbs)	40000	/40000	41491(Ch-1)	41500 (Ch-1)
(U) Design Mission Radius (NM)				
(b)(1)				

10. (U) Technical/Operational Characteristics:

	Development Estimate/ Approved Program	a/ Demonstrated Performance	Current Estimate
a. (U) Technical			
(U) F-15E AIR-TO-GROUND CONFIGURATION b/ e/			
(U) Take-Off Gross Weight (bs)	81000 /81000	81000	81000
(U) Mission Radius (NM)			
(b)(1)			
(U) F-15E AIR-TO-AIR CONFIGURATION: e/ f/			
(U) Cruise Thrust per Engine 0.8M/SL (Lbs)			
(U) Mil Rated	12100/12100	N/A	12100
(U) Max Rated	25950/25950	N/A	25950
(U) Take-Off Gross Weight (Lbs)	62500/62500	N/A	62500
(U) Design Mission Radius (NM)			
(b)(1)			
b. (U) Operational			
(U) F-15 A/B/C/D			
(U) Max Speed/Sea Level, Sustained (Mach)	1.2/ 1.2	1.16	1.2
(U) Max Speed/At Altitude, Sustained (Mach)	2.3/ 2.3	2.3	2.3
(U) Max Speed/Burst (Mach)	2.5/ 2.5	2.5	2.5
(U) Take-Off Distance: 50 ft Obstacle (Ft)	2500 /2500	2313	2313
(U) Landing Distance: 50 ft Obstacle (Ft)	3840 /3840	3773	3773
(U) System Serial Mean Time Between Failure (Hr)	3.5/ 3.5	3.8	3.8
(U) System Operationally Ready Rate (%)	70 / 70	80	80
(U) Direct Maintenance Man-Hours Per Flight Hour (MMH/FH)	20.8/ 12.26	12.04	12.04

10. (U) Technical/Operational Characteristics:

b. (U) Operational	Development Estimate/ Approved Program	a/ Demonstrated Performance	Current Estimate
(U) F-15 A/B/C/D			
(U) Specific Excess Power (Ft/Sec)	(b)(1)		
(U) F-15E AIR-TO-GROUND CONFIGURATION b/ e/			
(U) Take-Off Roll (81000 Lbs Gross Weight (Ft)	3590 /3590	N/A	3590
(U) Max Speed/Sea Level, Sustained (Mach) c/	.97/ .97	N/A	.97
(U) Max Speed/Sea Level, Sustained (Mil Power) (Mach) c/	.84/ .84	N/A	.84
(U) Maximum Sustained Load Factor (G)	(b)(1)		
(U) F-15E AIR-TO-AIR CONFIGURATION: e/ f/			
(U) Max Speed/Sea Level, Sustained (Mach)	1.04/1.04	N/A	1.04
(U) Max Speed at Altitude, Sustained (Mach)	1.76/1.76	N/A	1.76
(U) Max Speed, Burst (Mach)	1.76/1.76	N/A	1.76

10. (U) Technical/Operational Characteristics:

	Development Estimate/ Approved Program	a/ Demonstrated Performance	Current Estimate
b. (U) Operational			
(U) F-15E AIR-TO-AIR CONFIGURATION: e/ f/			
(U) Thrust to Weight Ratio at Take-Off	.67/ .67	N/A	.67
(U) Take-Off Distance/50 Ft Obstacle (Ft)	3520 /3520	N/A	3520
(U) Landing Distance/50 Ft Obstacle (Ft)	5000 /5000	N/A	5000
(b)(1)			
(U) Specific Excess Power (Ft/Sec)			
(b)(1)			

a/ (U) Best and/or most reliable estimate
b/ (U) F-15E Air-To-Ground Configuration: CFTs (Conformal Fuel Tanks), (6) CBU-87, (2) AIM-9, (2) AIM-120, (3) 610 Gal External Fuel Tanks, LANTIRN, Internal ECM
c/ (U) Mid combat weight, stores on, tanks on
d/ (U) Mid combat weight, stores dropped, tanks dropped
e/ (U) Additional F-15E Operational/Technical Characteristics will be provided as they become available.
f/ (U) F-15E Air-To-Air Configuration: CFTs, (4) AIM-9L, (4) AIM-120, Full Ammo, 50% Internal Fuel, F100-PW-220 at Spec Levels

c. (U) Previous Change Explanations --

(U) The current estimate and demonstrated performance for the F-15 A/B/C/D Thrust-to-Weight Ratio at Take-Off was revised from 1.17 to 1.15 to reflect data gathered from the DT&E Program. Basic Air Superiority take-off gross weights are estimated to fall within the weight range of 41,381 to 41,658 pounds.

10. (U) Technical/Operational Characteristics:

c. (U) Previous Change Explanations --

(U) The demonstrated performance and current estimate for the F-15 A/B/C/D Take-Off Engine Thrust (lbs) and Take-Off and Landing Distances with a 50 Foot Obstacle favorably exceeded a conservative Development Estimate (DE).

(U) The current estimate and demonstrated performance for the F-15 A/B/C/D Take-Off Gross Weight (lbs) was revised from 40,000 to 41,491 and 41,500 respectively to reflect data gathered from the DT&E Program. Basic Air Superiority take-off gross weights are estimated to fall within the weight range of 41,381 to 41,658 pounds.

(U) The demonstrated performance and current estimate of the F-15 A/B/C/D Design Mission Radius (NM) favorably exceeded a conservative Development Estimate (DE).

(U) The demonstrated performance and current estimate for System Serial Mean Time Between Failures of 3.8 hours is based on field data of 18 months after IOC.

(U) System Operational Ready Rate of 70% for the F-15 A/B/C/D reflected in the DE was defined for the end of AF RDT&E. DCP #19, Revision C (5 May 1977) reflected the Air Force approved program of 80% at 18 months after IOC (March 1977). The demonstrated performance and current estimate were measured against the approved program.

(U) MMH/FH for the F-15 A/B/C/D of 20.8 hours reflected in the DE was defined for the end of AF RDT&E. Approved Program for MMH/FH from DCP #19, Revision C (5 May 1977) is 12.26 at 18 months after IOC (March 1977). The actual performance (12.04) measured against the approved program is reflected as the demonstrated performance and current estimate.

(U) The demonstrated performance and current estimate of the F-15 A/B/C/D Specific Excess Power Operational Characteristics in feet/second changed due to an increase in the weight of the aircraft.

(U) F-15E Operational/Technical Characteristics were added in the 31 December 1984 SAR.

d. (U) Current Change Explanations --

(Ch-1) Correction of a typing error from the previous SAR submission (31 December 1984).

10. (U) Technical/Operational Characteristics:

e. (U) References --

(U) Development Estimate:
(1) F-15 A/B/C/D
DCP #19, 15 September 1968; modified by Program Schedule briefed to Secretary of Defense in 1969 and DCP #19B, 24 January 1973.
Air Force Estimates as a result of Source Selection and Contract Definitization.
(2) F-15E
PMD R-P2060(43)/27130F/F-15, dated 19 September 1985.
Air Force Estimates as a result of Source Selection and Contract Definitization.

(U) Approved Program:
(1) F-15 A/B/C/D
PMD R-P2060(43)/27130F/F-15, dated 19 September 1985 and DCP #19C, dated 5 May 1977 (as amended 21 February 1980).
Air Force Estimates as a result of Source Selection and Contract Definitization.
(2) F-15E
PMD R-P2060(43)/27130F/F-15, dated 19 September 1985.
Air Force Estimates as a result of Source Selection and Contract Definitization.

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11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. (U) Cost --			
Development (RDT&E)	$ 1657.8	+721.9	$ 2379.7
Procurement	4333.2	+6454.3	10787.5
Airframe	(1679.1)	(+2907.4)	(4586.5)
Engines	(832.4)	(+1442.1)	(2274.5)
Electronics	(866.8)	(+677.2)	(1544.0)
Armament	(111.8)	(-13.7)	(98.1)
Other Hardware	(18.2)	(+50.1)	(68.3)
Total Flyaway	(3508.3)	(+5063.1)	(8571.4)
Peculiar Support	(449.2)	(+964.6)	(1413.8)
Initial Spares	(375.7)	(+426.6)	(802.3)
Construction (MILCON) 1/	--	--	--
Total: FY 70 Base-Year $	5991.0	+7176.2	13167.2
Escalation	1364.2	+23447.1	24811.3
Development (RDT&E)	(120.8)	(+788.4)	(909.2)
Procurement	(1243.4)	(+22658.7)	(23902.1)
Total Then Year $	7355.2	+30623.3	37978.5

1/ The F-15 Program has no MILCON funding in the primary program PE.

b. (U) Quantities --

Development (RDT&E)	20	--	20
Procurement	729	+537	1266
Total	749	+537	1286

c. (U) Unit Cost --

Procurement:			
FY 70 Base-Year $	$ 5.944	$+ 2.577	$ 8.521
Then Year $	7.650	+ 19.751	27.401
Program:			
FY70 Base-Year $	7.999	+ 2.240	$ 10.239
Then Year $	9.820	+ 19.712	29.532

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

d. (U) Approved Design to Cost Goal — None.

e. (U) Foreign Military Sales — Sales to date total 127 aircraft at an estimated cost of $4432.3M, broken out by country as follows:

Country	Quantity	Estimated Cost
Israel	51	$1371.7M
Japan	14	292.6M
Saudi Arabia	62	2768.0M
Total	127	4432.3M

All FMS deliveries have been completed; therefore, there will be no further impact on USAF Costs or Schedule.

f. (U) Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. (U)	Program Acquisition--			
(1)	Cost	37978.5	39062.4	37978.5
(2)	Quantity	1286	1286	1286
(3)	Unit Cost	29.532	30.375	29.532
b. (U)	Current Procurement--	(FY 1986)	(FY 1986)	(FY 1987)
(1)	Cost	1962.3	2224.4	2027.3
	Less CY Adv Proc	- 201.6	- 236.0	- 218.9
	Plus PY Adv Proc	+ 176.4	+ 176.4	+ 201.6
	Net Total	1937.1	2164.8	2010.0
(2)	Quantity	48	48	48
(3)	Unit Cost	40.356	45.100	41.875

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Development Estimates	1778.6	5576.6	7355.2
Previous Changes			
Economic	- 0.2	+ 2838.1	+ 2837.9
Quantity	+ 0.0	+15040.8	+15040.8
Schedule	+ 0.0	+ 3342.9	+ 3342.9
Engineering	+ 989.7	+ 5793.2	+ 6782.9
Estimating	- 8.5	- 2318.9	- 2327.4
Other	+ 208.6	+ 559.1	+ 767.7
Support	+ 36.3	+ 5226.1	+ 5262.4
Subtotal	+ 1225.9	+30481.3	+31707.2
Current Changes			
Economic	- 4.9	- 1679.0	- 1683.9
Quantity	+ 0.0	- 291.6	- 291.6
Schedule	+ 0.0	- 492.4	- 492.4
Engineering	+ 44.8	- 2843.8	- 2799.0
Estimating	+ 162.1	+ 3034.7	+ 3196.8
Other	+ 0.0	+ 0.0	+ 0.0
Support	+ 82.4	+ 903.8	+ 986.2
Subtotal	+ 284.4	- 1368.3	- 1083.9
Total Changes	+ 1510.3	+29113.0	+30623.3
Current Estimate	3288.9	34689.6	37978.5

13. (U) Cost Variance Analysis:

a. (U) Summary--(FY 1970 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	TOTAL
Development Estimates	1657.8	4333.2	5991.0
Previous Changes			
Quantity	+ 0.0	+ 3365.7	+ 3365.7
Schedule	+ 0.0	+ 1003.0	+ 1003.0
Engineering	+ 458.9	+ 1203.6	+ 1662.5
Estimating	+ 1.4	- 776.3	- 774.9
Other	+ 173.9	+ 445.2	+ 619.1
Support	- 16.6	+ 1194.0	+ 1177.4
Subtotal	+ 617.6	+ 6435.2	+ 7052.8
Current Changes			
Quantity	+ 0.0	+ 0.0	+ 0.0
Schedule	+ 0.0	- 489.1	- 489.1
Engineering	+ 16.5	- 480.6	- 464.1
Estimating	+ 55.8	+ 791.6	+ 847.4
Other	+ 0.0	+ 0.0	+ 0.0
Support	+ 32.0	+ 197.2	+ 229.2
Subtotal	+ 104.3	+ 19.1	+ 123.4
Total Changes	+ 721.9	+ 6454.3	+ 7176.2
Current Estimate	2379.7	10787.5	13167.2

13. (U) Cost Variance Analysis:

b. (U) Previous Change Explanations --

(U) RDT&E

Economic: Revised Economic Escalation Indicies.

Engineering: Closeout engine development and system test and development. Requirements beyond baseline program. AMRAAM Integration, deletion of conformal fuel tanks (CFTs). Flight test and F-15 enhancements added. F-15E development, Augmented MSIP development and Advanced Derivative Engine (ADE) Integration effort added. MER-200P Rack. Fiscal Year (FY) 84 reprogrammings for increased air-to-air capability for C and D aircraft and for incorporation of Very High Speed Integrated Circuitry (VHSIC). FY 83 reprogramming is based on a reduction in scope of the HAVE TALON program. Upgrade of radar capability to counter evolving Electronic Counter Measures (ECM) capabilities.

Estimating: Reestimate of procurement program initial spares, engines, ECO, radar and Tactical Electronic Warfare Sets (TEWS). Withdrawal of Rapid Deployment Forces Funds. Revised estimating factors for Aerospace Ground Equipment (AGE) and training spares. Additional requirements for systems engineering/management, flight test, Government Furnished Equipment (GFE) to support testing and electronic warfare support. Adjustment for change in escalation indicies of years prior to the budget year. Reestimate of Programmable Signal Processor (PSP) Improvements, Aircraft Structural Life Assessment Program, Empennage Improvement Program, and C/D MSIP efforts. Adjustments to current and prior years due to funding constraints and changes in escalation indices.

Other: Deletion of engine procurement by the Navy; Component Improvement Program (CIP) transferred from Procurement to Development; McDonnell Douglas Cost Overrun.

Support: Avionics Integrated TEWS RDT&E transferred to another program element. Initial Spares reduction. Additional Peculiar Support equipment (PSE). Definitization of training, PSE, engine and airframe spares. Additions for CFTs, Tangential Carriage CFTs, Electronic Warfare Support requirements, and C/D MSIP simulator changes.

(U) Procurement

Economic: Revised Economic Escalation Indicies.

Quantity: Changes in F-15 aircraft procurement quantities.

Schedule: F-15 aircraft production rate changes. Rephasing of JTIDS (Joint Tactical Information and Distribution System) Program. Schedule changes associated with quantity changes.

Engineering: Closeout engine development and system test and development. Requirements beyond baseline program. AMRAAM (Advanced Medium Range Air-to-Air Missile) integration. Deletion of CFTs. Additional flight testing, addition of MER-200P Rack, F-15 Enhancements, Alternate Fighter Engine (AFE), ADE, F-15E, Augmented MSIP, and Tangential Carriage CFTs. Engineering changes associated with quantity changes.

13. (U) Cost Variance Analysis:

b. (U) Previous Change Explanations --

Estimating: Reestimate of procurement program, initial spares, engines, ECO, radar, TEWs, and Countermeasures Dispenser Sets (CMDs). Withdrawal of Rapid Deployment Forces Funds. Revised estimating factors for AGE and training spares. Reduced ECO for congressional reduction to fund Peacekeeper. OSD-directed reduction to engine ECO and warranty. Reestimate to reflect savings from CFT competition and Configured Engine Bay (CEB). Revised estimate of multiyear procurement estimate of requirements and savings. Adjustment for change in escalation indicies for years prior to the budget year. Estimating changes associated with quantity changes.

Other: Deletion of engine procurement by the Navy. CIP (Component Improvement Program) transferred from avionics procurement to development. McDonnell Douglas Cost overrun.

Support: Avionics integrated TEWs RDT&E transferred to another program element. Initial Spares reduction. Additional PSE (Peculiar Support Equipment). Definitization of training, PSE and engine and airframe spares. Addition for CFTs, F-15E training, PSE, Data and Initial Spares requirements. Reprogrammings based on reductions in prior years to actual requirements and a reduction in management reserve. Adjustments for impact of inflation indice changes on current and prior years. Initial Spares and other support requirement changes associated with quantity changes. PSE reduction.

c. (U) Current Change Explanations--

	(Dollars in Millions) Base-Year $	Then-Year $
(1) (U) RDT&E		
Revised economic escalation indices (Economic)	$ + 0.0	$ - 4.9
Integration of Very High Speed Integrated Circuitry (VHSIC) Technology (Engineering)	+ 0.4	+ 1.1
Integration of Advanced Algorithm (Software) (Engineering)	+ 2.4	+ 6.8
Integration of DMR (Dual-Mode Recognizer) into the APG-70 Radar (Engineering)	+ 3.2	+ 8.4

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13. (U) Cost Variance Analysis:

c. (U) Current Change Explanations (continued) --

	(Dollars in Millions) Base-Year $	Then-Year $
(1) (U) RDT&E		
Integration for a Common Data Transfer Module (DTM) (Engineering)	+ 1.2	+ 3.1
Development of Advanced Avionics Software (Engineering)	+ 4.9	+ 14.0
Development of Compatability for ECCM Systems (Engineering)	+ 4.4	+ 11.4
Qualification of Second Source for the new Inertial Navigation System (INS) (Estimating)	+ 2.7	+ 7.0
Adjustment for Current and Prior Year escalation indices change (Estimating)	+ 0.0	+ 0.1
Revised Estimate of Flight Test and Mission Support (Estimating)	+ 42.4	+ 122.1
Revised Estimate for C/D MSIP Development and ECCM (Electronic Counter Counter-Measures) Improvements (Estimating)	+ 7.5	+ 23.7
Revised Estimate for the Improved Performance Engine (IPE) (Estimating)	$ + 3.2	$ + 9.2
Development Effort to Support Electronic Module Testing	+ 5.3	+ 14.0
o Development of the Memory Module Test Station (Support)	(+ 2.5)	(+ 6.6)
o Development of APG-70 Radar Module Test Station (Support)	(+ 2.8)	(+ 7.4)

13. (U) Cost Variance Analysis:

c. (U) Current Change Explanations (continued) --

	(Dollars in Millions) Base-Year $	Then-Year $
(1) (U) RDT&E		
Revised Estimates for Support Equipment Development	+ 26.7	+ 68.4
o Revised Estimate for TEWS Intermediate System (TISS) (Support)	(+ 26.3)	(+ 67.4)
o Revised Estimate for C/D MSIP Simulators (Support)	(+ 0.4)	(+ 1.0)
(2) (U) Procurement		
Correcting entries due to the recalculation of the 31 Dec 83 SAR Schedule, Quantity and Quantity-related changes	+ 0.0	+ 0.0
o Quantity change -- deletion of 96 aircraft (1452 to 1356) Correction of 31 Dec 1983 SAR (Quantity)	(+ 0.0)	(- 291.6)
o Schedule change associated with the deletion of 96 aircraft (1452 to 1356) Correction of 31 Dec 83 SAR (Schedule)	(- 233.6)	(- 898.8)
o Engineering change associated with the deletion of 96 aircraft (1452 to 1356) Correction of 31 Dec 1983 SAR (Engineering)	(- 243.0)	(- 1490.9)
o Estimating change associated with the deletion of 96 aircraft (1452 to 1356) Correction of 31 Dec 1983 SAR (Estimating)	(+ 274.0)	(+ 1037.8)
o Support change associated with the deletion of 96 aircraft (1452 to 1356) Correction of 31 Dec 1983 SAR (Support)	(- 9.3)	(- 39.0)
o Base Year only correction to 31 Dec 83 SAR for adjustment for prior year escalation (Estimating)	(- 0.4)	(+ 0.0)

13. (U) Cost Variance Analysis:

c. (U) Current Change Explanations (continued) --

	(Dollars in Millions) Base-Year $	Then-Year $
(2) (U) Procurement		
o Correction of Base Year Adjustment for deescalation of Adv Buy TY$ using debit vs credit year inflation rates (Estimating)	(+ 0.4)	(+ 0.0)
o Rephased Schedule (Schedule)	(+ 0.0)	(+ 829.7)
o Recategorization associated with balancing the corrections made to the 31 Dec 83 SAR. This revised estimate amount was previously netted in the original cost changes. (Estimating)	(+ 211.9)	(+ 852.8)
Correcting entries to the 31 Dec 84 SAR Schedule and Quantity related changes (due partly to recalculation of 31 Dec 83 SAR Schedule, Quantity and Quantity-related changes)	+ 0.0	+ 0.0
o Schedule change associated with the deletion of 90 aircraft (1356 to 1266) Correction of 31 Dec 84 SAR (Schedule)	(- 255.5)	(- 1682.3)
o Engineering change associated with the deletion of 90 aircraft (1356 to 1266) Correction of 31 Dec 84 SAR (Engineering)	(- 211.0)	(- 1239.2)
o Estimating change associated with the deletion of 90 aircraft (1356 to 1266) Correction of 31 Dec 84 SAR (Estimating)	(+ 68.9)	(+ 13.9)
o Rephased schedule (Schedule)	(+ 0.0)	(+ 1090.6)

13. (U) Cost Variance Analysis:

c. (U) Current Change Explanations (continued) --

	(Dollars in Millions) Base-Year $	Then-Year $
(2) (U) Procurement		
o Recategorization associated with balancing the corrections made to the 31 Dec 84 SAR. This revised estimate amount was previously netted in the original cost changes. (Estimating)	(+ 397.6)	(+ 1817.0)
Revised economic escalation indices (Economic)	+ 0.0	- 1679.0
Schedule change to peak procurement rate of 48 aircraft/year in the FY87 President's Budget (PB) versus 60 aircraft/year in the FY86 PB (Schedule)	+ 0.0	+ 168.4
Transfer of JTIDS (Joint Tactical Information and Distribution System) Procurement Funding to retrofit (Engineering)	- 47.2	- 205.5
Addition of the Linear Linkless Ammunition System (Engineering)	+ 0.7	+ 2.9
Addition of Tangential Carriage CFT Ejector Units (Engineering)	+ 19.9	+ 88.9
Adjustment for Current and Prior Year escalation indices change (Estimating)	+ 14.0	+ 50.4
Propulsion Estimating Methodology Change (Estimating)	- 27.2	- 119.8
Augmented MSIP and F-15E Nonrecurring Cost decrease due to actuals coming in at a lower than expected cost (Estimating)	- 5.6	- 22.2

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13. (U) Cost Variance Analysis:

c. (U) Current Change Explanations (continued) --

	(Dollars in Millions) Base-Year $	Then-Year $
(2) (U) Procurement		
F-15E CFT Price Increase due to deletion of C/D CFTs (Estimating)	$ + 1.5	$ + 7.6
Withdrawal of Contingent Liability Funding by Higher Headquarters (Estimating)	- 3.0	- 10.5
Revision of F-15 Program Estimating Methodology (Estimating)	- 1.7	+ 15.2
Support Offset for economic change on support items in the prior years (Support)	+ 4.2	+ 15.3
F-15 Support Requirements	+ 63.5	+ 320.0
o Deletion of C/D CFTs (Support)	(- 26.3)	(- 118.1)
o Deletion of AGETS (Automated Ground Engine Test Sets) (Support)	(- 1.3)	(- 5.9)
o Deletion of C/D CFT Ejector Units (Support)	(- 6.6)	(- 27.9)
o Revised Training Requirement based on new schedule and additional requirements for the IPE (Improved Performance Engine) (Support)	(+ 10.7)	(+ 48.4)
o Revision of out-year estimate for PGSE (Peculiar Ground Support Equipment) and additional requirements for the IPE (Support)	(+ 40.8)	(+ 201.2)
o Discrete estimation of out-year data requirements (Support)	(- 23.7)	(- 110.6)

13. (U) Cost Variance Analysis:

c. (U) Current Change Explanations (continued) --

	(Dollars in Millions) Base-Year $	Then-Year $
(2) (U) Procurement		
o Revised Initial Spares Requirements due to directed redefinition of the Initial Spares budgetary process (Support)	(+ 69.9)	(+ 332.9)
Adjustments to refine the mix of previous support and estimating category changes primarily related to the impact of escalation changes on current and prior years	0.0	0.0
Decrease to Estimating category (Estimating)	(- 138.8)	(- 607.5)
Increase to Support category (Support)	(+ 138.8)	(+ 607.5)

d. (U) References --

(U) Development Estimate:
AF Form 1037 - Quarterly Review — January 5, 1970.

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

Initial SAR/Development Estimate to Current Estimate

	Changes(Then-Year Dollars in Millions)								
PAUC (Initial SAR/Dev Est)	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	PAUC Current Estimate)
9.820	+0.897	+7.368	+2.217	+3.098	+0.676	+4.859	+0.597	+19.712	29.532

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

a. (U) RDT&E

	Initial Contract Price		
	Target	Ceiling	Qty
Multi-Staged Improvement Program (MSIP) Phase II	$ 341.8	$ N/A	N/A

McDonnell Douglas, St. Louis, MO.
F33657-83-C-0043/PZ0003, CPIF
Award: February 2, 1983
Definitized: December 2, 1983

Current Contract Price			Estimated Price at Completion-	
Target	Ceiling	Qty	Contractor	Program Manager
$ 383.8 (Ch-1)	$ N/A	N/A	$ 401.3	$ 405.9 (Ch-1)

(Ch-1) Changes in Current Contract Target Price and Contractor's Estimated Price at Completion occurred as a result of additional work being placed on this contract.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ + 4.5	$ - 11.8
Cumulative Variances to Date (11/30/85)	-18.8	- 23.5
Net Change	-23.3	- 11.7

Explanation of Change:

(U) Cost and Schedule Variances are marginal. Major Subcontractor on FPI contract is going to ceiling.
Impact: APG-70 Radar Software will be one year late on delivery. Radar Hardware delivery will occur on schedule. Initial capability of the system will be no less than the APG-63.

b. (U) Procurement

	Initial Contract Price		
	Target	Ceiling	Qty
Band III, Internal Countermeasures Set	$ 202.9	$ 220.6	65

Northrop Corporation, Rolling Meadows, IL
F33657-83-C-2149, FPIF
Award: September 13, 1983
Definitized: December 27, 1984

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 202.9	$ 220.6	65	$ 220.6	$ 220.6

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

b. (U) Procurement (continued)

Band III, Internal Countermeasures Set (continued)

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -14.8	$ -10.4
Cumulative Variances to Date (11/30/85)	-0-	-0-
Net Change	+14.8	+10.4

Explanation of Change:

(U) Cost and Schedule Variances are zero due to an Over-Target rebaseline which was implemented on this contract in November.
Impact: Hardware deliveries are approximately five months late, and flight testing is approximately six months late.

	Initial Contract Price		
	Target	Ceiling	Qty
FY83 Aircraft Buy	$ 615.1	$ N/A	39

McDonnell Douglas, St. Louis, MO
F33657-83-C-2133, FFP
Award: November 3, 1983 (CPR or C/SSR not required)
Definitized: February 24, 1984

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 808.3 (Ch-1)	$ N/A	39	$ 808.3	$ 808.3 (Ch-1)

(Ch-1) Changes in Current Contract Target Price and Contractor's Estimated Price at Completion occurred as a result of additional work being placed on this contract.

	Initial Contract Price		
	Target	Ceiling	Qty
FY84 Aircraft Buy	$ 594.3	$ N/A	36

McDonnell Douglas, St. Louis, MO
F33657-84-C-2131, FFP
Award: March 29, 1985 (CPR or C/SSR not required)
Definitized: March 29, 1985

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 709.5	$ N/A	36	$ 709.5	$ 709.5

This is the First SAR submission on this contract.

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

b. (U) Procurement (continued)

	Initial Contract Price		
	Target	Ceiling	Qty
FY85 Aircraft Buy	$ 768.0	$ N/A	42

McDonnell Douglas, St. Louis, MO
F33657-85-C-2086, FPP
Award: March 29, 1985 (CPR or C/SSR not required)
Definitized: July 29, 1985

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 783.7	$ N/A	42	$ 783.7	$ 783.7

This is the First SAR submission on this contract.

	Initial Contract Price		
	Target	Ceiling	Qty
F-15E/AMSIP/Prod Nonrecurring	$ 373.4	$ 416.3	N/A

McDonnell Douglas, St. Louis, MO
F33657-84-C-2228, FPI
Award: March 11, 1985
Definitized: March 11, 1985

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 428.7	$ 477.9	N/A	$ 466.5	$ 484.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ N/A	$ N/A
Cumulative Variances to Date (11/30/85)	-12.7	-9.9
Net Change	-12.7	-9.9

Explanation of Change:

(U) Cost and schedule variances are marginal. We underestimated the structural changes required for Buildup, Low Cost Advanced Titanium Structure (BLATS) technology and the 9G wing loads. Contractor is spending at a greater-than-planned rate to protect first flight of F-15E No. 1 (Dec 86). Impact: Increased cost due to structural change is nonrecoverable. No impact to first flight schedule.

This is the First SAR submission on this contract.

(F-15, December 31, 1985)

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

b. (U) Procurement (continued)

The SAR requires reporting on the top six contracts for the program being reviewed. Contracts F33657-82-C-2123 (Radar Warning Receiver) and F33657-83-C-2001 (Lot 13 Engine Buy) are completed contracts. Contract F33657-83-C-2187 (Simulators) was superseded due to its total Contractual Value being less than the F-15E/AMSIP/Production Nonrecurring Contract.

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

a. (U) Program Status --

(1) Percent Program Completed: 71.429% (20/28)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 56.840% ($21586.9M/$37978.5M)
(Funds Appropriated To Date in Millions/Total Program Funding in Millions)

b. (U) Appropriation Summary —

(Then Year Dollars in Millions)

Appropriation	Current & Prior Years (FY67-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92-94)	Total
RDT&E	$ 2802.4	$ 209.0	$ 223.6	$ 53.9	$ 3288.9
Procurement	$ 18784.5	$ 2027.3	$ 8259.2	$ 5618.6	$ 34689.6
MILCON	$ --	$ --	$ --	$ --	$ --
Total	$ 21586.9	$ 2236.3	$ 8482.8	$ 5672.5	$ 37978.5

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

c. (U) Annual Summary --

FISCAL YEAR	BASE-YEAR DOLLARS				THEN-YEAR DOLLARS			*
	QTY	FLYAWAY (NONADD)		TOTAL	ADV PROCUREMENT		TOTAL	ESCL RATE %
		NONREC	REC		(DEBIT)	(CREDIT)		
APPROPRIATION: RDT&E								
1967	--	--	--	1.1	--	--	1.0	3.2
1968	--	--	--	1.1	--	--	1.0	3.7
1969	--	--	--	78.2	--	--	75.5	3.5
1970	--	--	--	175.1	--	--	175.1	3.6
1971	--	--	--	338.3	--	--	349.5	3.3
1972	--	--	--	397.1	--	--	422.9	3.1
1973	--	--	--	408.6	--	--	454.4	4.4
1974	--	--	--	223.8	--	--	258.0	3.7
1975	--	--	--	154.2	--	--	184.2	3.6
1976	--	--	--	28.2	--	--	34.9	3.6
197T	--	--	--	3.9	--	--	5.3	4.4
1977	--	--	--	43.3	--	--	59.6	4.6
1978	--	--	--	41.7	--	--	61.1	7.0
1979	--	--	--	7.2	--	--	11.7	8.4
1980	--	--	--	1.4	--	--	2.5	9.4
1981	--	--	--	5.8	--	--	11.6	11.9
1982	--	--	--	15.6	--	--	33.3	9.2
1983	--	--	--	51.0	--	--	114.5	4.9
1984	--	--	--	54.3	--	--	126.7	3.8
1985	--	--	--	78.6	--	--	189.6	3.6
1986	--	--	--	92.0	--	--	230.0	3.2
1987	--	--	--	80.4	--	--	209.0	4.1
1988	--	--	--	39.6	--	--	106.5	3.9
1989	--	--	--	14.1	--	--	39.2	3.4
1990	--	--	--	14.6	--	--	41.6	2.9
1991	--	--	--	12.5	--	--	36.3	2.3
1992	--	--	--	10.6	--	--	31.6	2.3
1993	--	--	--	5.5	--	--	16.5	2.3
1994	--	--	--	1.9	--	--	5.8	2.3
SUBTTL	20	-- 1/	-- 1/	2379.7	--	--	3288.9	

1/ Not Available

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

(F-15, December 31, 1985)

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

c. (U) Annual Summary —

FISCAL YEAR	BASE-YEAR DOLLARS				THEN-YEAR DOLLARS			*
	QTY	FLYAWAY (NONADD)		TOTAL	ADV PROCUREMENT		TOTAL	ESCL RATE %
		NONREC	REC		(DEBIT)	(CREDIT)		
APPROPRIATION: PROCUREMENT								
1973	30	3.3	269.6	344.4	--	--	478.1	7.9
1974	62	15.4	425.7	575.2	--	--	903.1	10.7
1975	72	1.6	434.4	542.1	30.9	--	927.0	13.8
1976	108	11.4	649.4	828.2	37.2	-30.9	1522.3	12.5
197T	24	4.8	135.1	163.1	--	--	322.2	5.3
1977	108	6.1	617.0	712.1	51.4	-37.2	1418.6	5.0
1978	97	3.5	598.3	711.6	69.6	-51.4	1517.2	7.4
1979	78	0.7	435.0	536.5	81.4	-69.6	1386.8	8.7
1980	60	--	330.5	365.0	77.9	-81.4	1056.6	9.7
1981	42	--	261.2	349.1	125.1	-77.9	1101.8	11.9
1982	36	--	259.8	345.7	109.2	-125.1	1147.5	9.6
1983	39	7.0	258.7	410.6	158.5	-109.2	1457.7	9.0
1984	36	32.5	267.4	410.3	144.0	-158.5	1537.8	8.0
1985	42	30.0	316.7	523.4	176.4	-144.0	2045.5	4.1
1986	48	15.7	343.0	483.8	201.6	-176.4	1962.3	4.1
1987	48	3.8	357.1	483.3	218.9	-201.6	2027.3	4.1
1988	48	10.4	351.1	486.3	227.6	-218.9	2101.3	3.9
1989	48	6.2	357.4	490.8	227.7	-227.6	2176.2	3.4
1990	48	1.1	351.5	439.1	230.7	-227.7	1992.6	2.9
1991	48	--	350.2	428.5	242.4	-230.7	1989.1	2.3
1992	48	--	350.3	415.3	221.7	-242.4	1972.3	2.3
1993	48	--	348.7	418.7	227.5	-221.7	2034.0	2.3
1994	48	--	349.8	324.4	--	-227.5	1612.3	2.3
SUBTTL	1266	153.5	8417.9	10787.5	2859.7	-2859.7	34689.6	
TOTAL	1286			13167.2			37978.5	

* Since outlay rates are not shown, the escalation rates can not be used to verify the composite index.

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

d. (U) Obligations and Expenditures --

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	Total	Obligated 1/	Expended 1/
	Appropriation: RDT&E		
1967	1.0	1.0	1.0
1968	1.0	1.0	1.0
1969	75.5	75.5	75.5
1970	175.1	175.1	175.1
1971	349.5	349.5	349.5
1972	422.9	422.9	422.9
1973	454.4	454.4	454.4
1974	258.0	258.0	258.0
1975	184.2	184.2	184.2
1976	34.9	34.9	34.9
197T	5.3	5.3	5.3
1977	59.6	59.6	59.6
1978	61.1	61.1	61.1
1979	11.7	11.7	11.7
1980	2.5	2.5	2.5
1981	11.6	11.6	11.6
1982	33.3	33.3	33.3
1983	114.5	113.4	107.4
1984	126.7	126.4	121.1
1985	189.6	188.3	119.3
1986	230.0	36.3	0.5
TO COMPLETE	486.5	N/A	N/A
TOTAL	3288.9	2606.0	2489.9

1/ Reflects Program Office records as of 31 December 1985.

(F-15, December 31, 1985)

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

d. (U) Obligations and Expenditures --

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	Total	Obligated 1/	Expended 1/
	Appropriation: Procurement		
1973	478.1	478.1	478.1
1974	903.1	903.1	903.1
1975	927.0	927.0	927.0
1976	1522.3	1522.3	1522.3
197T	322.2	322.2	322.2
1977	1418.6	1418.6	1418.6
1978	1517.2	1517.2	1517.2
1979	1386.8	1386.8	1386.8
1980	1056.6	1056.6	1056.6
1981	1101.8	1101.8	1101.8
1982	1147.5	1147.5	1147.5
1983	1457.7	1457.0	1349.1
1984	1537.8	1293.1	861.5
1985	2045.5	1456.6	245.7
1986	1962.3	11.1	0.0
TO COMPLETE	15905.1	N/A	N/A
TOTAL	34689.6	15999.0	14237.5

1/ Reflects Program Office records as of 31 December 1985.

17. (U) Production Rate Data:

a. (U) Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate 1/	Current Estimate	Maximum
1973	30	30	30	30
1974	77	62	62	62
1975	144	72	72	72
1976	144	108	108	108
197T		24	24	24
1977	144	108	108	108
1978	144	97	97	97
1979	46	78	78	78
1980		60	60	60
1981		42	42	42
1982		36	36	36
1983		39	39	39
1984		36	36	36
1985		42	42	42
1986		48	48	48
1987		48	48	72
1988		48	48	136
1989		48	48	144
1990		48	48	144
1991		48	48	
1992		48	48	
1993		48	48	
1994		48	48	

1/ A Production Estimate Baseline was not required for SAR reporting at the time the F-15 Program completed the DSARC III process. As a result, the Production Estimate Baseline is being established from the Current Program Estimate.

(F-15, December 31, 1985)

17. (U) Production Rate Data:

b. (U) Cost Variance -- Dollars in Millions

Item	Production Estimate	Change (Cur Est Less Prod Est)	Current Estimate	Change (Cur Est Less Maximum)	Maximum
Prog Acq Cost (BY$)	13167.2	0.0	13167.2	+ 406.8	12760.4
Prog Acq Cost (TY$)	37978.5	0.0	37978.5	+ 2452.0	35526.5
PAUC (BY$)	10.239	0.000	10.239	+ 0.316	9.923
PAUC (TY$)	29.532	0.000	29.532	+ 1.906	27.626

c. (U) Schedule Variance --

	Production Estimate	Change (Cur Est Less Prod Est)	Current Estimate	Change (Cur Est Less Maximum)	Maximum
Start Date (Mon/Yr)	Oct 1972	N/A	Oct 1972	N/A	Oct 1972
Duration (In Months)	283	0	283	48	235
End Date (Mon/Yr)	Apr 1996	N/A	Apr 1996	N/A	Apr 1992

Note: Start date for all estimates is defined as of the Production Approval Decision for the F-15A Program. The End Date is the month that the last delivery of aircraft will take place in.

d. (U) Deliveries (Plan/Actual) —

	To Date
RDT&E	20/20
Procurement	777/777

18. (U) Operating and Support Costs:

Not Applicable.

AF-17 13 F-16.

SAR-85-057

~~CONFIDENTIAL~~

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

PROGRAM: F-16

AS OF DATE: December 31, 1985

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MAR 17 18
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD—PA)
DEPARTMENT OF DEFENSE
SAF/PAS
86-167 -T

1. (U) Designation and Nomenclature (Popular Name): F-16 Multimission Fighter ighting Falcon)

2. (U) DoD Component: U.S. Air Force

3. (U) Responsible Office and Telephone Number:

F-16 Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH

PM: Maj Gen Ronald W. Yates
Assigned: August 15, 1983
AV 785-6151; COMM (513)255-6151

4. (U) Program Elements/Procurement Line Items

RDT&E: PE27133F (no shared funds)
PROCUREMENT: PE27133F APPN: 3010 (no shared funds) ICN F016AD

5. (U) Related Programs:

Advanced Medium Range Air-to-Air Missile (AMRAAM), Low Altitude Navigation and Targeting Infrared for Night (LANTIRN), Airborne Self-Protection Jammer (ASPJ), Global Positioning System (GPS).

6. (U) Mission and Description:

The F-16 Multimission Fighter is a single engine, lightweight, high performance aircraft, powered by a 25,000 pound thrust class afterburning turbofan engine. ; is a tactical fighter aircraft with an air-to-air and air-to-surface, multi-role apability that can be deployed from the continental U.S. to any possible trouble

OASD(PA) 86-S-0624

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area of the world with minimum enroute support and with high reliability and simplified maintenance procedures to assure successful operations 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 is employed in a complementary role to the F-15 in counter air missions, and to supplement the surface attack capabilities of the F-4, F-111, and A-10.

7. (U) Program Highlights

a. (U) Significant Historical Developments:

The F-16 received Secretary of Defense approval for program initiation in August 1971. DSARC I approval occurred in December 1974 and the full scale development contract was awarded in January 1975. The United States and four European countries (Belgium, Denmark, The Netherlands, and Norway) signed a memorandum of understanding for F-16 co-production in June 1975. Approval for long lead procurement was given at DSARC III A in January 1977 and production approval was given at DSARC III B in October 1977. The first aircraft delivery to Tactical Air Command occurred in September 1978 and Hill AFB activated the first F-16 squadron in February 1979. The USAF initial operational capability was reached in October 1980.

b. (U) Significant Developments Since Last Report:

F-16A/B: In March 1985, the last of 785 F-16A/B aircraft were delivered to the USAF. The program management responsibility transfer (PMRT) occurred on 1 October 1985. Over 1300 USAF, European, and Foreign Military Sales aircraft are deployed in 12 countries around the world. Operational performance and readiness of the USAF F-16A/B fleet has been outstanding as indicated by a sustained mission capable rate of over 85 percent since April 1985, exceeding the Tactical Air Force standard.

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

F-16 C/D: A total of 136 F-16 C/D aircraft have been delivered by the end of CY85. Shaw AFB received the first USAF combat unit of F-16 C/D's in March 1985. The Air Force Operational Test and Evaluation Center conducted an initial operational test and evaluation (IOT&E) of the F-16 C/D aircraft from January 1983 to April 1985. Improvements to the F-16 C/D weapon system were defined to meet increasing threats in the 1990s and to be incorporated into the F-16 C/D MSIP III (December 1988) aircraft.

The F-16 C/D is expected to meet its current mission requirements.

c. Changes Since "As of" Date -- None

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches:

There are currently no DCP (dated 10 March 1975) threshold breaches.

(U) Schedule:

a. (U)

F-16A/B Milestones	Development Estimate/ Approved Program	Current Estimate
Complete Competitive Flight Test	Dec 74/Dec 74	Dec 74
Award Development	Jan 75/Jan 75	Jan 75
DSARC II	Mar 75/Mar 75	Apr 75
Radar Contractor Selection	Jan 76/Jan 76	Nov 75
First FSD Flight	Dec 76/Dec 76	Dec 76
DSARC IIIA	Jan 77/Jan 77	Jan 77
DSARC IIIB	Sep 77/Sep 77	Oct 77
First Flight, Production Aircraft	Aug 78/Aug 78	Aug 78
First Aircraft to TAC	Sep 78/Sep 78	Sep 78
Deliver 100th Production Aircraft to USAF	May 80/May 80	May 80
F-16A/B PMRT	N/A	Oct 85
F-16C/D Milestones		
Begin MSIP I	Feb 80/Feb 80	Feb 80
Program Direction-MSIP II	Dec 80/Dec 80	Dec 80
Begin MSIP II	May 81/May 81	May 81
MSIP I First Delivery	Nov 81/Nov 81	Nov 81
Deliver First F-16C to USAF	Jul 84/Jul 84	Jul 84
Initial F-16C/D Delivery to TAF	Dec 84/Dec 84	Dec 84

b. (U) Previous Change Explanation --

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

F-16C/D
Integration of F-16C/D (MSIP) milestones into SAR.

c. (U) Current Change Explanations -- None

d. (U) References --

F-16A/B

Development Estimate - Decision Coordinating Paper (DCP) #143, 10 March 1975 (For Coordination - Revised)
Approved Program - Decision Coordinating Paper (DCP) #143, 29 November 1977, Aircraft Production Planning Schedule for USAF (WA 78-1)(January 1978); USAF Bases Units and Priorities (PD 80-3) (May 1978)

F-16C/D

Development Estimate - F-16 Multinational Staged Improvement ogram (F-16 C/D) Program Baseline (December 1985)
Approved Program - F-16 Multinational Staged Improvement Program (F-16 C/D) Program Baseline (December 1985)

. (U) Technical/Operational Characteristics:

	Development Estimate/ Approved Program		Demonstrated Performance	Current Estimate
a. (U) Technical				
F-16A/B				
(U) Sustained Turn Rate.				
(b)(1)				
F-16C/D				
(U) Turn Rate, Air-to-Air.				
(b)(1)				
b. (U) Operational				
F-16A/B				
(U) Mission Reliability (%)	85/90		91	91
(U) Mean Flight Time Between Failure (MFTBF) Hrs.)	1.75/2.90		3.05	2.92
(U) Air-to-Air Mission				
No./wt. per Missiles	2/169	2/195	2/195	2/195
No./wt. of Ammo	500/280	500/280	500/281	500/280
(U) Air-to Ground Mission				
No./wt. of Weapon	2/2000	2/2000	2/1970	2/1970
No./wt. of ECM Pod	1/392	1/675		1/675
(b)(1)				

10. (U) Technical/Operational Characteristics (Cont'd):

	Development Estimate/ Approved Program	Demonstrated Performance	Current Estimate
F-16C/D			
(U) Mean Time Between Maintenance (Hrs.)	3.0/3.0		3.0
(U) Air-to-Air Mission 1/			
No./wt. per Missiles	2/195	2/195	2/195
No./wt. of Ammo	500/280	500/280	500/280
(U) Air-to-Air Mission 2/	4/195/328	4/195/328	4/195/328
No./wt. per AIM-9L/wt. per AMRAAM	500/280	500/280	500/280
No./wt. of Ammo			
(U) Air-to-Ground Mission 3/			
No./wt. of Weapon	2/1980	2/1980	2/1980
No./wt. per Missiles	2/195	2/195	2/195
No./wt. of Ammo	500/280	500/280	500/280
(U) Air-to-Ground Mission 4/			
No./wt. of Weapons	4/1856	4/1856	4/1856
No./wt. per Missiles	2/195	2/195	2/ 195
No./wt. of Ammo	500/280	500/280	500/280

(b)(1)

[redacted]

c. (U) Previous Change Explanations --

F-16A/B

(1) (U) Technical Characteristic No. 10.a. changes are due to increase of maximum TOGW to accommodate an increase in payload requirements.

1/(U) Air-to-Air Loading 1: 2 AIM-9L, 500 Rounds Ammo, 2 370 Gal Tanks
2/(U) Air-to-Air Loading 2: 2 AIM-9L, 500 Rounds Ammo, 2 370 Gal Tanks, 2 AMRAAM
Air-to-Ground Loading 1: 2 AIM-9L, 500 Rounds Ammo, 2 370 Gal Tanks, 2 Mk-84, 1 ALQ-131
Air-to-Ground Loading 2: 2 AIM-9L, 500 Rounds Ammo, 2 370 Gal Tanks 4 AGM-65/TRL, LANTIRN Pods

(b)(1)

[redacted]

10. (U) Technical/Operational Characteristics (Cont'd):

(2) (U) Operational Characteristic No. 10.b.(1) changed to reflect decrease in average mission duration from 3.3 hours to 2.3 hours.

(3) (U) Operation Characteristic No. 10.b(2) changed to reflect improved hardware reliability from active program to minimize number of parts.

(4) (U) Operational Characteristic No. 10.b.(3): Development Estimate of missile weight based on AIM-9J; current estimate based on AIM-9L.

(5) (U) Operational Characteristic No. 10.b.(4): Development Estimate of weapon weight reflected nominal value; current estimate reflects measured weight. Development estimate of pod weight based on ALQ-119-3; current estimate based on ALQ-131.

(6) (U) Operational Characteristic No. 10.b.(7): Current estimate and demonstrated performance exceed both air-to-air and air-to-ground DCP goals.

F-16C/D -- None.

d. (U) Current Change Explanations

F-16A/B -- None.

F-16C/D -- None.

e. (U) References -

F-16A/B

(U) Development Estimate - Decision Coordinating Paper (DCP) #143, 10 March 1975 (For Coordination)

(U) Approved Program - Decision Coordinating Paper (DCP) #143, 29 November 1977.

F-16C/D

(U) Development Estimate - F-16 Multinational Staged Improvement Program (F-16 C/D) Program Baseline (December 1985).

(U) Approved Program - F-16 Multinational Staged Improvement Program (F-16 C/D) Program Baseline (December 1985).

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. (U) Cost —			
Development (RDT&E)	$ 578.6	$ +415.2	$ 993.8
Procurement	3798.2	+16093.0	19891.2
Airframe	(1375.4)	(+ 4901.9)	(6277.3)
Engine	(911.3)	(+ 3119.2)	(4030.5)
Electronics	(539.6)	(+ 3261.6)	(3801.2)
Armament	(171.6)	(+ 500.7)	(672.3)
Sys/Proj Mgt	(33.8)	(+ 549.0)	(582.8)
Total Flyaway	(3031.7)	(+12332.4)	(15364.1)
Peculiar Support	(435.2)	(+ 2360.7)	(2795.9)
Other Weapon System Cost	(—)	(+ 130.3)	(130.3)
Initial Spares	(331.3)	(+ 1269.6)	(1600.9)
Construction (MILCON)	—	—	— *
Total FY 75 Base-Year $	$ 4376.8	$+16508.2	$20885.0
Escalation	1677.7	+30773.2	32450.9
Development (RDT&E)	(80.5)	(+ 418.0)	(498.5)
Procurement	(1597.2)	(+30355.2)	(31952.4)
Construction (MILCON)	—	—	—
Total Then-Year $	$ 6054.5	$+47281.4	$53335.9
b. (U) Quantities —			
Development (RDT&E)	8	—	8
Procurement	650	+ 2397	3047
Total	658	+ 2397	3055
c. (U) Unit Cost —			
Procurement:			
FY 75 Base-Year $	$ 5.843	$+ 0.685	$ 6.528
Then-Year $	8.301	+ 8.714	17.015
Program:			
FY 75 Base-Year $	6.652	+ 0.184	6.836
Then-Year $	$ 9.201	$+ 8.258	$ 17.459

d. (U) Approved Design to Cost Goal — None

e. (U) Foreign Military Sales —

(1) 348 for EPG Program for a total cost of $3,008.5M (FY75$) which includes 116 @ $936.1M for Belgium, 58 @ $477.0M for Denmark, 102 @ $902.1M for the Netherlands, and 72 @ $693.3M for Norway.

(2) 44 follow-on aircraft @ $944.5M (Then Year) for Belgium

* The current estimate in then-year dollars of construction costs not included in the SAR is $290.7 million.

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars) (Cont'd)

e. (U) Foreign Military Sales -- (Cont'd)

(3) 12 follow-on aircraft @ $157.5M (Then Year) for Denmark

(4) 111 follow-on aircraft @ $1,781.1M (Then Year) for the Netherlands

(5) 81 @ $2,094.3M (Then Year) for Egypt

(6) 150 @ $3,290.1M (Then Year) for Israel

(7) 36 @ $931.2M (Then Year) for Korea

(8) 40 @ $1,034.8M (Then Year) for Pakistan

(9) 160 @ $4,158.2M (Then Year) for Turkey

(10) 24 @ $614.9M (Then Year) for Venezuela

(11) 8 @ $236.7M (Then Year) for Singapore

(12) 12 @ $317.9M (Then Year) for Thailand

f. Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. (U) Program Acquisition --			
(1) Cost	53335.9	56843.8	53335.9
(2) Quantity	3055	2803	3055
(3) Unit Cost	17.459	20.280	17.459
b. (U) Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	3219.0	3693.4	3842.6
Less CY ADV Proc	- 514.1	- 553.1	- 612.0
Plus PY Adv Proc	418.3	441.2	444.9
Net Total	3123.2	3581.5	3675.5
(2) Quantity	180	180	216
(3) Unit Cost	17.351	19.897	17.016

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	659.1	5395.4		6054.5
Previous Changes:				
Economic	+31.5	+2215.6		+2247.1
Quantity		+20886.3		+20886.3
Schedule	+0.1	+1885.8		+1885.9
Engineering	+1048.9	+16871.8		+17920.7
Estimating	+37.0	-2519.6		-2482.6
Other	+20.6	+35.8		+56.4
Support	+154.9	+10120.6		+10275.5
Subtotal	+1293.0	+49496.3		+50789.3
Current Changes:				
Economic	-10.0	-3514.2		-3524.2
Quantity		+2652.8		+2652.8
Schedule		-743.7		-743.7
Engineering	-466.7	-1349.0		-1815.7
Estimating	+16.9	-323.3		-306.4
Other				
Support		+229.3		+229.3
Subtotal	-459.8	-3048.1		-3507.9
Total Changes	+833.2	+46448.2		+47281.4
Current Estimate	1492.3	51843.6		53335.9

(FY 1975 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	578.6	3798.2		4376.8
Previous Changes:				
Quantity		+7482.5		+7482.5
Schedule		+312.4		+312.4
Engineering	+498.9	+5557.6		+6056.5
Estimating	-6.4	-1044.0		-1050.4
Other	+15.5	+24.6		+40.1
Support	+101.0	+3754.2		+3855.2
Subtotal	+609.0	+16087.3		+16696.3
Current Changes:				
Quantity		+705.7		+705.7
Schedule				
Engineering	-199.9	-587.2		-787.1
Estimating	+6.1	-119.2		-113.1
Other				
Support		+6.4		+6.4
Subtotal	-193.8	+5.7		-188.1
Total Changes	+415.2	+16093.0		+16508.2
Current Estimate	993.8	19891.2		20885.0

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

b. (U) Previous Change Explanations—

RDT&E

Economic:	Revised escalation indices.
Engineering:	Added capability (Improved radar, AMRAAM integration, PLSS/ATDL); development of F-16F variant configuration.
Estimating:	Refinement of estimates.
Other:	Congressional action on ICS, CIP, and FOT&E Funding.
Support:	Development of AIS.

Procurement

Economic:	Revised escalation indices.
Quantity:	Addition of 2145 aircraft.
Schedule:	Stretchout of FY82-85 procurements; acceleration of deliveries in FY88 from 15 aircraft to 18 aircraft per month.
Engineering:	Production incorporation of added capabilities (ASPJ, AMRAAM, LANTIRN, Improved RWR); introduction of F-16F variant configuration in FY89.
Estimating:	Flyaway cost re-estimates; two multiyear procurements.
Other:	Potential contract award fees.
Support:	Increased support for added aircraft and capability enhancements.

c. (U) Current Change Explanations—

	(Dollars in Millions) Base-Year $	Then-Year $
(1) (U) RDT&E		
Revised Feb 86 economic escalation indices. (Economic)	N/A	-10.0
Termination of F-16F variant configuration development. (Engineering)	-249.8	-584.8
Development of F-16 avionics upgrades. (Engineering)	+32.4	+77.1

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

c. (U) Current Change Explanations (Cont'd)—

	(Dollars in Millions) Base-Year $	Then-Year $
(1) (U) RDT&E (Cont'd)		
Integration of Mark XII Advanced Identification Friend-or-Foe (IFF) system. (Engineering)	+12.2	+29.0
Restructure of F-16 PLSS VNS program to incorporate Adaptive Targeting Data Link (ATDL) capability. (Engineering)	+5.3	+12.0
Re-estimate of test and mission support requirements. (Estimating)	+5.3	+15.7
Adjustment for prior year escalation. (Estimating)	+0.8	+1.2
(2) (U) Procurement		
Revised Feb 86 economic escalation indices. (Economic)	N/A	-3513.5
Favorable currency exchange rate impact associated with multinational coproduction program. (Economic)	N/A	-0.7
Increased F-16 aircraft procurement to meet planned Force structure.	+1569.2	+5039.7
- Addition of 252 aircraft. (Quantity)	(+713.5)	(+2297.8)
- Engineering changes applicable to 252 F-16s. (Engineering)	(+473.0)	(+1524.8)
- Estimating changes applicable to 252 F-16s. (Estimating)	(+70.7)	(+227.8)
- Peculiar support for 252 additional aircraft. (Support)	(+195.4)	(+628.5)

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

c. (U) Current Change Explanations (Cont'd) —

	(Dollars in Millions) Base-Year $	Then-Year $
(2) (U) Procurement (Cont'd)		
- Initial spares for 252 additional aircraft. (Support)	(+116.6)	(+360.8)
Correction to December 31, 1983 SAR to reflect schedule impact resulting from addition of 486 aircraft.	—	—
- Flyaway cost adjustment associated with identification of schedule impact. (Quantity)	(—)	(+377.5)
- Procurement schedule change due to increased production rate from 15 to 18 aircraft per month effective in FY86. (Schedule)	(—)	(-672.8)
- Engineering change cost adjustment associated with identification of schedule impact. (Engineering)	(—)	(+257.0)
- Estimating cost adjustment associated with identification of schedule impact. (Estimating)	(—)	(+38.3)
Deletion of 100 F-16 ATDL (PLSS VNS) Group B units pending results of restructured development program.	-15.4	-43.8
- 50 Follow-on units added previously as a Quantity change. (Quantity)	(-7.8)	(-22.5)
- 50 initial units identified as an Engineering change. (Engineering)	(-7.6)	(-21.3)
Procurement schedule change due to increase in FY87 production rate from 15 to 18 aircraft per month. (Schedule)	N/A	-70.9

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

c. (U) Current Changes Explanations--

	(Dollars in Millions) Base-Year $	Then-Year $
(2) (U) Procurement (Cont'd)		
Cancellation of planned F-16F variant configuration production incorporation.	-844.4	-2571.3
- Flyaway cost impact of F-16F cancellation. (Engineering)	(-722.8)	(-2204.9)
- Support cost impact of F-16F cancellation. (Support)	(-121.6)	(-366.4)
Production incorporation of Mark XII Advanced IFF. (Engineering)	+108.0	+316.6
Substitution of AN/APG-66 in lieu of the AN/APG-68 Fire Control radar in 120 of 216 annual aircraft procurements effective in FY87. (Engineering)	-233.9	-688.9
Delay in planned introduction of ASPJ and improved radar warning receiver (RWR) Group B hardware from FY85 to FY87. (Engineering)	-203.9	-532.3
Revised engine estimate based on more current cost data. (Estimating)	-230.0	-673.3
Re-estimate of ASPJ Group A cost based on analysis of proposal data. (Estimating)	-126.2	-363.0
Grassroots re-estimate of airframe cost. (Estimating)	-96.1	-263.0
Adjustment for prior year escalation.	+141.7	+363.1
- Adjustment for flyaway elements. (Estimating)	(+109.2)	(+280.4)

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

c. (U) Current Changes Explanations (Cont'd)—

(2) (U) Procurement (Cont'd)

	(Dollars in Millions) Base-Year $	Then-Year $
- Adjustment for support elements. (Support)	(+32.5)	(+82.7)
Adjustments to refine the mix of previous support and estimating category changes primarily related to the impact of escalation on current and prior years.	—	—
- Adjustment to flyaway elements. (Estimating)	(+153.2)	(+429.5)
- Adjustment to support elements. (Support)	(-153.2)	(-429.5)
Refinement of peculiar support (Support)	-151.9	-326.8
Re-estimate of initial spares requirements. (Support)	+88.6	+280.0

d. (U) References —

Development Estimate: President's FY 1977 budget dated 19 January 1976.

14. (U) Initital SAR/Development Estimate to Current Estimate

PAUC Initial SAR/ (Development Estimate)	Changes (Then Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
9.201	-.418	+.486	+.374	+5.272	-.913	+.018	+3.439	+8.258	17.459

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

a. RDT&E - None

b. Procurement

	Initial Contract Price		
	Target	Ceiling	Qty
	$144.0M	$165.6M	N/A

General Dynamics/Forth Worth Division, Fort Worth, Texas
F33657-82-C-2038, FPIF
Award: N/A (follow on effort)
Definitized: April 15, 1982

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$625.2M(Ch 1)	$696.6M	N/A	$623.9M	$622.0M(Ch 2)

Changes since previous report --

(Ch 1) The target price increased $124.8M since the 31 December 1984 SAR due to additional authorizations added to the contract.

(Ch 2) The PM's estimate increase of 133.6M reflects 124.8M for added authorizations and 8.8M increase because of the unfavorable cost performance Index factor that is used as a basis of the PM's estimate. $1.00 worth of planned effort has been costing $1.07 on this MSIP contract.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ - 9.7M	$ -19.2M
Cumulative Variances to date 11/30/85	$ -29.5M	$ -18.2M
Net Change	$ -19.8M	$ + 1.0M

Explanation of Change: The increase in the negative cum to date cost variance is $19.8M. The most significant occurrences are: 1) Design and development effort for microwave assemblies; 2) ASPJ software support for Microwave Stimulus Interface and the Microwave Measurement Unit; 3) Flight simulation; 4) Engineering design for radio frequency drawings and controller board updates in Peculiar Support Equipment; 5) Automatic Test Equipment (ATE) to resolve computer program problems. The variance will not impact the Total Program. The cum cost variances will impact the contract costs at completion but we have anticipated the impact in the PM estimate and foresee no budget problem on this contract. The decrease in the negative cum to date schedule variance since the 31 December 1984 SAR is $1.0M due to the partial recovery of quality testing associated with the Sperry Multi Functional Program Generator within the avionics WBS. This favorable variance will not have an impact on the Total Program or the MSIP Contract. The PM's estimate is formulated on a Cost Performance Index and contains an additional contingency of $9.5M to fund anticipated but currently unknown correction of deficiencies for this contract. We foresee no funding problems.

The following contracts have been deleted from this report because they are no longer among the six largest contracts --
Westinghouse Electric Corp, Harmans, MD, F33657-81-C-0641 (FY83) FPIF
General Dynamics/Ft Worth Division, Ft Worth, TX F33657-82-C-2034 (FY82) FPIF
Pratt & Whitney, W. Palm Beach, Fl F33657-82-C-0258 (P00011) FFP

F-16 Aircraft:
General Dynamics/Fort Worth Division,
Fort Worth, Texas
F33657-82-C-2034 (FY 83) FPIF
Award: N/A (follow on effort)
Definitized: 30 August 1983

Initial Contract Price

Target	Ceiling	Qty
$715.8M	$774.8M	120

Current Contract Price

Target	Ceiling	Qty
$943.5M(Ch 1)	$1,018.7M	120

Estimated Price at Completion

Contractor	Program Manager
$962.6M	$968.0M(Ch 2)

Changes since previous report --

(Ch 1) The target price increased $38.6M since the 31 December 1984 SAR due to additional authorizations that have been added to the contract.

(Ch 2) The PM's estimate increase of $42.6M reflects $38.6M for added authorizations and a $4.0M increase because of the unfavorable Cost Performance Index factor that is the basis of the PM's estimate. $1.00 worth of planned effort has been costing $1.08 on this FY 83 aircraft buy.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -42.9M	$ -30.9M
Cumulative Variance to date 11/30/85	$ -64.4M	$ -21.4M
Net Change	$ -21.5M	$ + 9.5M

Explanation of change: The increase in the negative cum to date cost variance since the 31 December 1984 SAR is $21.5M. The most significant occurrences are as follows: 1) The cost impact of introducing the F-16 C/D aircraft in the FY 83 buy was understated by GD/FW; 2) Rework of technical orders associated with the Trainer Gun and fuel systems; 3) Integration problems with Wide Angle Conventional Heads-Up Display Set in F-16 C/D air vehicles; 4) Rework of first unit trainers as a result of part shortages and change notices. There are no Total Program impacts as a result of these variances. The potential contract over target is adequately considered in the PM's estimate at completion.

The decrease in the negative cum to date schedule variance is $9.5M. The most significant occurrence is deliveries of previously scheduled hardware within the Airframe WBS and the Heads-Up Display within the Fire Control System. These variances will not impact the Total Program at completion. The F-16 Program Office has funded this contract at target price and has established a Contingent Liability of $27.5M to cover the impacts of performance to date and unknown deficiencies. We foresee no funding problems on this contract.

Engines:

	Initial Contract Price		
	Target	Ceiling	Qty
General Electric Corporation Evendale, Ohio F33657-84-C-2011 (FY 85) FFP Award: 3 February 1984 Definitized: 3 February 1984	$522.7M	$522.7M	126

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$522.7M	$522.7M	126	$522.7M	$522.7M

This contract was not among our 6 largest contracts as listed in the 31 December 1984 SAR.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variance to Date		

Explanation of change: CPR/CSSR is not available since Firm Fixed Price (FFP) contracts do not require these reports. Contract C-2011 is the FY 85 buy, we used 25 October 1985 Contract Funds Status Report (CFSR) for the estimated price at completion and actual price of worked performed. The cut off date for the report was 30 September 1985. The effort includes the Air Force buy of 110 installs plus 3 training engines and one additional engine for test. There are also 12 spare engines funded by Air Force Logistics Command.

F-16, December 31, 1985

F-16 Aircraft:
General Dynamics/Fort Worth Division
Fort Worth, Texas
F33657-82-C-2034 (FY 84) FPIF
Award: N/A (follow on effort)
Definitized: August 30, 1983

Initial Contract Price

Target	Ceiling	Qty
$669.6M	$724.8M	144

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1,151.2M(Ch 1)	$1,245.5M	144	$1,157.0M	$1,151.1M(Ch 2)

Changes since previous report --

(Ch 1) The target price increased $159.6M since the 31 December 1984 SAR due to additional authorizations added to the contract.

(Ch 2) The PM's estimate increase of $158.0M reflects $159.6M for added authorizations partly offset by a $1.6M reduction reflecting the favorable Cost Performance Index of recent months effect on the remaining work.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ - 7.2M	$ - 6.6M
Cumulative Variance to date 11/30/85	$ -50.0M	$ -45.6M
Net Change	$ -42.8M	$ -39.0M

Explanation of change: The increase in the negative cum to date cost variance since the 31 December 1984 SAR is $42.8M. The most significant occurrences are: 1) Actual costs were greater than planned for apportioned earned budget for procurement within the airframe WBS; 2) Reevaluation of target at completion values within the airframe, tooling, and weapons delivery WBS; 3) Late delivery of items associated with design changes causing work arounds to protect production rate; 4) Transfer of excess parts and tasks from elements in the factory which were in an underrun condition. These variances will not impact the total program at completion. The increase in the negative cum to date schedule variance is $39.0M. The most significant occurrences are: 1) Return to purchase order delivery after previously being in an ahead of schedule position within the Airframe and Display Set WBS elements; 2) Late deliveries of Flight Control hardware associated with design changes. The schedule variance will not impact the Total Program. The PM's cost estimate at completion of $1,021.6M ($1151.1 at price) is $9.6M over target cost. GD/FW has set up a Management Reserve of $46.2M within the contract's target cost. GD has to date dedicated $20.9M of the total reserve to be applied to the negative cost variance at completion. The contract has $25.3M of MR remaining to be used for future problems such as Correction of Deficiencies and the balance, as on past contracts, will be used by GD to reduce the unfavorable variance at completion. We have funded this contract to target price $1,151.2M and have budgeted on additional $10.9M for our share (60%) of the forcasted overtarget at completion. We foresee no funding problem on this contract.

F-16, December 31, 1985

F-16 Aircraft:
General Dynamics/Fort Worth Division
Fort Worth, Texas
F33657-82-C-2034 (FY 85) FPIF
Award: N/A (follow on effort)
Definitized: Auqust 30, 1983

Initial Contract Price

Target	Ceiling	Qty
$697.4M	$754.8M	150

Current Contract Price

Target	Ceiling	Qty
$1,188.3M	$1,287.0M	150

Estimated Price at Completion

Contractor	Program Manager
$1,182.6M	$1,198.3M

This contract was not among our six largest contracts as listed in the 31 December 1984 SAR.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to date 11/30 85	$ -14.6M	$ -2.3M
Net Change	$ -14.6M	$ -2.3M

Explanation of change: This contract was not included in the 31 December 1984 SAR. The negative cum to date cost variance of $-14.6M is caused by: 1) The transfer of excess parts from functions which were in an underrun condition; 2) Robotic routing being done manually; 3) Lower efficiency in manufacturing for new employees; 4) Isolated part shortages in the airframe subsystem within the subassembly area. The variance will not impact the total program at completion.

The negative cum to date schedule variance of $-2.3M was caused by a correction of actual costs and performance relating to shop order requisitioning of Titanium sheet in the aft fuselage and the late requisitioning of hardware from inventory in airframe subsystems. The variances will not impact the Total Program at completion.

The PM's cost estimate at completion is $1057.1M which is $16.6M over target cost. Our estimate at completion is $1198.3M at price. At 15.9% complete the contractor has set aside $57.8M of the contract's target cost as Management Reserve and of that amount has dedicated $6.3M to be applied to offset the variance at completion. $51.6M remains for use in solving future problems and Correction of Deficiencies. We estimate Correction of Deficiencies to be $8.0M leaving $43.6M available to apply to the variance at completion. We have funded this effort at target price, $1,188.3M and have budgeted an additional $21.9M for a potential overtarget at completion. We foresee no funding problem on this effort.

Attack Radar:
Westinghouse Electric Corporation
Harmans, Maryland
F33657-81-C-0641 (FY 84) FPIF
Award: N/A (follow on effort)
Definitized: October 31, 1985

Initial Contract Price		
Target	Ceiling	Qty
$311.2M	$354.5M	207

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$317.9M	$361.9M	207	$323.7M	$330.8M

This contract was not among our six largest contracts as listed in the 31 December 1984 SAR.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to date 11/30/85	$ -13.7M	$ -15.9M
	$ -13.7M	$ -15.9M

Explanation of change: This contract was not included in the 31 December 1984 SAR. The negative cum to date cost variance of $ -13.7M is due to significant occurrences as follows: 1) The high failure rate of printed wire assemblies that are used in the Dual Mode Transmitter and the Programmable Signal Processor causing additional hours to be spent on rework and associated retesting; 2) The continuing effort to incorporate incoming Revision Notices on LRU's in the factory; 3) High failure of components causing retesting in the Low Power Radio Frequency Unit. These variance will not cause an impact to the Total Program.

The negative cum to date schedule variance of $ -15.9M is due to significant occurrences as follows: 1) Shortage of high value materials that impacted the deliveries of the Programmable Signal Processor and the Dual Mode Transmitter; 2) Test failures of components and the retesting required delayed Air Force acceptance; 3) Incorporation of Revision Notices have further delayed deliveries. These schedule delays have impacted the Total Program schedule and schedules at our aircraft contractor's plant. Westinghouse will reduce contract target price to provide a monetary consideration which is agreed upon. It is unprecedented for Westinghouse to give such consideration for their program slip impacts. The Program Manager's estimate has the potential liabilities adequately funded. The basis for the PM's estimate is an unfavorable cum to date Cost Performance Index factor of 1.064. We have funded this effort to contract target price $317.9M and have budgeted an additional $15.0M in anticipation of over target costs at completion. We foresee no funding problems on this contract.

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: 38.6% (20581.8/53335.9)

b. (U) Appropriation Summary —

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY75-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP (FY92-94)	Total
RDT&E	1278.3	81.3	132.7		1492.3
Procurement	19303.5	3842.6	16291.8	12405.7	51843.6
MILCON	-	-	-	-	-
Total	20581.8	3923.9	16424.5	12405.7	53335.9

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

c. (U) Annual Summary

Fiscal Year	Qty	FY75 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) *
		Flyaway		Totals	Advance Proc		Total	
		NonRec	Rec		Debit	Credit		
Appropriation: RDT&E								
1975				31.2			32.0	--
1976				187.2			214.7	11.0
197T				57.7			69.0	5.4
1977				211.9			256.4	2.1
1978				121.5			162.3	5.9
1979				65.8			93.6	8.4
1980				17.4			27.6	9.4
1981				24.6			43.1	11.9
1982				30.9			57.9	9.2
1983				36.2			70.9	4.9
1984				45.7			93.1	3.8
1985				43.4			91.4	3.6
1986				30.4			66.3	3.2
1987				35.8			81.3	4.1
1988				18.1			42.7	3.9
1989				11.3			27.5	3.4
1990				7.0			17.4	2.9
1991				17.7			45.1	2.3
Subtotal	8			993.8			1492.3	

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

c. (U) Annual Summary

Fiscal Year	Qty	FY75 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) *
		Flyaway		Totals	Advance Proc		Total	
		NonRec	Rec		Debit	Credit		
Appropriation: Procurement								
1977				182.2	174.9		257.6	6.2
1978	105	61.0	523.6	889.5	37.7	174.9	1385.9	6.6
1979	145	30.1	551.6	854.8	67.9	37.7	1434.4	8.7
1980	175	50.6	678.8	874.7	141.3	67.9	1641.9	9.7
1981	180	43.1	706.3	937.0	194.8	141.3	1918.0	11.9
1982	120	52.7	490.1	1025.0	545.5	166.8	2205.7	9.6
1983	120	185.8	523.4	889.1	218.6	372.3	2048.4	9.0
1984	144	71.7	652.0	980.5	349.1	313.1	2388.4	8.0
1985	150	114.7	716.1	1104.0	586.8	443.4	2804.2	4.1
1986	180	113.5	847.8	1221.2	514.1	418.3	3219.0	4.1
1987	216	85.3	1016.4	1409.1	612.0	444.9	3842.6	4.1
1988	216	32.8	1102.9	1380.2	659.6	691.9	3877.0	3.9
1989	216	52.0	1148.5	1441.4	666.0	829.8	4154.1	3.4
1990	216	19.4	1088.5	1396.7	680.0	666.0	4120.3	2.9
1991	216	14.9	1089.5	1371.9	675.4	680.0	4140.4	2.3
1992	216	4.4	1097.3	1400.7	603.5	675.4	4324.0	2.3
1993	216	9.4	1091.6	1411.8	607.9	603.5	4458.5	2.3
1994	216	5.0	1093.3	1121.4		607.9	3623.2	2.3
Subtotal	3047	946.4	14417.9	19891.2	7335.1	7335.1	51843.6	
Total	3055			20885.0			53335.9	

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

16. Program Funding Summary (Cont'd):

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated*	Expended*
	Appropriation: RDT&E		
1975	32.0	32.0	32.0
1976	214.7	214.7	214.7
197T	69.0	69.0	69.0
1977	256.4	256.4	256.4
1978	162.3	162.3	162.3
1979	93.6	93.6	93.6
1980	27.6	27.6	27.6
1981	43.1	43.1	43.1
1982	57.9	57.9	57.9
1983	70.9	70.9	65.0
1984	93.1	93.1	81.2
1985	91.4	91.1	65.8
1986	66.3	29.9	5.7
To Complete	214.0		
Total	1492.3	1241.6	1174.3

*Program Office records as of 31 December 1985

16. Program Funding Summary (Cont'd):

d. (U) Obligations and Expenditures —

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated*	Expended*
	Appropriation: Procurement		
1977	257.6	257.6	257.6
1978	1385.9	1385.9	1385.9
1979	1434.4	1434.4	1434.4
1980	1641.9	1641.9	1641.9
1981	1918.0	1918.0	1918.0
1982	2205.7	2191.5	2104.4
1983	2048.4	2048.4	1644.0
1984	2388.4	2125.1	1283.1
1985	2804.2	2206.6	363.7
1986	3219.0	339.3	
To Complete	32540.1		
Total	51843.6	15548.7	12033.0

*Program Office records as of 31 December 1985

17. (U) Production Rate Data:

a. (U) Annual production rate can achieve a maximum of 27 (21 aircraft plus 6 aircraft equivalents) per month at General Dynamics with no additional tooling expense. This includes USAF as well as European Participating Government use and all current Foreign Military Sales.

	Production Rates (Quantity/Year)			
Fiscal Year	Development Estimate *	Production Estimate	Current Estimate	Maximum
1986	N/A	180	180	180
1987	N/A	216	216	324
1988	N/A	216	216	324
1989	N/A	216	216	324
1990	N/A	216	216	324
1991	N/A	216	216	324
1992	N/A	216	216	108
1993	N/A	216	216	-
1994	N/A	216	216	-

* The production rate for the development estimate did not include years after 1982.

b. (U) Cost Variance - Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance CE less Max	Maximum *
Prog Acq Cost BY $	N/A	N/A	12154.4	+151.9	12002.5
TY $	N/A	N/A	35759.1	+1464.3	34294.8
PAUC BY $	N/A	N/A	6.4	+.1	6.3
TY $	N/A	N/A	18.7	+.7	18.0

17. (U) Production Rate Data:

b. (U) Cost Variance - Dollars in Millions (Cont'd)

* Does not include inefficiencies of rapid production growth with resultant hiring of new and inexperienced personnel and the difficulty in the abrupt change in rate from 216 to 324 per year (18 per month to 27).

c. (U) Schedule Variance

	Production Estimate	Variance CE vs Pd E	Current Estimate	Variance CE vs Max	Maximum
Start Date (mo/yr)	2/87	--	2/87	N/A	2/87
Duration (in months)	112	--	112	42	70
End Date (mo/yr)	5/96	--	5/96	N/A	12/92

d. (U) Deliveries (Plan/Actual)

	31 Dec 85
RDT&E	8/8
Procurement	
A/B	785/785
C/D	132/136

18. Operating and Support (O&S) Costs -- N/A

(5)
N-14 F/A-18

SAR-85-035
~~CONFIDENTIAL~~

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

PROGRAM: F/A-18

AS OF 31 DECEMBER 1985*

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CLEARED
FOR OPEN PUBLICATION
APR 01 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. (U) Designation/Nomenclature (Popular Name): F/A-18 Naval Strike Fighter (Hornet)

2. (U) DOD Component: U.S. Navy

3. (U) Responsible Office and Telephone Number:

F/A-18 Program Office
Naval Air Systems Command
Washington, D.C. 20361

PM: Captain G. H. Strohsahl
Assigned: 30 September 1983
Autovon: 222-7954
POC: LT R. Vickers
AV: 222-9191 COMM (202) 692-9191

AS AMENDED

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

RDT&E (6.4) Development - P.E. 64263N

PROCUREMENT: APPN: 1506; P.E. 24145N, 26492M, 26128M, 24159N, 26134M, 24157N, 26493M, 24158N, 24136N, 26144M, 24156N, 24662N, 52314X ICN 0144, 0146

MILCON: PE 24611N, 26496M

5. (U) Related Programs: AMRAAM, ASPJ, ALR-67, Laser and IR Maverick, NACES Ejection Seat, ALQ-126B, HARM, Harpoon, Sparrow, Sidewinder, Night Attack, RECCE, AV-8B

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OASD(PA) REVIEW 86-S-0852

6. (U) Mission and Description: The F/A-18A Naval Strike Fighter is a twin engine, mid-wing, multi-mission tactical aircraft. Designed to replace the F-4 Phantom and A-7 Corsair, the F/A-18A is being employed in Navy strike fighter squadrons and Marine fighter/attack squadrons. The F/A-18B is the two seat version currently used only for training. The F/A-18A is missionized for traditional fighter and attack roles through selected use of external equipment to accomplish specific missions. Commonality provides several benefits. Any aircraft can quickly be 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. With the addition of a sensor pallet which replaces the gun, selected aircraft may be configured as a tactical reconnaissance platform.

The primary design mission for the fighter applications is fighter escort, with fleet air defense as a secondary role. The attack missions are interdiction and close air support. Since the same airframe, engine, flight controls, and weapon system are used for both fighter and attack missions, excellent fighter performance, self-defense capabilities and increased survivability are inherent.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- In 1975 the Navy selected a carrier-capable variant of the YF-17 to satisfy its multimission strike fighter requirement, thereby complying with Congressional direction to consider only the two competitors (YF-17 and F-16) in the Air Force's lightweight fighter competition. The Secretary of Defense approved the F/A-18 development plan in December 1975, subsequent to the DSARC II review. Full scale development contracts were awarded to McDonnell Douglas for the airframe and General Electric for the engine. The first F/A-18 was flown in November 1978. Effective with the President's FY80 Budget (December 1978 SAR), the Navy increased the F/A-18 program from 811 to 1,377 aircraft. Low-rate production began in FY79 with a pilot run of nine aircraft and completed in FY80 with a limited run of 25 aircraft, and was followed by full-rate production commencing FY81 with 60 aircraft. After a successful Initial Operational Test and Evaluation of the weapon system completed in March 1980 and DSARC III (fighter) review completed in June 1981, the Secretary of Defense approved full production of the F/A-18 in its fighter role and directed implementation of cost reduction initiatives. These cost reduction efforts included breakout of contractor-furnished equipment to government-furnished equipment, second-sourcing of major end items and technology modernization. In November 1980 the Navy fleet replacement squadron, VFA-125 at Lemoore, California, commenced operations. In April 1982 a Navy Technical Evaluation in lieu of Board of Inspection and Survey initial trials was successfully completed, which permitted commencement of the formal Operational Evaluation in May 1982. In July 1982 the Chief of Naval Operations approved the F/A-18 as the Navy's tactical reconnaissance platform. As a result of the successful DSARC III (Attack) review completed in December 1982, the Secretary of Defense approved full production of the F/A-18 in its attack role (SDDM of 17 Mar 1983), but requested that additional operational testing be done to correct discrepancies noted during the operational evaluation and present the results to the DSARC principals within

18 months. The first F/A-18 Marine Air Group (MAG -11) was fully equipped with aircraft in August 1983.

b. (U) Significant Developments Since Last Report -- Operational testing results as requested by the 17 March 1983 SDDM were presented to OUSDR&E in March 1985, which satisfied prior discrepancies (all requirements were met). Operational test of the F/A-18 integrated EW Suite/HARM missile was completed 9 August 1985. During February 1985 Carrier Wing 14 (CVW-14) deployed on the USS Constellation (CV-64) with two F/A-18 squadrons, VFA-125 and VFA-113, to the Western Pacific and the Indian Ocean. The maiden deployment of the F/A-18 was considered most successful. The F/A-18 proved to be the state-of-the-art aircraft with respect to operational capability and maintainability. VMFA-531 flew from MCAS El Toro to Hawaii for a " shoot on arrival" missile exercise successfully firing two AIM-7Fs and two AIM 9Ls. All aircraft arrived in an "up status" and could have been flown back to the mainland after servicing. Two Royal Australian Air Force F/A-18s established a worlds distance record for tactical jets during transpac from Lemoore, CA to Australia. Ten MAG-11 F/A-18s participated in operation Bright Star after translant to Eygpt flying 154 of 155 scheduled sorties in eight days. The F/A-18 is expected to meet or exceed the Strike Fighter Mission requirements.

c. (U) Changes Since "As Of" Date -- As part of the FY1987 budget, the DoD has requested Congressional approval for a five year competitive multi-year procurement to buy out the program during the FY1988-FY1992 timeframe.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated - 23 November 1982) or SDDM (dated 17 March 1983) threshold breaches.

9. (U) Schedule:

a. (U) Milestones	Development Estimate	Approved Program	Current Estimate
Release of RFP	Oct 74	Oct 74	Oct 74
Award of Advanced Engineering Contracts			
General Electric (Engine)	May 75	May 75	May 75
McDonnell Douglas (Airframe)	May 75	May 75	May 75
Award of Full Scale Development Contract to General Electric (Engine)	Nov 75	Nov 75	Nov 75
DSARC II	Dec 75	Dec 75	Dec 75
Award of Full Scale Development Contract to McDonnell Douglas (Airframe)	Jan 76	Jan 76	Jan 76
First Flight	Jul 78	Jul 78	Nov 78
DSARC III-A Redesignated Program Review:	Mar 80	N/A	N/A
OSD Program Review for DSARC principals	N/A	Mar 80	Apr 80

Fighter Missions IOT&E	Oct 80	Nov 80	Feb 81
Begin Fighter Board of Inspection Survey Trials	Nov 80	Nov 80	Mar 82
DSARC IIIB	Nov 80	N/A	N/A
DSARC III (Fighter)	N/A	Feb 81	Jun 81
OSD Limited Program Review	N/A	Feb 81	Mar 81
DSARC III (Attack)	N/A	Fall 82	Dec 82
OPEVAL Completion	Dec 81	Dec 81	Oct 82
End Board of Inspection Survey Trials	May 82	May 82	Feb 83
IOC for first F/A-18 Squadron	Sep 82	Sep 82	Mar 83
Navy Support Date	TBD	TBD	Oct 83
Review for DSARC Principals	N/A	Oct 84	Mar 85 (Ch-1)

b. (U) Previous Change Explanations --

First flight rescheduled from Jul 78 to Sep 78 in accordance with contract definitization. First flight date delayed from Sep 78 to Nov 78 to permit thorough evaluation of the digital fly-by-wire flight control system. First flight occurred on 18 Nov 78.

DSARC IIIA changed to OSD Program Review for DSARC Principals.

IOT&E IV and Fighter Mision IOT&E were combined for program efficiency. The loss of F-12 delayed completion until late February 1981. (Dec 80 SAR).

BIS has been postponed until April 1981 based on completion testing status and the OSD Limited Program Review Schedule. BIS has slipped 4 months for aircraft maturity and behind schedule conditions. BIS start has slipped until Mar 82 to combine Fighter and Attack BIS trials thereby optimizing use of resources. Maximized testing before BIS delayed scheduled start until May 82. A Navy Technical Evaluation will be conducted in March and April in lieu of Initial BIS Trials. The Final Trials Phase of Service Acceptance Test will occur the first quarter of FY83 using production aircraft (Mar 82 SAR).

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 OSD Program Guidance of 13 May 1980 and Program Review 18 Apr 80. Decision Memorandum of 17 December 1980 established the date of February 81 for a Limited Program Review which combined with the 6 Nov 1980 program review will constitute DSARC III (Fighter) (Dec 80 (SAR)). The limited program review was scheduled and held on 17 Mar 1981. DSARC III (Fighter) completed as stated in 29 June 81 Decision Memorandum. DSARC III (Attack) was set for Fall 1982 by Decision Memorandum of 29 June 81 and completed in December 1982.

DSARC III (Attack) was rescheduled for December 1982.

Concurrent fighter and attack systems OPEVALS have been rescheduled for the period September 1981 - February 1982 to accomodate delays in contractor and Navy DT&E. Results will contribute to an OSD Program Review scheduled for April 1982. OPEVAL completion has slipped until Aug 82 on the flight test schedule. Carrier portions of OPEVAL slipped to October due to carrier availability.

Combined Fighter and Attack BIS will complete August 82. BIS has been consolidated into the minimum number of flights. A Navy Technical Evaluation will be conducted in March and April in lieu of Initial BIS Trials. The Final Trials Phase of Service Acceptance Test was completed the second quarter of FY83 using production aircraft.

Dec 77 SAR reported 6-month slip in IOC due to FY 79 budget decisions on procurement schedule. Congressional direction to purchase additional aircraft in FY 80 permits moving Mar 83 IOC date to Sep 82 IOC. Change to Dec 82 in accordance with Weapon System Planning Document dated 13 Jun 80. Aircraft delivery locations were rearranged so that all of VMFA-314 aircraft will be of the latest configuration coming off the production line.

Navy support for most items will begin in FY84.

c. (U) Current Change Explanations --

(Ch-1) OSD Program Review previously scheduled for Apr 85 to allow inclusion of data on initial F/A-18 aircraft carrier workups occurred in March 1985. Operational testing results were presented to OUSDR&E in March 1985; all requirements were met.

d. (U) References -- DCP #141 dated November 18, 1976, subject "Development Estimate"; OSD Program Review Decision Memorandum, dated March 17, 1983, subject "Approved Program".

10. (U) Technical/Operational Characteristics:

a. (U) Technical --	Development/Approved Estimate /Program	Demonstrated Performance	Current Estimate
Weight (Lb)			
(U) Empty VF	21,649/21,649#/ 1/	23,014	23,014
(U) Empty VA	21,720/21,720#/ 1/	23,014	23,014
(b)(1)			
(U) Dimensions (Ft)			
Length	56/56#/	56	56
Height	15.3/15.3#/	15.3	15.3
Wing Span	37.5/37.5#/	37.5	37.5
(U) Spotting Factor, A-7 Equivalent	1.2/1.2	1.2	1.2

b. Operational --	Development Estimate	Demonstrated Performance	Current Estimate
(U) Speed			
(U) At Altitude, Combat Weight (Mach)	1.7/1.7#/1/	2.0 (Ch-2)	2.0 (Ch-3)
(U) Radius (NM)			
(U) Fighter Escort, Internal Fuel	400/400	362	362
(U) Strike Mission	550/550	575	575
(U) Combat Ceiling VF (Ft)			
(b)(1)			
(U) Military Thrust	48,100/45,0001/	48,000	48,000
(U) Mission Reliability, VF @ 2,500 Hr	0.7/0.7	.893/	0.8
(U) System maintenance VF Mean Flight Hours Between Failure, Fighter Configuration @ 2500 Hrs Organizational Level Unscheduled Direct	1.4/1.7	1.753/ (Ch-4)	3.7
Maintenance Manhours per Flight Hour, VF @ 2500 Hrs	8	4.73/ (Ch-5)	3.35
Maintenance Operating Factor	12/122/		122/
Maintenance Men per Aircraft			
BIT Development Completion	N/A		100% (Ch-6)
BIT False Indication Rate	N/A		12% (Ch-7)
(U) Standard Depot Level Maintenance (Mos)	48/48#/		48

Notes (U):

1/(U) For these data elements, initial Milestone II values were established as the Planning Estimate (PE) with the Development Estimate (DE) to be based on the design resulting from the Detail Design Review. This Review was held on 26 and 27 Oct 77 and the changes were incorporated in the subsequent SAR (Dec 77). There have been no other changes in these DE values.

2/(U) This reporting factor is no longer being used.

3/(U) Fleet performance (Operational Squadrons) Apr-Sep 1985

4/(U) Measured at 9000 cumulative flight-hours, Maintainability Demonstration completed 4 May 1982.

#/(U) Items not required by DCP 141.

c. (U) Previous Change Explanations:

(U) +1365 lb - Fighter and attack commonality, initial estimated production weight adjusted for weight reduction program, actual FY79 production weight plus modifications, FY80 production weight involving changes, roll rate modification, and other minor changes.

(U) +1294 lb - Attack changes corresponding to 2.a(1) and the change to common VF and VA aircraft.

(U) +1128 lb - Original DSARC II estimate VF and VA configurations commonality, final design review, Lot III production specification weight adjusted for weight reduction, actual production delivery weights, and modifications/changes.

(U) +4756 lb - Max take-off weight changes associated with changes cited above (1), (2)

(U) -38 nm - Initial Design Reviews, engine performance estimates, and revisions to reflect demonstrated ranges on tests

(U) -100 ft - Estimate based on flight test data in R&D aircraft.
(U) +0.1 - Changed due to original DSARC II estimate and contract award (Mar 76 SAR)
(U) -2.0 Changed due to original DSARC II estimate and contract award (Mar 76 SAR)

d. (U) Current Change Explanations --
(Ch-1) Actual demonstration as reflected in the F/A-18 NATOPS manual, change 5 of 1 Jun 1985
(Ch-2) Aircraft airspeed envelope has been expanded to 2.0 Mach as reflected in the F/A-18 NATOPS manual, change 5 of 1 Jun 1985
(Ch-3) Changed to reflect actual demonstrated performance as reflected in the F/A-18 NATOPS manual, change 5 of 1 Jun 1985
(Ch-4) Actual fleet environment vice controlled environment (evaluation of design specification values)
(Ch-5) Actual fleet environment vice controlled environment (evaluation of design specification values)
(Ch-6) Development completed; additional follow-on testing for BIT enhancement for new systems ongoing until approximately FY1988
(Ch-7) Actual performance of BIT False Indication Rate

e. References -- DCP #141 dated November 18, 1976, subject "Development Estimate"; OSD Program Review Decision Memorandum, dated March 17, 1983, subject "Approved Program".

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

COST	Development Estimate	Changes	Current Estimate
a. Cost --			
DEVELOPMENT	1437.7	+214.6	1652.3
PROCUREMENT	6560.9	+6506.5	13067.4
Airframe	(3599.6)	+3165.1	(6764.7)
Engines	(1059.7)	+757.9	(1817.6)
Avionics	(198.8)	+355.3	(554.1)
Arms/Oth GF	(61.3)	+1289.0	(1350.3)
Total Flyaway	(4919.4)	+5567.3	(10486.7)
PGSE	(610.3)	+549.7	(1160.0)
Trning/Oth	(517.5)	+284.0	(801.5)
WEAPONS SYS COST	(6047.2)	+6401.0	(12448.2)
INITIAL SPARES	(513.7)	+105.5	(619.2)
Construction (MILCON)	18.0	+4.1	22.1
Total FY75 Base-Year $	8016.6	+6725.2	14741.8
Escalation	4858.7	+19722.4	24581.1
Development (RDT&E)	396.7	+354.6	751.3
Procurement	4451.7	+19357.8	23809.5
Construction (MILCON)	10.3	+10.0	20.3
Total Then-Year $	12875.3	+26447.6	39322.9

b. Quantities --			
Development (RDT&E)	11	0	11
Procurement	800	+566	1366
Total	811	+566	1377
c. Unit Cost --			
Procurement:			
FY75 Base-Year $	8.2	+1.4	9.6
Then-Year $	13.8	+13.2	27.0
Program:			
FY 75 Base-Year $	9.9	+.8	10.7
Then-Year $	15.9	+12.7	28.6

d. Approved Design to Cost Goal -- SECNAV directed that the total program cost for the F/A-18 not exceed $40B for 1377 aircraft.

e. Foreign Military Sales -- Sales to date total 147 F/A-18 aircraft. Sales to Spain total 72 aircraft for approximately $2.339B (Total Program Cost). Sales to Australia total 75 aircraft for approximately $2.767B(Total Program Cost). Canada currently expects to purchase from McDonnell Douglas a total of 138 aircraft for a total contract cost of $2.36B.

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	39322.9	42898.8	39322.9
(2) Quantity	1377	1377	1377
(3) Unit Cost	28.6	31.2	28.6
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	2436.1	2849.6	3406.7
Less CY Adv Proc	-201.6	-268.1	-405.9
Plus PY Adv Proc	207.7	207.7	201.6
Net Total	2442.2	2789.2	3202.4
(2) Quantity	84	84	120
(3) Unit Cost	29.1	33.2	26.7

13. Cost Variance Analysis:

a. 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	+190.7	+8319.1	-1.2	+8508.6
Quantity	--	+6870.4	--	+6870.4
Schedule	+14.6	+3816.1	+1.6	+3832.3
Engineering	+55.6	+1539.3	--	+1594.9
Estimating	+298.8	+5921.0	+20.5	+6240.3
Other	+6.5	--	--	+6.5
Support	+3.0	+2968.9	-1.4	+2970.5
Subtotal	+569.2	+29434.8	+19.5	+30023.5
Current Changes:				
Economic	--	-1778.9	--	-1778.9
Quantity	--	--	--	--
Schedule	--	-83.5	--	-83.5
Engineering	--	+715.2	--	+715.2
Estimating	--	-2412.9	-5.4	-2418.3
Other	--	--	--	--
Support	--	-10.4	--	-10.4
Subtotal	--	-3570.5	-5.4	-3575.9
Total Changes	+569.2	+25864.3	+14.1	+26447.6
Current Estimate	2403.6	36876.9	42.4	39322.9

Cost Variance Analysis (FY 1975 (Base Year) Dollars in Millions

Development Estimate	1437.7	6560.9	18.0	8016.6
Previous Changes:				
Economic	--	--	--	--
Quantity	--	+3079.6	--	+3079.6
Schedule	+9.4	+397.9	--	+407.3
Engineering	+37.8	+480.7	--	+518.5
Estimating	+161.4	+2015.9	+6.9	+2184.2
Other	+4.5	--	--	+4.5
Support	+1.5	+1020.3	-0.5	+ 1021.3
Subtotal	+214.6	+6994.4	+6.4	+7215.4
Current Changes:				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	-.8	--	-.8
Engineering	--	+222.4	--	+222.4
Estimating	--	-680.3	-2.3	-682.6
Other	--	--	--	--
Support	--	-29.2	--	-29.2
Subtotal	--	-487.9	-2.3	-490.2
Total Changes	+214.6	+6506.5	+4.1	+6725.2
Current Estimate	1652.3	13067.4	22.1	14741.8

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations

Development

Economic:	Revision to escalation rates
Schedule:	Slower production build up and extension of the radar test bed aircraft usage
Engineering:	Commonality of fighter and attack aircraft and extended testing requirements
Estimating:	Revisions for budget changes, flight test costs, equipment price analysis, reprogramming of unobligated balances
Support:	Additional operational test time supported
Other:	Court ruling on previous year allowable cost to the Government

Procurement

Economic:	Revisions to escalation rates
Quantity:	566 additional aircraft
Schedule:	Fluctuations in production rates and final year of production
Engineering:	Commonality, additional equipment and correction of defects changes
Estimating:	Revised program estimates based on more current information
Support:	Changes in projected sites, distribution of aircraft, increased aircraft quantity, decreased spares

MILCON

Economic:	Revisions to escalation rates
Schedule:	Restructuring of facilities to meet changed aircraft deliveries
Estimating:	Redistribution of requirements and updated estimates
Support:	Realignment of facilities

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E	0.0	0.0
(2) Procurement		
Revised Escalation Indices (Economic)	-	-1778.9
Rephased and Accelerated Program (57 additional A/C to be procured 87-90) (Schedule)	-.8	-83.5
Addition of Night Attack, Refinements to ECP-178, and additional two seaters (Engineering)	+222.4	+715.2
Revised Procurement Strategy, reduced profit in out years (Estimating)	-680.3	-2412.9

10

Adjusted allocation for support due to change in aircraft procurement schedule (Support)	-29.2	-10.4
TOTAL Procurement Cost Change	-487.9	-3570.5

13. Cost Variance Analysis (Cont'd):

(3) MILCON

Changes in Program Allocation of MILCON Funds (Estimating)	-2.3	-5.4
TOTAL MILCON Cost Change	-2.3	-5.4

c. References -- DSARC II Decision Memorandum Dated December 22, 1976, Subject Development Estimate.

14. Program Acquisition Unit Cost (PAUC) History: (Then-year dollars in millions)

a. Initial SAR Estimate to Current Baseline Estimate

PAUC (Initial SAR Est)	Changes								PAUC DE
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
15.821	--	--	+.055	--	--	--	--	+.055	15.876

b. Current Baseline Estimate to Current Estimate

PAUC DE	Changes								PAUC CE
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
15.876	+4.887	-1.536	+2.722	+1.678	+2.776	+.005	+2.150	+12.682	28.558

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

a. Procurement --

Airframe:

McDonnell Douglas
N00019-83-C-0272/FFP
Award Date: Oct 31, 1983
Definitized Date: Jun 15, 1984
Explanation of change: Not reported on FFP Contracts

Initial Contract Price		
Target	Ceiling	Qty
$1414.6	N/A	84

Current Contract Price			PM's Estimated Price at Completion
Target	Ceiling	Qty	
$1414.6	$1414.6	84	$1414.6

McDonnell Douglas
N00019-83-0272/FFP
Award Date: Oct 31, 1983
Definitized Date: Jun 15, 1984
Explanation of Change: Not reported on FFP Contracts

Initial Contract Price		
Target	Ceiling	Qty
$1380.1	N/A	84

Current Contract Price			PM's Estimated Price at Completion
Target	Ceiling	Qty	
$1380.1	N/A	84	$1380.1

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

McDonnell Douglas
N00019-84-C-0063
Award Date: Feb 29, 1984
Definitized Date: (Est) May 31, 1986
Explanation of Change: Not reported on FFP Contracts

Initial Contract Price		
Target	Ceiling	Qty
$1400.0	N/A	84

Current Contract Price			PM's Estimated Price at Completion
Target	Ceiling	Qty	
$1400.0	N/A	84	$1400.0

Engine:
General Electric
N00019-82-C-0042/FFP
Award Date: Dec 23, 1981
Definitized Date: Jan 30, 1984
Explanation of Change: Not reported on FFP Contracts

Initial Contract Price		
Target	Ceiling	Qty
$ 309.0	N/A	175

Current Contract Price			PM's Estimated Price at Completion
Target	Ceiling	Qty	
$ 309.0	N/A	175	$ 309.0

General Electric
N00019-83-C-0086/FFP
Award Date: Feb 3, 1984
Definitized Date: Jan 31, 1985
Explanation of Change: Not reported on FFP Contracts

Initial Contract Price		
Target	Ceiling	Qty
$ 307.8	N/A	186

Current Contract Price			PM's Estimated Price at Completion
Target	Ceiling	Qty	
$ 307.8	N/A	186	$ 307.8

General Electric
N00019-84-C-0140/FFP
Award Date: Aug 10, 1984
Definitized Date: Aug 22, 1985
Explanation of Change: Not Reported on FFP Contracts

Initial Contract Price		
Target	Ceiling	Qty
$ 309.9	N/A	198

Current Contract Price			PM's Estimated Price at Completion
Target	Ceiling	Qty	
$ 309.9	N/A	198	$ 309.9

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

a. Program Status --
(1) Percent Program Completed: 67% (12 yrs/18 yrs)
(2) Percent Program Cost Appropriated: 47.6%
($18,731.2/39,322.9)

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

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs	Budget Year (87)	FYDP (88-91)	Balance To Complete Beyond FYDP (92)	Total
RDT&E	2403.6	0.0	0.0	0.0	2403.6
Procurement (APN)	16290.4	3406.7	13439.0	3740.8	36876.9
MILCON	37.2	.9	3.3	1.0	42.4
Total	18731.2	3407.6	13442.3	3741.8	39322.9

c. Annual Summary --

Fiscal Year	Qty	FY 75 Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Proc Debit	Credit	Total	Escl Rate (%)
			Appropriation: RDT&E					
1975	0	N/A	N/A	19.5	N/A	N/A	20.0	
1976	0	N/A	N/A	100.1	N/A	N/A	110.4	7.5
1977	0	N/A	N/A	18.9	N/A	N/A	22.2	6.5
1977	0	N/A	N/A	271.3	N/A	N/A	341.9	7.3
1978	1	N/A	N/A	462.8	N/A	N/A	626.8	7.5
1979	8	N/A	N/A	336.3	N/A	N/A	496.1	8.9
1980	2	N/A	N/A	192.8	N/A	N/A	314.8	10.7
1981	0	N/A	N/A	96.6	N/A	N/A	173.2	9.8
1982	0	N/A	N/A	100.1	N/A	N/A	190.5	6.2
1983	0	N/A	N/A	53.9	N/A	N/A	107.7	5.1
Subtotal	11	N/A	N/A	1652.3	N/A	N/A	2403.6	
			Appropriation: Procurement (APN)					
1978	0	0.0	0.0	19.8	34.1	0.0	34.1	
1979	9	22.3	201.2	332.4	59.6	-34.1	580.8	10.9
1980	25	32.5	378.7	598.2	127.9	-59.6	1185.9	13.6
1981	60	0.3	670.9	969.0	114.3	-117.8	2116.8	10.9
1982	63	14.8	599.2	1040.2	187.9	-124.4	2472.1	8.8
1983	84	51.0	691.8	1021.3	247.6	-187.9	2593.5	6.8
1984	84	0.0	636.2	918.2	216.7	-247.6	2453.9	5.4
1985	84	60.7	568.2	869.6	207.7	-216.7	2417.1	4.1
1986	84	15.0	553.2	844.1	201.6	-207.7	11.3 2436.1	4.1
1987	120	13.6	757.7	1139.2	405.9	-201.6	17.7 3406.7	4.1
1988	132	28.1	806.2	1168.3	348.1	-226.2	23.3 3597.7	3.9
1989	132	41.0	771.3	1022.8	317.7	-270.0	26.5 3232.1	3.4
1990	163	0.0	910.9	1093.4	267.6	-325.5	34.7 3534.6	2.9
1991	163	0.0	850.6	930.1	174.2	-337.5	31.1 3074.6	2.3
1992	163	0.0	818.8	1100.8	0.0	-354.3	36.8 3740.8	2.3
Subtotal	1366	279.3	9214.9	13067.4	2910.9	-2910.9	36876.9	

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

Fiscal Year	Qty	FY 75 Base-Year Dollars Flyaway Nonrec	Rec	Total	Then-Year Dollars Advance Proc Debit	Credit	Total	Escl Rate (%)
			Appropriation: MILCON					
1977	N/A	N/A	N/A	0.8	N/A	N/A	1.0	
1978	N/A	N/A	N/A	0.0	N/A	N/A	0.0	
1979	N/A	N/A	N/A	0.0	N/A	N/A	0.0	
1980	N/A	N/A	N/A	3.8	N/A	N/A	6.5	
1981	N/A	N/A	N/A	0.2	N/A	N/A	0.4	5.6
1982	N/A	N/A	N/A	6.9	N/A	N/A	12.9	5.6
1983	N/A	N/A	N/A	2.9	N/A	N/A	5.6	3.7
1984	N/A	N/A	N/A	4.7	N/A	N/A	9.4	3.6
1985	N/A	N/A	N/A	.4	N/A	N/A	.8	3.6
1986	N/A	N/A	N/A	0.3	N/A	N/A	.6	3.2
1987	N/A	N/A	N/A	0.4	N/A	N/A	.9	4.1
1988	N/A	N/A	N/A	0.0	N/A	N/A	0.0	3.9
1989	N/A	N/A	N/A	1.4	N/A	N/A	3.3	3.4
1990	N/A	N/A	N/A	0.0	N/A	N/A	0.0	2.9
1991	N/A	N/A	N/A	0.0	N/A	N/A	0.0	2.3
1992	N/A	N/A	N/A	0.4	N/A	N/A	1.0	2.3
Subtotal	N/A	N/A	N/A	22.1	N/A	N/A	42.4	
Total	1377	279.3	9214.9	14741.8	-2910.9	2910.9	39322.9	

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: RDT&E		
1975	20.0	20.0	20.0
1976	110.4	110.4	110.4
1977	22.2	22.2	22.2
1978	341.9	341.9	341.9
1979	626.8	626.8	626.8
1980	496.1	496.1	496.1
1981	314.8	314.8	314.8
1982	173.2	173.2	169.7
1983	190.5	190.5	185.9
To Complete	107.7	107.7	97.1
Total	2403.6	2403.6	2384.9

d. Obligations and Expenditures (Cont'd)--

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: Procurement		
1978	34.1	34.1	33.0
1979	580.8	579.4	553.9
1980	1185.9	1177.0	1105.4
1981	2116.8	2077.6	1936.1
1982	2472.1	2451.5	2276.1
1983	2593.5	2591.9	2340.5
1984	2453.9	2346.5	1461.1
1985	2417.1	2200.8	2812.4
1986	2436.1	1073.2	1055.2
To Complete	20586.5	N/A	N/A
Total	36876.9	14532.0	13573.7
	Appropriation: MILCON		
1977	1.0	1.0	1.0
1978	0.0	0.0	0.0
1979	0.0	0.0	0.0
1980	6.5	6.5	6.5
1981	.4	.4	.4
1982	12.9	12.9	12.9
1983	5.6	4.6	4.6
1984	9.4	6.7	6.6
1985	.8	.9	.9
1986	.6	0.0	0.000
To Complete	5.2	N/A	N/A
Total	42.4	33.0	32.9

17. Production Rate Data:

a. Annual Production Rates -- (Note: The maximum Production Rate shown below includes all customers)

Fiscal Year	Production Rates (Quantity/Year) Development Estimate	Production Estimate	Current Estimate	Maximum
1978	1		1	
1979	8	5	17	9
1980	2	15	27	25
1981		48	60	78
1982		96	63	87
1983		108	84	126

17. Production Rate Data (Cont'd):

Fiscal Year	Production Rates (Quantity/Year) Development Estimate	Production Estimate	Current 1/ Estimate	Maximum
1984		132	84	135
1985		132	84	146
1986		132	84	139
1987		132	120	145
1988		0	132	140
1989		0	132	144
1990		0	163	163
1991		0	163	163
1992		0	163	163
Total	11	800	1377	1663

1/ Total current estimate includes eleven R&D aircraft.

b. Cost Variance -- Dollars in Millions

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	8016.6	+6725.2	14741.8	0	14741.8
	(TY $)	12875.3	+26447.6	39322.9	0	39322.9
PAUC	(BY $)	9.9	+ .8	10.7	0	10.7
	(TY $)	15.9	+12.7	28.6	0	28.6

c. Schedule Variance --

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	11/78	0	11/78	0	11/78
Duration (in Months)	132	60	192	0	192
End Date (Mo/Yr)	11/89	60	11/94	0	11/94

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	11/11
Procurement	273/273

18. Operating and Support Costs:

a. Not Applicable.

③ N-15 FFG-7

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SAR-85-101

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
Program: FFG 7 Class

AS OF DATE: December 31, 1985*

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1. Designation/Nomenclature (Popular Name): FFG 7 Class/Guided Missile Frigate (OLIVER HAZARD PERRY Class)

2. DoD Component: U.S. Navy

3. Responsible Office and Telephone Number:
Guided Missile Frigate Ship Acquisition Program Office (PMS399)
Washington, D.C. 20362-5101

PM: CAPT R.B. Woodruff, USN
Assigned: November 30, 1984
AV 222-2922; COMM (202) 692-2922

4. Program Elements/Procurement Line Items:
RDT&E: 63509N (S4627-024 only) (shared funding)
63564N (S4627-024 only)
64567N (SSL67-024, S0408-024, and S0857-024)
PROCUREMENT: APPN 1611 ICN 14010

5. Related Programs: LAMPS MK III, TACTAS, CIWS

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OASD(PA) RECORD 86 0893

6. U Mission and Description: To provide self-defense and effectively supplement planned and existing escorts in the protection of underway replenishment groups, amphibious forces, and military shipping against sub-surface, air and surface threats.

The FFG 7 Class Guided Missile Frigate will displace approximately 3900 tons in the full load condition when remaining space and weight margins are used. The propulsion plant utilizes a single controllable, reversible pitch propeller powered by two gas turbines. CIWS is provided commencing with the FY 78 ships. FY 78 and prior year ships delivered with an overall length of 445 ft., accommodations for 185 officers and enlisted men, and hangar facilities for two LAMPS MK I helicopters. FY 79 and subsequent year ships are provided with fin stabilizers, and configured to accept TACTAS, LAMPS MK III helicopters, and the Helicopter Landing System (HLS). These ships have an overall length of 453 ft (ship length at the waterline remains unchanged), and accommodations for 217 men. The helicopter landing area for all ships is capable of accommodating a helo as large as the SH-3.

7. U Program Highlights:

a. Significant Historical Developments -- Studies were conducted in late 1970 to examine the feasibility of a new class of ships to counter the ASW, AAW, and surface warfare threats. The Guided Missile Frigate (FFG) Program entered the Conceptual Phase in January 1971 to develop the FFG mission and design in detail. Ship System Design started in April 1972 and completed in April 1973. Contracts for detail design and construction of the lead ship were awarded to Bath Iron Works in May and October 1973, respectively. The lead ship of the class (USS OLIVER HAZARD PERRY) was delivered to the Navy in November 1977, and successfully completed her Post Delivery Test and Trials, including a full-scale shock test. An approximate two year gap between the lead and first follow ship allowed feedback of experience from the lead to follow ship programs. In addition, the propulsion and combat systems were developed and evaluated at land-based test sites. Improvement items planned for FY 1979 and later year ships are being incorporated after their effectiveness and suitability have been demonstrated through test and evaluation.

b. Significant Developments Since Last Report --

The FY 86 Appropriations Act includes language that makes available the $40.0M of FY 83 SCN to fully fund the FY 84 ship at the end cost of $376.3M.

FFG 53, nineteenth follow ship at Bath Iron Works, was delivered to the Navy February 1, 1985.

FFG 55, twentieth follow ship at Bath Iron Works, was delivered to the Navy May 10, 1985.

FFG 54, fifteenth ship at Todd, Los Angeles was delivered to the Navy May 31, 1985.

Production workers at Bath Iron Works were on strike from July 1 to October 7, 1985. Delays in ship deliveries of 20 and 19 weeks have been negotiated for FFGs 58 and 59, respectively.

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

FFG 52, thirteenth and last ship at Todd, Seattle, was delivered to the Navy July 11, 1985.

FFG 56, twenty-first follow ship at Bath Iron Works, was delivered to the Navy September 13, 1985, six weeks later than planned because of the strike.

Total program costs are estimated herein to be $9,534.3M of which $8,763.3M are sunk costs (obligations through December 31, 1985), and $771.0M are considered costs to complete.

FFG 7 Class ships will fulfill their mission requirements of supplementing other escorts in the protection of underway replenishment groups, amphibious forces, and military shipping.

c. Changes Since "As of" Date -- None

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches:
There are currently no DCP (approved December 11, 1975) threshold breaches.

9. (U) Schedule:

a. (U) Milestones	Development Estimate/ Approved Program	Current Estimate
Characteristics Approved	Oct 72/Oct 72	Oct 72[1/]
Complete Lead Ship Contract Design	Apr 73/Apr 73	Apr 73
Complete OPEVAL/IOT&E in Major Ship Systems		
(1) SPS-49	Aug 74/Aug 75	Aug 75
(2) Sonar	Oct 74/Aug 75	Aug 75
Complete Follow Ship Contract Design	Nov 74/Nov 74	Nov 74
Complete IOT&E for Combat System Equipments	Feb 75/Aug 75	Aug 75
DSARC III	Mar 75/Dec 75	Dec 75
Production Contract Award		
(1) Lead Ship	Jun 73/Oct 73	Oct 73
(2) Follow Ships, First Increment	Apr 75/Dec 75-Mar 76	Feb 76
(3) Follow Ships, Second Increment	N/A / Jan 77	Feb 77
(4) Follow Ships, Last Increment	Jun 77/Apr 81	Nov 84
Launch - Lead Ship	Mar 76/Jul 76	Sep 76
Delivery		
(1) Lead Ship	Jun 77/Jun 77	Nov 77
(2) Last Ship	Dec 82/May 86	Nov 88
IOC [2/]	Jul 77/Jul 77	Mar 79
Final Contract Trial		
(1) Lead Ship	Dec 77/Dec 77	Jul 78
(2) Last Ship	Jun 83/Nov 86	May 89
Ready for Operational Deployment		
(U) (1) Lead Ship	May 78/May 78	Mar 79
(b)(1)		

1/ Ship Characteristics (Oct 72) were repromulgated in the PF Top Level Requirements (TLR) (Feb 3, 1975), and updated in the FFG TLR (Apr 9, 1982).

2/ Initial Operational Capability is defined as completion of the Post Shakedown Availability for the lead ship of the Class.

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

b. Previous Change Explanations --

Complete IOT&E of AN/SPS-49 Radar was first delayed six months because of Navy decision to expand the test program. A further delay of six months was due to technical problems encountered during system testing and ship operation schedule changes.

Complete AN/SQS-56 Sonar IOT&E changed from October 1974 to August 1975 to allow for correction of discrepancies discovered during technical evaluation and to allow for additional submarine services.

Complete IOT&E for combat system equipment changed from February to August 1975 because of late delivery of the MK-92 FCS and the AN/SPS-49 Radar to the Combat System Test Center.

DSARC III changed from March to November 1975 reflecting extensions of the overall IOT&E schedule. The DSARC requirement was met with approval of DCP 97 on December 11, 1975.

Contract award date for lead ship construction changed from June to September 1973 to allow for further purification of the Navy contracting package. The contract was awarded in October due to difficult negotiations.

Contract award for first increment of follow ships changed to February 1976 to allow more time for administrative purposes, the reduction in FY 1975 from 7 to 3 ships, extensions of the IOT&E effort, and extended negotiations.

The follow ship procurement strategy was previously altered to reduce cost risk to the shipbuilders in view of the unstable inflationary state of the economy. Three contract awards were planned, each spanning 2 programs years, vice the two contract awards originally planned, each spanning 2 1/2 years; i.e., the FY 1976 ships were to be options to the FY 1975 contract, the FY 1978 ships are options to a FY 1977 contract, etc. Award of contracts for the last increment of these three follow ship procurements previously changed to April 1979. Subsequent changes in succeeding years reflected revised ship quantities which resulted from the annual budget process. Current estimate of November 1984 reflects contract award of the FY 1984 ship.

Lead ship launch changed from March to September 1976 because of changes, strut misalignment and a strike.

Lead ship delivery changed from June to November 1977 because of construction problems, strut misalignment, a strike and changes.

Last ship delivery previously changed from December 1982 to January 1985 to accommodate the FY 1974 and FY 1975 Defense Appropriation Acts, and the considerably longer lead times experienced by the shipbuilding industry for material and equipment. Subsequent changes reflected revised ship quantities which resulted from the annual budget process. Current estimate of November 1988 reflects the planned delivery of the FY 1984 ship. Dates for Final Contract Trial, Last Ship and Ready for Operational Deployment, Last Ship changed accordingly.

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

IOC initially changed from July to December 1977 to reflect change in lead ship delivery. IOC changed from December 1977 to March 1979 because the definition of IOC for a shipbuilding program was changed in October 1980 from the commissioning date for the lead ship of the Class to completion of the Post Shakedown Availibility in order to provide uniformity among the shipbuilding programs.

Final Contract Trial, Lead Ship changed from December 1977 to July 1978 because of change in ship delivery and revised schedule for test activities.

Ready for Operational Deployment, Lead Ship changed to March 1979 due to change in ship delivery, revision of schedule for test activities, and extension of Post Shakedown Availability.

c. Current Change Explanations -- None

d. References --

Development Estimate : DCP #97, dated April 24,1974

Approved Program: DCP #97, dated December 11,1975

10. (U) Technical/Operational Characteristics:

(U) a. Technical	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Length, Overall (ft)	440/445	445/453[1/]	445/453[1/]
Beam, Max. @ W.L. (ft)	45/45	45	45
Navigational Draft (ft)	24/24.5	25.4	25.4
Displacement, Full Load (tons)	3400/3605	3882	3900
Propulsion			
(1) Gas Turbine (2 ea)	LM-2500/LM-2500	LM-2500	LM-2500
(2) Shaft Horsepower	40,000/40,000	40,000	40,000
(U) b. Operational			
(U) Speed, Sustained (kts)	28/28	28.5	28.4
Endurance			
(b)(1)			
(U) (2) Stores (days)			
(a) Fresh Provisions	30/30	35	30
(b) Dry Provisions	45/45	81.9	45
(U) Fire Control System	MK-92 Mod 2/MK-92 Mod 2	MK-92 Mod 2	MK-92 Mod 2[2/]
(U) Fire Control Panel, Torpedo	MK-309/MK-309	MK-309	MK-309
(U) Launcher, Missile	MK-13 Mod 4/MK-13 Mod 4	MK-13 Mod 4	MK-13 Mod 4
(U) Launcher, Torpedo (2 ea)	MK-32/MK-32	MK-32	MK-32

1/ FY 1978 and prior/FY 1979 and later ships.
2/ The MK-92 Mod 2 Fire Control System (FCS) is installed in all but the last ship. This FY 1984 ship (FFG 61) will incorporate the MK-92 FCS Phase II upgrade, designated MK-92 Mod 6.

D. (U) Technical/Operational Characteristics (Cont'd):

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Gun (76mm) 3/	MK-75/MK-75	MK-75	MK-75
Acoustic Countermeasures	NIXIE/NIXIE	NIXIE	NIXIE
Sonar 4/	AN/SQS-505 Type/AN/SQS-56	AN/SQS-56	AN/SQS-56
Radar, Air Search	AN/SPS-49/AN/SPS-49	AN/SPS-49	AN/SPS-49
Radar, Surface Search	AN/SPS-55/AN/SPS-55	AN/SPS-55	AN/SPS-55

3/ CIWS installed in FY 1978 and subsequent ships in addition to MK-75.
4/ In addition to AN/SQS-56, FY 1979 and later ships are configured to accept TACTAS (AN/SQR-19) when available.

c. (U) Previous Change Explanations --

(U) Current estimate of 445 feet for Length, Overall for FY 1978 and prior year ships was due to the addition of a bulwark (bow spray shield) on the bow to minimize deck wetness. The Overall Length for FY 1979 and subsequent year ships was increased to 453 feet to retain the warping capstan capability with a stern approach of a LAMPS MK III helicopter. Length at the waterline is the same for all ships.

(U) Current estimate of 25.4 feet for Navigational Draft reflects FFG 36 inclining data and anticipated displacement growth for remaining space and weight items.

(U) Full Load Displacement previously changed to 3740 tons based upon the final results of the FFG 7 inclining experiment, revised estimates for space and weight items, and the addition of 24 accommodations for enlisted men, including fresh water stowage capacity. Current estimate of 3900 tons was based on FFG 36 inclining data and current estimate for remaining space and weight items.

(U) Sustained Speed previously increased to 28.2 kts based on final FFG 7 trial data and anticipated displacement growth for space and weight items. Current estimate of 28.4 kts was based on FFG 36 trial data and anticipated displacement growth for remaining space and weight items.

(b)(1)

(U) "SQS-505 Type" defined economic constraint, performance capability desired, and physical envelope for competitive procurement. The selected system was designated AN/SQS-56.

(U) 10. Technical/Operational Characteristics (Cont'd):

d. Current Change Explanations -- None

e. References --

Development Estimate: DCP #97, dated April 24, 1974

Approved Program: DCP #97, dated December 11, 1975

(U) 11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate (FY71-84)	Changes	Current Estimate (FY71-89)
Development (RDT&E)	$14.1 1/	$+5.6	$19.7
Procurement (SCN)	2606.3	+1729.7	4336.0
Basic Ship Costs	(1557.5)	(+828.2)	(2385.7)
Gov't Furnished Eqmt Costs	(860.2)	(+796.8)	(1657.0)
Other Costs	(17.6)	(+88.2)	(105.8)
Total Production	(2435.3)	(+1713.2)	(4148.5)
Outfitting & Post Delivery	(171.0)	(+16.5)	(187.5)
Construction (MILCON)	--	--	--
Total FY73 Base-Year $	2620.4	+1735.3	4355.7
Escalation	624.1	+4554.5	5178.6
De)		(3)	(3.3)
Procurement (SCN)	(624.1)	(+4551.2)	(5175.3)
Construction (MILCON)	(--)	(--)	(--)
Total Then-Year $	$3244.5	$+6289.8	$9534.3
b. Quantities --			
Development (RDT&E)	-	-	-
Procurement (SCN)	50	+1	51
Total	50	+1	51
c. Unit Cost --			
Procurement:			
FY73 Base-Year $	$52.1	$+32.9	$85.0
Then-Year $	64.6	+121.9	186.5
Program:			
FY73 Base-Year $	52.4	+33.0	85.4
Then-Year $	$64.9	$+122.0	$186.9

1/ Includes $1.1 in FY71 and $11.4 in FY72 actuals. $0.3 must be added to raise total pre-base year actuals to FY73$.

11. (U) Program Acquisition Cost (Cont'd):

d. Approved Design to Cost Goal --

	(Average Unit Sailaway Cost) Dev Estimate/ Appr Program 2/	Current Estimate	Latest Approved Threshold 3/
Qty: 49 1/			
FY 73 Base-Year $	$45.7/45.0	$72.0	$50.0
Then Year $	$57.2/57.0	$155.8	$62.0

1/ Average unit cost in FY73 base-year dollars for identical follow ships, excluding space and weight items and outfitting/post delivery requirements. The 49 follow ships were to be procured in FY75 through FY79.

2/ An average follow ship goal of $71.3 in FY73 base-year dollars, excluding space and weight items and outfitting/post delivery requirements, is under review by OSD. The estimate shown in the current estimate column, which represents the average cost of all authorized follow ships, is to be compared to this $71.3 goal.

3/ An average follow ship threshold of $97.0 in FY73 base-year dollars, excluding outfitting/post delivery requirements, is under review by OSD.

e. Foreign Military Sales -- Four ships have been acquired by Australia; two in FY75/76 buy, one in FY78 and one in FY80 at a current total value of $759.7 excluding FMS administrative cost. There are two In Country Support cases in support of the four RAN FFGs with a current value of $73.6 excluding FMS administrative cost. Australia is constructing two FFGs in Australia under auspices of the Australian Frigate (AF) Project. There is a FMS Case to provide material, documentation and services to support the AF Project which totals $265.3, excluding the FMS administrative cost.

f. Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	9534.3	9804.2	9534.3
(2) Quantity	51	51	51
(3) Unit Cost	186.9	192.2	186.9
b. Current Procurement --	(FY1986)	(FY1986)	(FY1987)
(1) Cost	19.0	22.8	16.3
Less CY Adv Proc	-	-	-
Plus PY Adv Proc	-	-	-
Less OF/PD on PY progs	-19.0	-22.8	-16.3
Net Total	-	-	-
(2) Quantity	-	-	-
(3) Unit Cost	-	-	-

3. (U) Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Development Estimate	14.1	3230.4	3244.5
Previous Changes:			
Economic	-	+2401.9	+2401.9
Quantity	-	+307.6	+307.6
Schedule	-	+1599.7	+1599.7
Engineering	+25.3	+880.1	+905.4
Estimating	-16.4	+1113.5	+1097.1
Support	-	+248.0	+248.0
Subtotal	+8.9	+6550.8	+6559.7
Current Changes:			
Economic	-	-132.5	-132.5
Schedule	-	+1.4	+1.4
Estimating	-	-123.3	-123.3
Support	-	-15.5	-15.5
Subtotal	-	-269.9	-269.9
Total Changes	+8.9	+6280.9	+6289.8
Current Estimate	23.0	9511.3	9534.3

(FY 1973 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	TOTAL
Development Estimate	14.1	2606.3	2620.4
Previous Changes:			
Quantity	-	+104.4	+104.4
Schedule	-	+209.7	+209.7
Engineering	+16.9	+476.0	+492.9
Estimating	-11.3	+894.0	+882.7
Support		+106.8	+106.8
Subtotal	+5.6	+1790.9	+1796.5
Current Changes:			
Schedule	-	+.6	+.6
Estimating	-	-55.6	-55.6
Support	-	-6.2	-6.2
Subtotal		-61.2	-61.2
Total Changes	+5.6	+1729.7	+1735.3
Current Estimate	19.7	4336.0	4355.7

b. Previous Change Explanations --

RDT&E

Engineering: Increased for integration of space and weight items into FFG design.

Estimating: Decreased due to revised estimates for integration of space and weight items into FFG design and to reflect actual funding levels.

(U)

13. Cost Variance Analysis (Cont'd):

Procurement

Economic: Revised escalation indices.

Quantity: Addition of one ship in accordance with FY 84 Appropriation Act.

Schedule: Restructuring of follow ship program schedule to accommodate Congressional actions, longer lead times, alteration of follow ship procurement strategy, revised ship quantities resulting from the annual budget process and earlier deliveries.

Engineering: Incorporation of changes resulting from design development and IOT&E effort and provision of funds for selected characteristics changes.

Estimating: Revised production estimate based on shipbuilders' proposals for FY 75/76 program ships, refined estimates for Government Furnished Equipment and Outfitting/Post Delivery requirements, quantity related changes, Congressional actions, and other revised estimates.

Support: Preparation of more comprehensible technical manuals, MK-92 FCS program quality assurance measures, expanded RMA test and evaluation effort, and procurement of selected equipments as battle spares.

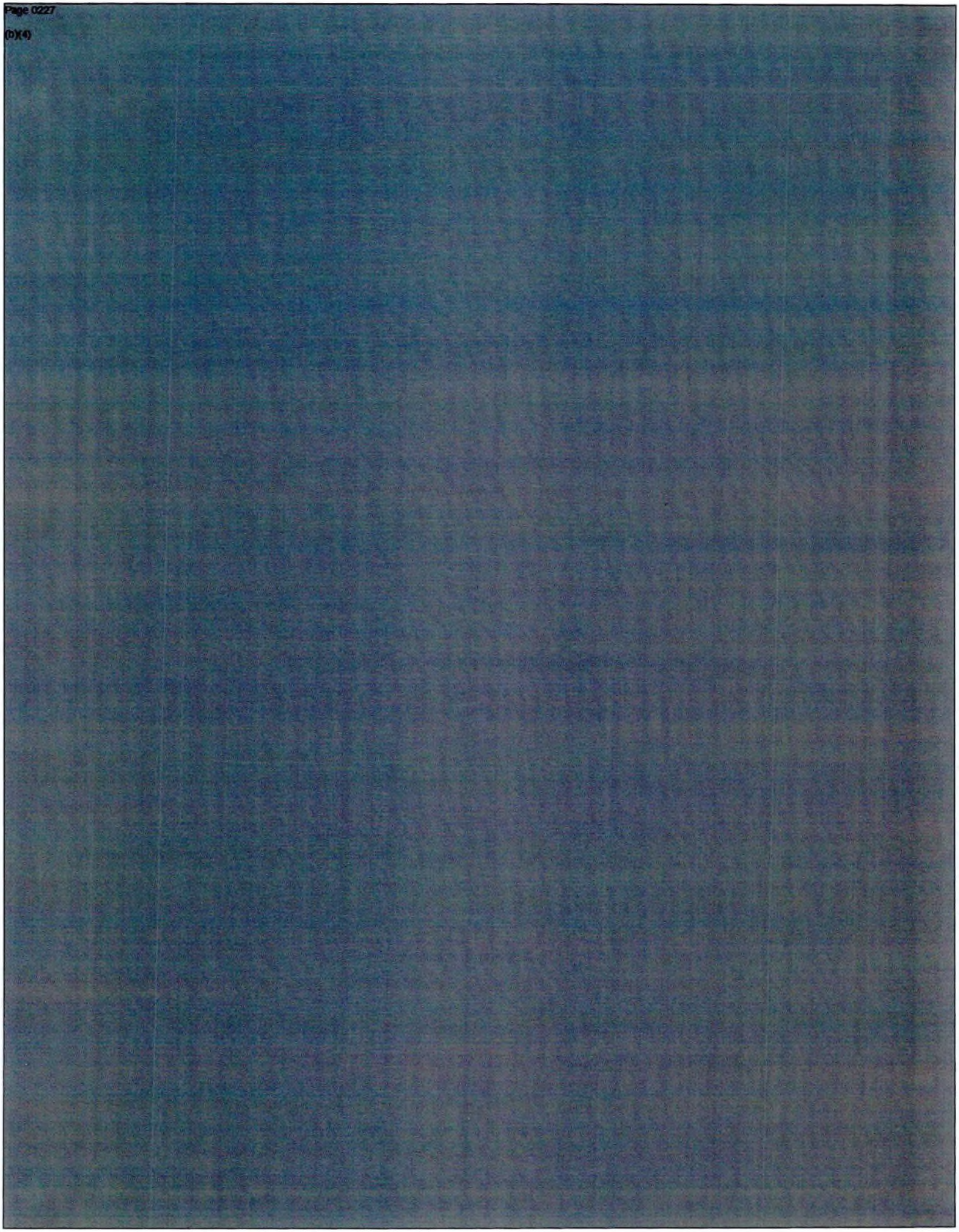
c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E	--	--
(2) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	--	-132.5
Increase reflects later planned deliveries of the FY 82 ship (FFG 57) at Todd, Los Angeles and the last FY 82 ship and the FY83 ship at Bath Iron Works (FFGs 58 & 59). (Schedule)	+.6	+1.4
Reduced estimates within the end cost of FY83 and prior year ships.	-58.6	-132.9
Increased estimate for Outfitting and Post Delivery requirements. (Estimating)	+3.0	+9.6
Decrease reflects reduced cost estimates for battle spares. (Support)	-6.2	-15.5

d. Reference --

Development Estimate: DCP #97, dated April 24, 1974

(b)(4)



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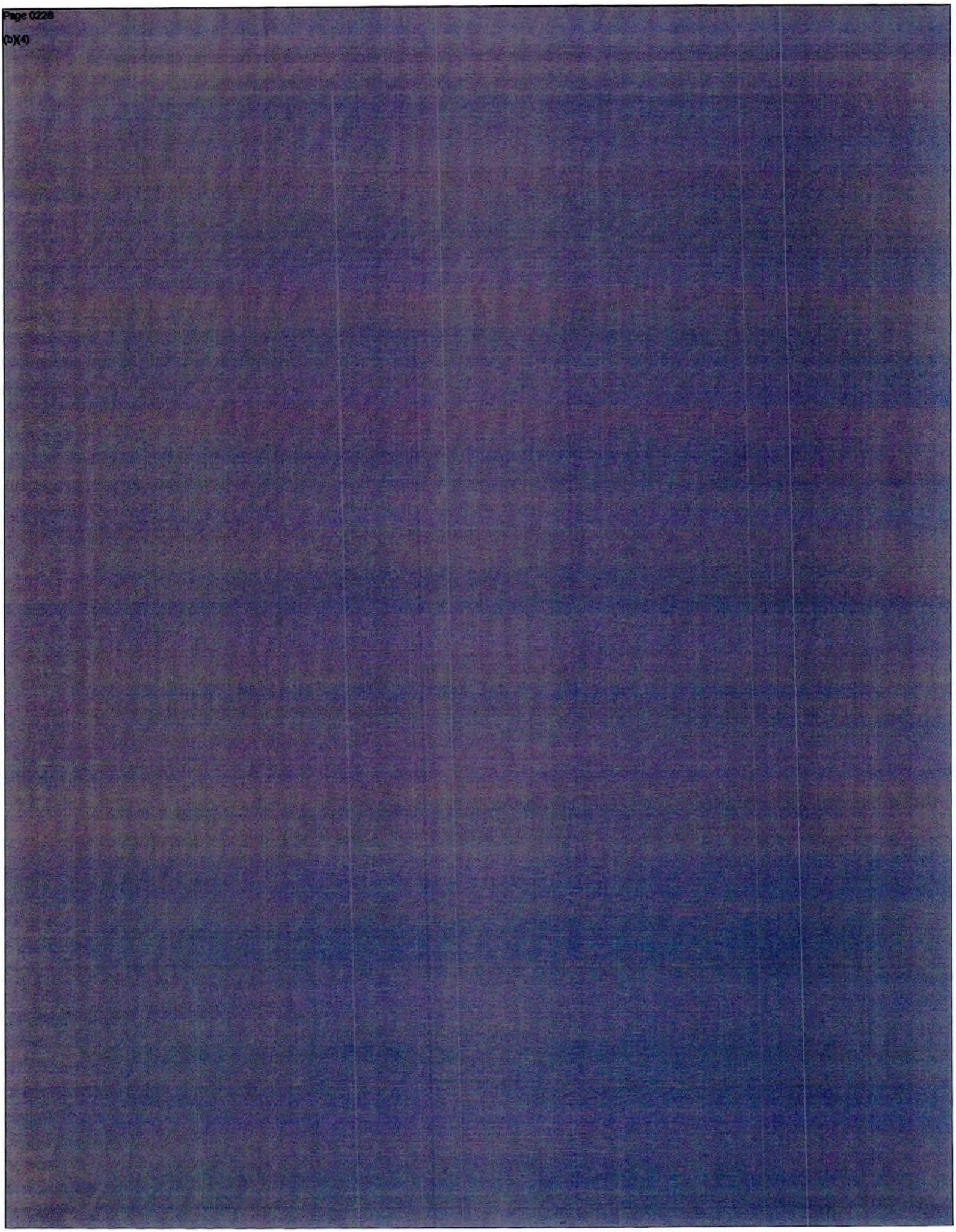

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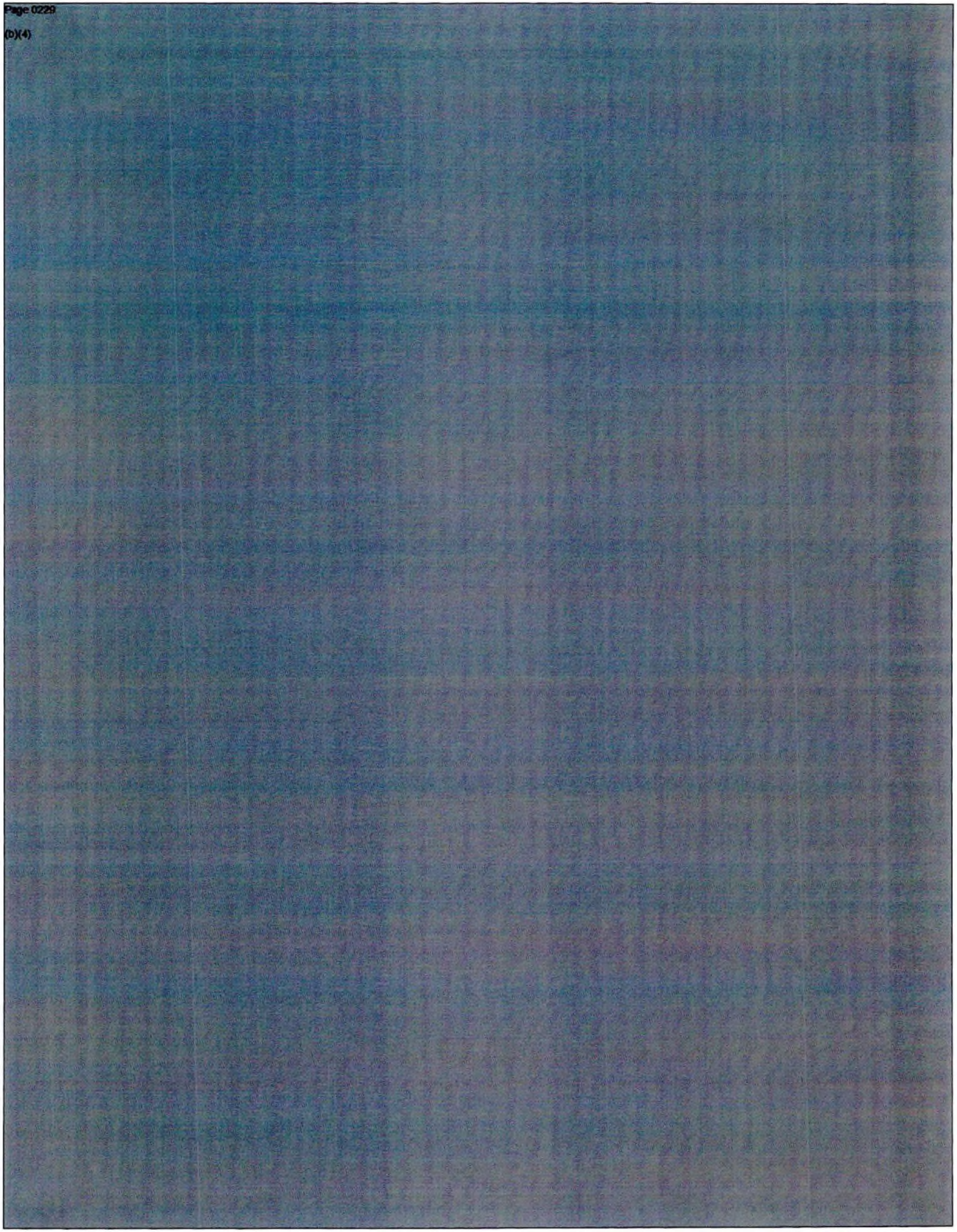

15. (U) Contract Information (Cont'd): (Then Year Dollars in Millions)

5) Follow Ship Class Design Agent
Gibbs and Cox, Inc. NewYork, NY.
N00024-84-C-2142, CPFF
Awarded and Definitized: June 1, 1984

Initial Contract Price		
Target	Ceiling	Qty
$29.0	N/A	N/A

Current Contract Price		
Target	Ceiling	Qty
$38.5	N/A	N/A

Estimated Price At Completion	
Contractor	Program Manager
$38.5	$38.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	--	--
Cumulative Variance To Date (12/31/85)	--	--
Net Change	--	--

(6) Engineering and Technical Support
Advanced Technology, Inc. Reston, VA.
N00024-85-C-2120, CPFF
Awarded and Definitized: October 29, 1984
Option Exercise: December 24, 1985

Initial Contract Price		
Target	Ceiling	Qty
$4.7	N/A	N/A
$4.4	N/A	N/A

Current Contract Price		
Target	Ceiling	Qty
$9.1	N/A	N/A

Estimated Price At Completion	
Contractor	Program Manager
$9.1	$9.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	--	--
Cumulative Variances to Date (12/31/85)	--	--
Net Change	--	--

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

a. Program Status --
(1) Percent Program Completed: 84.2% (16 yrs/19 yrs)
(2) Percent Program Cost Appropriated: 99.8% ($9,510.5/$9,534.3)
(All 51 ships appropriated; remainder is outfitting and post delivery requirements for prior year ships).

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

Appropriation	Current & Prior Yrs (FY 71-86)	Budget Year (FY 87)	Balance to Complete FYDP (FY88-89)	Beyond FYDP	Total
RDT&E	23.0	-	-	-	23.0
Procurement (SCN)	9487.5	16.3	7.5	-	9511.3
MILCON	-	-	-	-	-
Total	9510.5	16.3	7.5	-	9534.3

(U) Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty	FY 73 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1971				1.2			1.1	5.1
1972				11.6			11.4	4.6
1973				1.4			1.5	4.4
1974								8.0
1975								10.9
1976				.1			.1	6.6
1977								2.9
1977				.7			1.0	2.6
1978				1.0			1.5	6.8
1979				2.4			4.0	8.4
1980				1.3			2.4	10.6
Subtotal				19.7			23.0	
Appropriation: Procurement (SCN)								
1973	1		192.8	152.6		61.6	204.6	5.3
1974				7.4	11.0		11.0	9.0
1975	3		240.0	115.8		212.2	189.2	14.1
1976	6		398.4	470.3	170.2	20.5	828.3	11.5
1977				.2	.4		.4	2.0
1977	8		540.0	565.9	126.4	42.7	1105.5	6.2
1978	8		543.2	532.2	61.3	37.7	1135.6	8.2
1979	8		731.7	682.2	23.3	54.9	1489.7	9.6
1980	5		391.3	412.1	74.3		977.1	9.8
1981	6		571.5	576.6	57.9		1419.1	9.6
1982	3		300.8	350.0	102.0		893.2	7.5
1983	2		237.1	276.3	128.5		721.2	3.8
1984	1		144.0	157.7	94.0	40.0	430.3	3.6
1985				22.4	63.3		63.3	2.1
1986				6.5	19.0		19.0	4.1
1987				5.4	16.3		16.3	4.1
1988				2.3	7.1		7.1	3.9
1989				.1	.4		.4	3.4
Subtotal	51		4290.8	4336.0	955.4	469.6	9511.3	
Total	51		4290.8	4355.7	955.4	469.6	9534.3	

(U) Program Funding Summary (Cont'd):

d. Obligation and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1971	1.1	1.1	1.1
1972	11.4	11.4	11.4
1973	1.5	1.5	1.5
1974	--	--	--
1975	--	--	--
1976	0.1	0.1	0.1
1977T	--	--	--
1977	1.0	1.0	1.0
1978	1.5	1.5	1.4
1979	4.0	4.0	3.8
1980	2.4	2.4	2.3
Subtotal	23.0	23.0	22.6
Appropriation: Procurement (SCN)			
1973	204.6	204.6	202.9
1974	11.0	11.0	11.0
1975	189.2	189.2	186.3
1976	828.3	828.2	812.6
1977T	.4	.4	.4
1977	1105.5	1099.7	1083.1
1978	1135.6	1123.3	1100.4
1979	1489.7	1459.5	1402.6
1980	977.1	942.9	876.6
1981	1419.1	1341.3	1209.5
1982	893.2	745.5	615.7
1983	721.2	506.1	354.8
1984	430.3	251.2	81.3
1985	63.3	37.4	10.6
1986	19.0	--	--
To Complete	23.8	N/A	N/A
Subtotal	9511.3	8740.3	7947.8
Total	9534.3	8763.3	7970.4

17.(U) Production Rate Data:

a. Annual Rate Data -- (NOTE: Maximum production rates are not applicable for prior years)

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1973	1	1	1	N/A
1974				N/A
1975	7	3	3	N/A
1976	11	6	6	N/A
1977	10	8	8	N/A
1978	10	8	8	N/A
1979	11	8	8	N/A
1980		8	5	N/A
1981		8	6	N/A
1982			3	N/A
1983			2	N/A
1984			1	N/A

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	4004.0	+351.7	4355.7	N/A	N/A
(TY $)	8475.6	+1058.7	9534.3	N/A	N/A
PAUC (BY $)	80.1	+5.3	85.4	N/A	N/A
(TY $)	169.5	+17.4	186.9	N/A	N/A

c. Schedule Variance --

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	10/73	N/A	10/73	N/A	N/A
Duration (in Months)	151	30	181	N/A	N/A
End Date (Mo/Yr)	5/86	N/A	11/88	N/A	N/A

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	46/46

18.(U) Operating and Support Costs: Not applicable because the initial SAR for this program was submitted prior to first quarter of FY 1985.

A-6 BFVS

~~CONFIDENTIAL~~

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

PROGRAM: BRADLEY FIGHTING VEHICLE SYSTEMS (BFVS)

AS OF DATE: December 31, 1985

85-023

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CLEARED
FOR OPEN PUBLICATION

MAR 21 1986

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

1. (U) Designated/Nomenclature (Popular Name): Bradley Infantry Fighting Vehicle (IFV), M2, Bradley Cavalry Fighting Vehicle (CFV), M3 (Bradley Fighting Vehicles)

2. (U) DoD Component: Department of Army

3. (U) Responsible Office and Telephone Number:

PM, Bradley Fighting Vehicles
(Provisional)
U.S. Army Tank Automotive Command
Warren, MI 48397-5000

Acting PM: COL William O. Coomer
Assigned: July 1, 1985
AUTOVON 786-5909

~~Classified by: IFV/CFV SCG MSR 03783004~~
~~Declassify on: OADR~~

Concur in Classification as marked

18 MAR 1986

SECURITY REVIEW, DACSIM/HQDA

8 0717

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

RDTE:

PE 6.36.25.A	Project 1X663625DH65 (No shared funding)
PE 6.46.16.A	Project 1X464616D258 (No shared funding)
PE 6.46.17.A	Project 1X464617D340 (No shared funding)
PE 6.46.16.A	Project 1X664616D460 (No shared funding)

PROCUREMENT:

APPN 2033	SSN G80702
APPN 2033	SSN G21100
APPN 2033	SSN G15100
APPN 2033	SSN GA0153

MILCON:

APPN 2050	PE 22393A
APPN 2050	PE 85796A
APPN 2050	PE 84731A
APPN 2050	PE 85796A

5. (U) Related Programs: M790 Family of 25mm Ammunition; Training Devices; M2A1/M3A1 Modification Program; Multiple Launch Rocket System (MLRS)

6. (U) Mission and Description: The IFV and CFV are fully tracked, lightly armored fighting vehicles which provide protected cross-country mobility, vehicular mounted firepower, communication and protection to mechanized infantry units, armored cavalry units, and maneuver battalion scout squads. The Bradley IFV/CFV have an inherent swimming capability (with barrier erected) and are air transportable in the C141 and C5A aircraft. The IFV carries a nine-man infantry squad, while the CFV carries a five-man scout section. The product-improved IFV/CFV versions retain the cross country mobility and major performance characteristics of the current vehicles and incorporate improvements in missile performance, operations in an NBC environment, fightability, survivability, and in other functions. The Bradley introduces a formidable fighting vehicle into the Army forces that causes a concomitant re-distribution of some M113 Armored Personnel Carriers.

Vehicle armament consists of a fully stabilized, dual-feed, externally powered M242 25mm automatic gun as its primary weapon, a two-tube TOW missile launcher, and a M240C, 7.62mm coaxially-mounted machinegun. Supplementary armament for the IFV is the M231 firing port weapon. In the combined arms task force and armored cavalry organization, the Bradley will be the primary companion to the M1 Abrams main battle tank.

7. (U) Program Highlights:

a. (U) Significant Historical Developments:

The Bradley Fighting Vehicles are an outgrowth of the plan to develop and test the Mechanized Infantry Combat Vehicle (MICV) as outlined in the July 1972 DCP No. 30 and updated by the September 1972 DCP Cover Sheet Revision. The IFV/CFV predecessor, MICV, entered engineering development in September 1972. Special studies were conducted at the request of Congress and OSD which resulted

in the termination of the MICV/20mm but which supported the requirement for IFV/CFV (25mm/TOW) program. In January 1979, the Hughes Helicopter Inc. (HHI) externally powered 25mm Gun was competitively selected as the primary weapon system. The IFV/CFV was type classified as a result of ASARC III in December 1979. Secretary of Defense Decision Memorandum (SDDM) was issued on February 1, 1980, approving full production of the current design, with basic TOW. An initial production contract for 75 IFV's and 25 CFV's was awarded to FMC Corporation in February 1980. In October 1980, OSD guidance was received to initiate a TOW 2 development program. The government accepted the first production IFV on May 8, 1981. Breakout of major components to reduce costs began with the third year (1982) buy. Component breakout and maximum competition efforts continue. Competitive procurement for the vehicle integration effort was not considered by the Army to be cost effective. IFV/CFV fielding to FORSCOM units began in March 1983 with the 2nd Armored Division at Ft. Hood. A comprehensive block modification program was initiated in July 1983 which will lead to the production of a M2A1 and M3A1, commencing in May 1986. The M2A1/M3A1 production decision was made by the VCSA in May 1985. The M2A1/M3A1 improves basic IFV/CFVs in missile performance (TOW-2 subsystem), operations in a bio-chemical environment, fightability, and in other operations.

b.(4) Significant Developments Since Last Report:

The Bradley Fighting Vehicles maintained scheduled production throughout the report period. The delivery shortage of integrated sight units (ISUs), command guidance electronics (CGEs), and launchers caused some vehicles to be built and parked without the TOW subsystem. Recovery to the TOW subsystem contract schedule is forecast for May 1986.

BFVS fieldings continued on schedule in 1985. The final iteration of fielding to the 3rd Infantry Division in USAREUR was completed. BFVS handoff and transition training for the 11th Armored Cavalry Regiment in USAREUR and BFVS fielding to 1st Cavalry Division in FORSCOM also was accomplished. The CONUS operational readiness (OR) rate has remained near the DA goal of 90%. OCONUS OR rates exceed the goal.

The BFVS Block I Modification Program progressed according to schedule, with A1 vehicle production integration planned for May 1986. The M2A1/M3A1 was type classified on April 30, 1985. A1 prototype vehicles successfully passed Production Qualification Test (Government) (PQT-G) testing without major problems.

The first development contract for the BFVS Block II Modification Program was signed in April 1985. This program is intended to provide increased survivability changes into production vehicles. Production cut in is planned for the FY87 procurement.

Vehicle reliability (mean miles between failures) for the basic vehicle increased from 419 to 580, as compared to the user requirement of 240, as a result of the Production Reliability Verification Test (PRVT). Reliability is expected to initially decrease slightly with the upcoming A1 model production, due to the introduction of new components in the vehicle, such as the TOW-2.

The sixth year (FY85) vehicle production contract firm fix price (FFP) was awarded to FMC for 655 vehicles, a TOW 2 subsystem production letter contract was

signed with Hughes Aircraft Corporation (HAC), and a FY85-87 multiyear contract (FFP) was awarded to General Electric Ordnance Systems (GEOS) for the turret drive system.

The Bradley Fighting Vehicle System meets the critical mission requirements.

c.(U) Changes Since "As of" Date: None.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: The approved program is in MICV DCP No. 30, April 1972, with Cover Sheet Revision, September 1972, and the SDDM, February 1, 1980 for BFVS. No DCP thresholds were breached during the current reporting period.

9. (U) Schedule

a.(U) Milestones

	Development Estimate/ Approved Program	Current Estimate
(1)(U) Concept Formulation Complete	Apr 72/Apr 72	Apr 72
(2)(U) Engineering Development Contract Awarded 1/	Nov 72/Nov 72	Nov 76
(3)(U) Prototype Qualification Test - Contractor (PQT-C) 2/		
Start	N/A/Dec 78	Dec 78
Complete	N/A/Jun 79	Jun 79
(4)(U) Development Test II (PQT-G) 1/		
Start	Dec 74/Dec 74	Jun 79
Complete	Nov 75/Nov 75	Jun 80
(5)(U) Operational Test II (IFV) 2/		
Start	N/A Jan 76	Oct 79
Complete	N/A/Mar 76	Nov 79
(6)(U) ASARC/DSARC III 2/	N/A/Dec 79/Jan 80	Dec 79/ Jan 80
(7)(U) First Production Contract Award 1/	Oct 76/Oct 76	Feb 80
(8)(U) Production (1st Delivery) 1/	Oct 77/May 81	May 81
(9)(U) Development Test III (FVT-G)		
Start	Oct 77/N/A 3/	N/A 3/
Complete	Jun 78/N/A 3/	N/A 3/
(10)(U) Initial Production Testing 2/		
Start	N/A/Oct 81	Jun 82
Complete	N/A/Jul 82	May 83
(11)(U) Type Classification Standard 2/		
IFV	Aug 78/Aug 78	Dec 79
CFV	Aug 78/Jul 80	Dec 79
(12)(U) Initial Operational Capability (IOC) 4/	Aug 78/Oct 82	Dec 83 4/

b.(U) Previous Change Explanations:

(1)(U) Engineering development, conduct of PQT-G test and operational test II, production contract award, type classification standard, and first production vehicle delivery were all delayed due to DA decision to terminate the MICV program and begin IFV/CFV program development.

(2)(U) Dates for these milestones are not reflected in the MICV DCP; reflect Army approved milestones.

(3)(U) Milestone deleted in accordance with AR 1000-1 basic policy for systems acquisition.

(4)(U) Development Estimate IOC was based on MICV program. Actual IOC occurred later than approved program milestone, due to Army redefinition of IOC. The Commander FORSCOM determined that the IOC occurred in December 1983.

c. (U) Current Change Explanation:

None.

d. (U) References -

Development Estimate: Development Concept Paper (DCP) No. 30, April 1972, with Cover Sheet Revision September 1972.

Approved Program: Secretary of Defense Decision Memorandum (SDDM), February 1, 1980.

1/ Dates for these milestones are not included in the former MICV DCP but reflect Army approved milestones.
2/ Milestone was deleted in accordance with AR 1000-1 basic policy for systems acquisition.

10. (U) Technical/Operational Characteristics:

	Development Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. (U) Technical			
(1) (U) Weight (Combat loaded) - lbs.	35-38,000/43-50,000	49,987	50,000
(2) (U) Armor Protection @			
(b)(1)	[redacted]		
b. (U) Operational			
(1) (U) Firepower			
25mm Gun			
(a) (U) Stabilization Accuracy on a 4 mil. Target (% of Time Target)	80 to 90/80 to 90	94.5	94.5
(b) (U) Single Shot Accuracy to 1,000M (rd. to rd. std. dev.) (Stat) (Mils.) (AP)	.50/.50	.50 (Ch-1)	.50 (Ch-1)

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10. (U) Technical/Operational Characteristics (Cont'd):

		Development/Estimate/ Approved Program	Demonstrated Performance	Current Estimate
(c)	(U) Dispersion:			
	(U) HE (Mils.) (500 rds/min)	.97/.97	.97 (Ch-2)	.97 (Ch-2)
	(U) AP (Mils.) (100 rds/min)	.59/.59	.59 (Ch-3)	.59 (Ch-3)
	(U) Receiver Life (rds.)	25,000/25,000	30,000	30,000
	(U) Barrel Life (rds.)	3,750/3,750	13,000	13,000
	TOW			
(b)(1)	[redacted]			
(2)	(U) Reliability			
	(a) (U) System (MMBF)	330/240	580 (Ch-4)	580 (Ch-4)
	(b) (U) 25mm Gun (MRBS)	2,000/2,000	9,021	9,021
(3)	(U) Maximum Speed (MPH)			
	(a) (U) Land	40-45/40-45	42.0 (Ch-5)	42.0 (Ch-5)
	(b) (U) Water	3.6/4.5	4.4	4.4
(4)	(U) Acceleration 0-30 (MPH (sec)	18-22/18-22	18.5 (Ch-6)	18.5 (Ch-6)
(5)	(U) Ground Pressure (p.s.i.)	7.0/7.6	7.8	7.8(50K lbs)
(6)	(U) Maintenance Ratio (Manhours/Oper. Hours)	.60/.60	.40	.60

c. (U) Previous Change Explanations -

Vehicular data in column 1, Development Estimate, reflects the 20mm MICV program. Vehicular data in column 1, Approved Program, shows the successor Fighting Vehicle System. Armament data for Development Estimate shows the 25mm VRFWS-S program, whereas the armament data for approved program is based upon the QMR for 25mm weapon system. Column 2 reflects data in the Materiel Need (MN) for the IFV/CFV. Columns 3 and 4 depict the current M2/M3 program.

d. (U) Current Change Explanations - The results from several government (Aberdeen Proving Ground (APG)) tests on M2/M3 production vehicles and M242 production guns indicate the MN/QMR/system specification requirements are being met or exceeded. Previously demonstrated and current estimates shown for some operational characteristics were based on results from an individual government test. The new APG tests result in the following three changes to technical/operational characteristics:

(Ch-1) Single shot accuracy, in demonstrated performance and current estimate, changed from .41 to .50, based on the M2/M3 MN and system specification requirement.

(Ch-2) HE dispersion data, demonstrated performance and current estimate, changed from .71 to .97, based on the M242 QMR and system specification requirement.

(Ch-3) AP dispersion data, demonstration performance and current estimate, changed from .38 to .59 based on the M242 QMR and system specification requirement.

(Ch-4) Reliability (MMBF) for the basic vehicle changed from 419, demonstrated, and 460, current estimate to 580, both demonstrated and current estimate, based upon Production Reliability Verification Test (PRVT) final scoring. However, with upcoming A1 production, reliability is expected to initially decrease slightly.

(Ch-5) Demonstrated and current estimate maximum land speed changed from 43.4 MPH to 42.0 MPH based on average test results of PRVT test vehicles, rather than results from a single IPT test vehicle as previously reported.

(Ch-6) Demonstrated and current estimate acceleration changed from 17.1 (sec) to 18.5 (sec) based on average test results of PRVT test vehicles, rather than results from a single IPT test vehicle as previously reported.

e. (4) References -

Development Estimate: Development Concept Paper (DCP) No. 30, April 1972, with Cover Sheet Revision, September 1972

Approved Program: Materiel Need (MN) for an IFV/CFV, March 2, 1978; with changes through April 13, 1979; and MN Annex May 25, 1982.

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Base Year: FY72

(Dollars in Millions)

11.(U) Program Acquisition Cost

	(1) Development Estimate (FY66-FY80)	(2) Changes	(3) Current Estimate (FY66-FY91)
a.(U) Cost			
Development (RDT&E)	$98.3	$+209.4	$307.7
Vehicles	(34.3)	(+204.5)	(238.8)
25mm Weapon/Ammo	(64.0)	(+4.9)	(68.9)
Procurement (WTCV)	227.3	+2848.7	3076.0
IFV/CFV	(170.6)	(+2596.7)	(2767.3)
FPW	(N/A)	(+8.7)	(8.7)
25mm Wpn	(54.2)	(+57.1)	(111.3)
Initial Spares	(2.5)	(+186.2)	(188.7)
Military Construction (MICON)	N/A	+11.1	11.1
TOTAL; Constant FY72 $	325.6	+3069.2	3394.8
Escalation	111.3	+7007.0	7118.3
Development (RDT&E)	(23.8)	(+183.3)	(207.1)
Procurement (WTCV)	(87.5)	(+6805.0)	(6892.5)
Construction (MILCON)	(N/A)	(+18.7)	(18.7)
TOTAL: Then Year $	$436.9	+10076.2	10513.1
b.(U) Quantities			
Development	15	+6	21
Procurement	1190	+5692	6882
Total	1205	+5698	6903
c.(U) Unit Cost			
Procurement:			
FY72 Base-Year $	$.191	+.256	.447
Then-Year $	.265	+1.184	1.449
Program:			
FY72 Base-Year $	.270	+.222	.492
Then-Year $	.363	+1.160	1.523

d.(U) Approved Design to Cost Goal

	(Average Unit Rollaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty: 6882			
@ Peak Rate: 73/mo 1/			
FY80 Constant $	2/ .543	.765	.597
Then-Year $	2/ .818	1.276	.877

e.(U) Foreign Military Sales --- None

f.(U) Nuclear Costs --- None

1/ Based on current approved program of 870 vehicles per year.
2/ Cover sheet amendment to SEP 72 MICV DCP did not contain a rollaway cost goal.

12.(U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.(U) Program Acquisition			
(1) Cost	10513.1	11312.5	10513.1
(2) Quantity	6903	6903	6903
(3) Unit Cost	1.523	1.639	1.523
b.(U) Current Procurement	(FY 1986)	(FY 1986)	(FY 1987)
(1)(U) Cost	1002.6	1119.0	1234.2
Less CY Adv Proc	27.3	35.9	23.8
Plus PY Adv proc	20.4	17.6	28.8
Net Total	995.7	1100.7	1239.2
(2)(U) Quantity	716	716	870
(3)(U) Unit Cost	1.391	1.537	1.424

13.(U) Cost Variance Analysis:

a.(U) Summary --

(1)(U) Current (Then-Year) Dollars in Millions

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate	122.1	314.8	-	436.9
Previous Changes:				
Economic	-1.1	+153.6	-1.3	+151.2
Quantity	+18.0	+2648.1	-	+2666.1
Schedule	+22.1	+591.1	-	+613.2
Engineering	+166.9	+996.1	-	+1163.0
Estimating	+40.2	+5022.5	+40.9	+5103.6
Other	+17.9	-	-	+17.9
Support	+135.6	+1025.0	-	+1160.6
Subtotal	+399.6	+10436.4	+39.6	+10875.6
Current Changes:				
Economic	-.1	-438.8	-.4	-439.3
Quantity	-	-	-	-

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	RDT&E	PROC	MILCON	TOTAL
Schedule	-	+1.8	-	+1.8
Engineering	-	+284.5	-	+284.5
Estimating	-6.8	-759.7	-9.4	-775.9
Other	-	-	-	-
Support	-	+129.5	-	+129.5
Subtotal	-6.9	-782.7	-9.8	-799.4
Total Changes	+392.7	+9653.7	+29.8	+10076.2
Current Estimate	514.8	9968.5	29.8	10513.1

(2)(4) FY 1972 Constant Dollars (Base Year) in Millions

Baseline Estimate	98.3	227.3	-	325.6
Previous Changes:				
Quantity	+11.1	+905.8	-	+916.9
Schedule	+13.8	+59.4	-	+73.2
Engineering	+82.1	+325.1	-	+407.2
Estimating	+29.1	+1347.6	+14.9	+1391.6
Other	+11.0		-	+11.0
Support	+65.1	+311.0	-	+376.1
Subtotal	+212.2	+2948.9	+14.9	+3,176.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+78.7	-	+78.7
Estimating	-2.8	-214.9	-3.8	-221.5
Other	-	-	-	-
Support	-	+36.0	-	+36.0
Subtotal	-2.8	-100.2	-3.8	-106.8
Total Changes	+209.4	+2848.7	+11.1	+3069.2
Current Estimate	307.7	3076.0	11.1	3394.8

b.(4) Previous change explanations -

RDT&E

Economic: Revised escalation indices.

Quantity: Addition of 6 prototype vehicles to support the IFV/CFV Dev Phase.

Schedule: Delays due to redirection of program from one-man weapon station with 20MM Gun/25MM Gun (MICV configuration) to two-man weapon station with 25MM Gun and TOW Subsystem (IFV/CFV configuration) which caused complete restructuring of R&D effort.

Engineering: Design effort associated with redirection of program to IFV/CFV configuration; additional design effort of A1 configuration.

Estimating: Revised estimate for Gov't and Contractor Engr. Application of revised historical escalation indices.

Other: Engr Contractor over-runs.

Support: Revised requirements for TMDE and "New Look" manuals.

Procurement

Economic: Revised escalation indices.

Quantity: Addition of 5,692 vehicles with associated increase in gun quantity.

Schedule: Production delay due to extension of R&D effort and stretchout of production to permit delivery of additional vehicles.

Engineering: Design changes to IFV/CFV configuration and A1 configuration.

Estimating: Revised production cost estimates based on more current data. Application of revised historical escalation indices.

Support: Increase in initial spare, peculiar support equipment, TMDE requirements, and classroom spares.

MILCON

Economic: Revised escalation indices.

Estimating: Added MILCON to cover BFVS unique sites.

c (U) Current changes -

	(Dollars in Millions) Base Year	Then Year
(1) (U) RDT&E		
Revised JAN 86 economic escalation rates (Economic)	N/A	-.1
Programs adjusted to reflect contract deobligations (-3.8); AMC decision to withdraw funds for Small Business Innovation Research (SBIR) (-.5); OSD FY85 Inflation Cut (-.3); Congressional action deleted FY86 funds to support M2A1/M3A1 vehicle configuration completion. Existing funds will be reallocated to cover requirement (-2.2) (Estimating).	-2.8	-6.8
Total RDT&E Change	-2.8	-6.9
(2) (U) Procurement		
Revised JAN 86 economic escalation rates (Economic)	N/A	-438.8

	(Dollars in Millions) Base Year	Then Year
Reschedule of production rates during FY88 thru FY90 (Schedule)	0	+1.8
Addition of High Survivability requirements (Engineering)	+78.7	+284.5
Changes to vehicle and 25MM Gun estimates based on latest contractual data and revision of Acquisition Plan to include competition and Multi-year Procurement (Estimating)	-214.9	-759.7
Changes in initial spares requirements, TMDE, and peculiar support equipment (Support)	+36.0	+129.5
Total Procurement Change	-100.2	-782.7

(3)(U) MILCON

Revised JAN 86 economic escalation rates (Economic)	N/A	-.4
Net adjustment to include only Bradley unique sites (Estimating)	-3.8	-9.4
Total MILCON Change	-3.8	-9.8

14 (U) Program Acquisition Unit Cost (PAUC) History: Development Estimate to Current Estimate

PAUC Development Estimate	Changes (Then Year Dollars in Millions) Econ	Qty	Sch	Eng	Est	Spt	Other	Total	PAUC (Current Estimate)
.363	-.042	+.086	+.089	+.210	+.627	+.187	+.003	+1.160	1.523

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

a (U) RDT&E -

Not applicable.

b (U) Procurement -

Vehicle	Initial Contract Price Target	Ceiling	Qty
(1) (U) FMC Corp., San Jose, CA, DAAE07-85-C-A016, IFV/CFV & MLRS Production, FFP, Awarded & Definitized July 3, 1985	$315.3	N/A	715
IFV/CFV only	$294.2	N/A	655

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
Total:	$322.4	N/A	715	$322.4	$322.4
IFV/CFV only:	$301.3	N/A	655	$301.3	$301.3

Cost Variance: Schedule Variance:

Not Applicable (FFP contract)

Vehicle	Initial Contract Price Target	Ceiling	Qty
(2) (U) FMC Corp., San Jose, CA, DAAE07-84-C-A005, IFV/CFV & MLRS Production, FP/EPA, Awarded & Definitized May 9, 1984	$289.1	N/A	678
IFV/CFV only	$263.0	N/A	600

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
Total:	$294.1	N/A	678	$294.1	$294.1
IFV/CFV only:	$267.3	N/A	600	$267.3	$267.3

Cost Variance: Schedule Variance:

Not Applicable (FP/EPA contract)

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Vehicle	Initial Contract Price Target	Ceiling	Qty
(3)(U) FMC Corp., San Jose, CA, DAAE07-83-C-A001, IFV/CFV & MLRS Production, FPIF, Awarded & Definitized May 1983	$292.0	$327.0	678
IFV/CFV only	$264.3	$296.0	600

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
Total:	$296.1	$331.2	678	$291.0	$291.0
IFV/CFV only:	$269.5	$301.5	600	$263.7	$263.7

TOTAL CONTRACT:	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+10.3	$-6.2
Cumulative Variances to Date (Oct 85)	$+12.5	$-0.1
Net Change	$+ 2.2	$+6.1

Explanation of Change: The $2.2M increase in favorable cost variance since the previous SAR is primarily in the auxiliary automotive system and burden accounts. The cost variance in the auxiliary automotive system is due to contractor use of an inaccurate pricing file for low-value material, which after correction resulted in parts costing less than was anticipated. Actual burden costs were less than planned, as a result of variations in labor and changes to the burden rate. The $6.1M favorable increase in schedule variance since the December 1984 SAR is principally in the vehicle integration, hull and frame, suspension, power pack/drive train, and auxiliary automotive system cost accounts. This variance is attributed to FMC earning final performance in these previously scheduled efforts - mostly in manufacturing order parts and station material - while the remaining schedule called for less performance. Schedule performance for burden was greater than expected, due to more earned value credited in the manufacturing function (labor) than was anticipated. All vehicles under contract -A001 have been delivered. The remaining work is mostly in the manufacture and installation of modification kits. A contract cost underrun is forecasted.

Transmission	Initial Contract Price Target	Ceiling	Qty
(4)(U) GEOS, Pittsfield, MA, DAAE07-83-G-A054, Transmission Production (FYs 83/4/5 multiyear), FFP, Awarded November 15, 1982, Definitized July 31, 1984	$227.0	N/A	2,114

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
Total:	$250.0	N/A	2,114	$250.0	$250.0
IFV/CFV Only:	$229.2			$229.2	

Cost Variance | Schedule Variance

Not Applicable (FFP contract)

TOW Subsystem	Initial Contract Price Target	Ceiling	Qty
(5)(u) HAC, El Segundo, CA, DAAE07-82-2010, D.O. #2000, TOW Subsystem Production, (FY83/84) FFP, Awarded May 21, 1982, Definitized March 2, 1984	$249.7	N/A	1,200

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
Total:	$249.7	N/A	1,200	$249.7	$249.7

Cost Variance | Schedule Variance

Not Applicable (FFP contract)

Turret Drive System	Initial Contract Price Target	Ceiling	Qty
(6)(u) GEOS, Pittsfield, MA, DAAE07-85-C-0396, Turret Drive System Production (FY85/6/7 multiyear), FFP, Awarded January 31, 1985, Definitized July 30, 1985	$187.0	N/A	2,046

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
Total:	$162.6	N/A	2,046	$162.6	$162.6

Cost Variance | Schedule Variance

Not Applicable (FFP contract)

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

a (U) Program Status --

(1) (U) Percent Program Completed: 81.5% (22 yrs/27 yrs)

(2) (U) Percent Program Cost Appropriated: 57.8% (6072.6/10513.1)

b (U) Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY66-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92)	Total
RDT&E	514.8	-	-	-	514.8
Procurement	5531.9	1234.2	3202.4	-	9968.5
MILCON	25.9	3.9	-	-	29.8
TOTAL	6072.6	1238.1	3202.4		10513.1

c (U) Annual Summary ---

FISCAL YEAR	QTY	FY72 BASE-YEAR DOLLARS ROLLAWAY NONREC	ROLLAWAY REC	TOTAL PROGRAM	THEN YEAR DOLLARS ADVANCE PROC DEBIT	ADVANCE PROC CREDIT	TOTAL 1/	(%) ESCL RATE
			APPROPRIATION: RDT&E					
1966				1.5			1.2	2.7
1967				6.5			5.3	3.2
1968				2.8			2.4	3.6
1969				5.4			4.8	4.7
1970				1.9			1.8	5.5
1971				5.3			5.2	5.1
1972				2.1			2.2	4.6
1973				9.2			10.1	4.3
1974	3			16.9			20.1	8.0
1975	3			12.9			16.6	10.9
1976	7			24.2			32.8	6.6
197T				5.8			8.2	2.9
1977				39.5			57.5	2.6
1978	8			31.8			49.9	6.8
1979				25.3			43.5	8.4
1980				20.4			38.7	10.6
1981				20.1			41.5	10.6
1982				40.2			88.5	7.6
1983				20.4			46.9	4.9
1984				11.0			26.4	3.8
1985				4.5			11.2	3.6
TOTAL	21			307.7			514.8	

1/ Adjusted to obligation level where obligational authority has expired.

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16 (U) Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. (U) Annual Summary ---

FISCAL YEAR	QTY	FY72 BASE-YEAR DOLLARS ROLLAWAY NONREC	ROLLAWAY REC	TOTAL PROGRAM	THEN YEAR DOLLARS ADVANCE PROC DEBIT	ADVANCE PROC CREDIT	1/ TOTAL	(%) ESCL RATE
			APPROPRIATION: PROCUREMENT					
VEHICLES								
1969		.5		.5			.4	2.7
1979		16.2	2.6	18.8			39.2	8.9
1980	100	13.7	81.2	99.1			231.6	11.8
1981	400	9.9	202.2	234.6			614.1	11.6
1982	600	1.3	264.9	282.9	59.0		794.6	14.3
1983	600		210.7	234.2	49.1	59.0	700.6	9.0
1984	600	12.1	216.7	244.9	29.6	39.5	768.3	8.0
1985	655	5.2	252.9	267.1	24.9	39.2	869.7	4.1
1986	716	4.3	254.4	275.9	22.3	20.4	933.5	4.1
1987	870		305.8	326.4	20.6	25.2	1142.4	4.1
1988	870		294.6	314.1	12.7	17.4	1132.7	3.9
1989	870		274.0	290.5	19.2	15.1	1074.7	3.4
1990	601		167.3	178.3	0	21.6	675.1	2.9
TOTAL	6882	63.2	2527.3	2767.3	237.4	237.4	8976.9	
FIRING PORT WEAPON								
1980	1600	1.1	1.2	2.3			5.4	11.8
1981	4000	.2	1.7	1.9			5.1	11.6
1982	19400	.1	4.4	4.5			12.7	14.3
TOTAL	25000	1.4	7.3	8.7			23.2	
GUN								
1980	310	2.7	10.8	13.5			31.6	11.8
1981	480		7.5	7.5			19.7	11.6
1982	720		9.7	9.7			27.2	14.3
1983	532	1.7	8.4	10.1			30.2	9.0
1984	630		11.6	11.6			36.5	8.0
1985	690		11.9	11.9			38.7	4.1
1986	715		11.9	11.9	5.0		40.2	4.1
1987	947		11.6	11.6	3.2	3.6	40.5	4.1
1988	947		10.8	10.8	2.3	3.1	38.8	3.9
1989	948		9.9	9.9	.4	3.1	36.6	3.4
1990	275 → 465		2.8	2.8	0	1.1	10.6	2.9
TOTAL	7194	4.4	106.9	111.3	10.9	10.9	350.6	

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1/ Adjusted to obligation level when obligational authority has expired.

16 (U) Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c (U) Annual Summary ---

FISCAL YEAR	QTY	FY72 BASE-YEAR DOLLARS ROLLAWAY NONREC	ROLLAWAY REC	TOTAL PROGRAM	THEN YEAR DOLLARS ADVANCE PROC DEBIT	ADVANCE PROC CREDIT	TOTAL	(%) ESCL RATE
			APPROPRIATION: PROCUREMENT					
SPARES								
1980				3.5			8.1	11.8
1981				17.1			44.7	11.6
1982				20.0			56.0	14.3
1983				21.9			65.4	9.0
1984				18.9			59.2	8.0
1985				21.6			70.3	4.1
1986				8.5			28.9	4.1
1987				14.7			51.3	4.1
1988				16.3			58.9	3.9
1989				15.6			57.8	3.4
1990				15.7			59.6	2.9
1991				14.9			57.6	2.3
TOTAL				188.7			617.8	
			APPROPRIATION: MILITARY CONSTRUCTION					
1983				3.7			9.4	4.9
1984				2.1			5.5	3.8
1985				4.0			11.0	3.6
1986				0			0	3.2
1987				1.3			3.9	4.1
TOTAL				11.1			29.8	

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

d (U) Obligations and Expenditures --

THEN YEAR DOLLARS (CURRENT ESTIMATE IN MILLIONS) FISCAL YEAR	TOTAL PROGRAM 1/	OBLIGATED	EXPENDED
	APPROPRIATION: RDT&E		
1966	1.2	1.2	1.2
1967	5.3	5.3	5.3
1968	2.4	2.4	2.4
1969	4.8	4.8	4.8
1970	1.8	1.8	1.8
1971	5.2	5.2	5.2
1972	2.2	2.2	2.2
1973	10.1	10.1	10.1
1974	20.1	20.1	20.1
1975	16.6	16.6	16.6
1976	32.8	32.8	32.8
1977	8.2	8.2	8.2
1977	57.5	57.5	57.5
1978	49.9	49.9	49.9
1979	43.5	43.5	43.5
1980	38.7	38.7	38.7
1981	41.5	41.5	40.1
1982	88.5	88.5	86.7
1983	46.9	46.9	43.1
1984	26.4	26.4	15.9
1985	11.2	8.0	3.2
TOTAL	514.8	511.6	489.3
	APPROPRIATION: PROCUREMENT		
VEHICLE			
1969	.4	.4	.4
1979	39.2	39.2	39.2
1980	231.6	231.6	231.3
1981	614.1	614.1	600.0
1982	794.6	794.6	772.9
1983	700.6	700.6	612.4
1984	768.3	659.4	434.9
1985	869.7	520.4	40.7
1986	933.5	52.2	0
1987	1142.4	0	0
1988	1132.7	0	0
1989	1074.7	0	0
1990	675.1	0	0
TOTAL	8976.9	3612.5	2731.8

1/ Adjusted to obligation level where obligational authority has expired.

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

d (U) Obligations and Expenditures --

THEN YEAR DOLLARS (CURRENT ESTIMATE IN MILLIONS) FISCAL YEAR	TOTAL PROGRAM 1/	OBLIGATED 2/	EXPENDED 2/
		APPROPRIATION: PROCUREMENT	
FIRING PORT WEAPON (FPW)			
1980	5.4	5.4	5.1
1981	5.1	5.1	4.9
1982	12.7	12.7	12.4
TOTAL	23.2	23.2	22.4
GUN			
1980	31.6	31.6	30.8
1981	19.7	19.7	19.3
1982	27.2	27.2	26.3
1983	30.2	30.2	29.6
1984	36.5	32.3	22.0
1985	38.7	31.3	5.9
1986	40.2	0	0
1987	40.5	0	0
1988	38.8	0	0
1989	36.6	0	0
1990	10.6	0	0
TOTAL	350.6	172.3	133.9
		APPROPRIATION: PROCUREMENT	
SPARES			
1980	8.1		
1981	44.7		
1982	56.0		
1983	65.4		
1984	59.2		
1985	70.3		
1986	28.9		
1987	51.3		
1988	58.9		
1989	57.8		
1990	59.6		
1991	57.6		
TOTAL	617.8		

1/ Program for FPW and Gun adjusted to obligation level where obligational authority has expired.

2/ Obligations and expenditures for system initial spares are not currently available to the reporting PM. MSCs budget execution system does not provide obligation and expenditure data by system.

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

d (U) Obligations and Expenditures --

THEN YEAR DOLLARS (CURRENT ESTIMATE IN MILLIONS)			
FISCAL YEAR	TOTAL PROGRAM	OBLIGATED 1/	EXPENDED 1/
		APPROPRIATION: MILITARY CONSTRUCTION	
1983	9.4		
1984	5.5		
1985	11.0		
1986	0		
1987	3.9		
TOTAL	29.8		

1/ Obligation and expenditures not available.

17 (U) Production Rate Data

a (U) Annual Production Rates -

	Production Rates (Quantity/Year)			
Fiscal Year	Development Estimate	Production Estimate	Current Estimate	Maximum Economic
1977	59	N/A		
1978	79	N/A		
1979	465	N/A		
1980	587	N/A	100	
1981		N/A	400	
1982		N/A	600	
1983		N/A	600	
1984		N/A	600	
1985		N/A	655	
1986		N/A	716	788
1987		N/A	870	957
1988		N/A	870	957
1989		N/A	870	957
1990		N/A	601	268

FY85 & Prior production procurement are considered sunk; therefore, costing and scheduling for maximum economic production rate is only feasible for FY86 subsequent procurements.

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

b (U) Cost Variance -- Dollars in Millions (NOTE: Subject to limitations on production rates above.)

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum Economic
Prog Acq Cost	(BY$)	N/A	N/A	3394.8	-15.1	3379.7
	(TY$)	N/A	N/A	10513.1	-79.6	10433.5
PAUC	(BY$)	N/A	N/A	.492	-.002	.490
	(TY$)	N/A	N/A	1.523	-.012	1.511

c. (U) Schedule Variance -- (Note: Subject to the limitations on production rates above.)

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum Economic
Start Date (MO/YR) 1/	N/A	N/A	5/81	N/A	5/81
Duration (in Months)	N/A	N/A	140	-5	135
End Date (Mo/Yr) 1/	N/A	N/A	12/92	N/A	7/92

d (U) Deliveries (Plan/Actual) --

	To Date
RDT&E	21/21
PROCUREMENT	2085/2086 2/

18 (U) Operating and Support Costs: Not Required

1/ Represents delivery dates.

2/ Represents production vehicle deliveries only.

AF-18 GLCM

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SAP-85-113

SELECTED ACQUISITION REPORT (CRS: DD-COMP(Q&A)) (U)
Program: Ground Launched Cruise Missile, BGM-109G (U)

AS OF DATE: December 31, 1985

INDEX (U)

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1. (U)Designation and Nomenclature (GLCM): BGM-109G/Ground Launched Cruise Missile (TOMAHAWK)

2. (U)DOD Component: U.S. Air Force

3. (U)Responsible Office and Telephone Number:

Ground Launched Cruise Missile Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433-5000

Col R. Fritschie
Assigned: 1 Oct 84
AUTOVON: 785-7636
COMM: (513)255-7636

4. (U)Program Elements:

RDT&E: PE 64362F (No Shared Funding)
Procurement: APPN 3020; ICN MGLCMO; PE 27314F (No Shared Funding)
MILCON: PE 27314F (No Shared Funding)

5. (U)Related Programs: Air Launched Cruise Missile (ALCM) and Sea Launched Cruise Missile (SLCM)

~~Classified by: OPNAVINST S5513.2B~~

~~Declassify: OADR~~

(THIS PAGE IS UNCLASSIFIED)

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6. (U) Mission and Description: The GLCM system is being developed to provide increased theater firepower. The system will also raise the theater nuclear threshold by releasing nuclear loaded aircraft for conventional tasks and increasing the survivability of the theater nuclear force. The primary elements of the GLCM system are the missile itself, a Transporter Erector Launcher (TEL) and a Launch Control Center (LCC). The missile is a variation of the Tomahawk (BGM-109) cruise missile developed by the U.S. Navy. It is jet engine powered and makes use of an inertial guidance system aided by Terrain Contour Matching (TERCOM) position updates. A solid propellant booster is used to obtain cruise speed. The TEL consists of a launcher containing four missiles which, along with associated electronic and power production equipment, is mounted on a semi-trailer. The LCC shelter, also mounted on a semi-trailer, houses the missile launch crew and the equipment necessary for communications, missile status monitoring and missile launch. The GLCM system is air transportable. It does not replace any existing USAF weapon systems.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- The GLCM program resulted from the January 1977 DSARC II decision authorizing development of the Sea Launched Tomahawk Cruise Missile. The decision also established the Joint Cruise Missiles Project Office, with the Navy designated as lead service, to develop the Air, Ground, and Sea Launched Missiles with maximum commonality. In February 1977, the GLCM Required Operational Capability (ROC) document was published, followed in April 1977 by the Operational Concept for GLCM. The program began funded activities in October 1977 by contract go-ahead to General Dynamics. During 1978, conceptual trade studies were performed to establish configuration and technical requirements. In January 1979, a special AFSARC was held to review GLCM communications, mobility, and hardened shelter requirements. In August 1979, missile procurement was reduced from 696 to 560. In December 1979, the NATO Foreign and Defense Ministers endorsed deployment of 464 U. S. GLCMs in five European countries with a late 1983 IOC. The first flight of a Tomahawk missile from an engineering model of the TEL was successfully conducted in May 1980. In June 1980, Britain announced that GLCM would be deployed at two bases near London: Greenham Common and Molesworth, resulting in direction to plan for six Main Operating Bases (MOBs) versus five. In August 1981, Italy announced GLCMs would be deployed at an inactive airfield near Comiso on Sicily. In September 1981, the first German made M.A.N. tractor was delivered for testing at Aberdeen Proving Grounds. As a result of a November 1981 program review to the DSARC, the Milestone III production decision was delegated to the Air Force provided special thresholds were not breached. From February 1982 to December 1982, six flights were conducted. Four were successful. One was partially successful and one was a failure. Mobility testing was completed at Aberdeen Proving Grounds during this timeframe. In January 1983, a 30 day realistic field exercise was conducted at Ft Lewis, Washington. In December 1983, GLCM IOC was achieved on schedule at RAF Greenham Common, UK. Also, IOC at Comiso AS, Italy, was attained on schedule in March 1984. Two additional GLCM flights reached operational capability at RAF Greenham Common, UK on schedule in September and December 1984. Both bases demonstrated their capability during the year by successfully completing NATO tactical evaluations.

(b)(1)

[redacted]

(1) (U) In August 1985, OSD transferred program management of GLCM from the Joint Cruise Missile Project Office and directed the GLCM Program Office to be established at the Aeronautical Systems Division (ASD) at Wright-Patterson AFB, Ohio. Also, Program Management Responsibility Transfer (PMRT) of the GLCM from HQ AFSC to HQ AFLC was delayed by one year to October 1987.

(2) (U) GLCM will meet mission requirements.

c. (U) Changes since as of date -- None.

8. (U) Decision Coordination Paper (DCP) Threshold Breaches: In lieu of a DCP, an Executive Program Summary was submitted in August 1981. No thresholds have been scheduled.

9. (U) Schedule:

a. (U) Milestones --	Development Estimate/ Approved Program	Current Estimate
1. DCARC I	NA/NA	NA
2. First Flight	NA/NA	NA
3. First Guided Flight	NA/NA	NA
4. DSARC II	Jan 77/Jan 77	Jan 77
5. First FSD Flight	Apr 78/May 80	May 80
6. IOT&E Start (First Flight)	Sep 80/Dec 81*	May 82
7. First Operational Platform Launch	Jan 80/Dec 81	Feb 82
8. IOT&E Complete (CH 1)	Apr 81/Feb 83	Jul 83
9. AFSARC III	NA/NA	Oct 83
10. Initial Operational Capability (IOC)**	May 82/Dec 83	Dec 83

(U) *The approved program milestone is start of DT&E/IOT&E which is in advance of first flight.

(b)(1)

[redacted]

9. (U) Schedule (cont'd):

b. Previous change explanations --

Schedule Milestone No. 5 - Adjusted due to test missile diversion for higher priority survivability tests, availability of refurbished missile assets from SLCM test program, and IOC decision during FY80 budget cycle. Revised due to late TEL engineering test unit.

Schedule Milestone No. 6,7,8 - Adjusted to reflect IOC decision during FY80 budget cycle. Revision in January 1981 due to six month slip in delivery of total Weapon Control System (WCS) software. Revision in Fall of 1981 due to several month slip in WCS software delivery. Milestone No. 8 also revised to satisfy DOE warhead test requirements to allow time for Quick Reaction Alert (QRA) testing, and to allow for slips due to climatic testing.

Schedule Milestone No. 8 - Revised to reflect actual competition of IOT&E flight tests.

Schedule Milestone No. 9 - Revised to reflect directed activity to revise availability/reliability results and projections.

Schedule Milestone No. 10 - Revised to reflect IOC decision during FY80 budget cycle, 29 August 1979 Amended Program Decision Memorandum.

c. Current Change Explanations --

(Ch-1) Deleted "Attack (Block IIA)" erroneously reported in Dec 84 SAR

d. References --

Development Estimate: FY 1979 RDT&E Discriptive Summary (PE 64362F).

Approved Program: HQ USAF Program Management Directive for BGM-109G Ground Launched Cruise Missile PMD No. R-P8010(11)/64362F, 28 Feb 83.

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GLCM, December 31, 1985

10. (U) Technical/Operational Characteristics:

	Dev Estimate/ Appr Program	Demonstrated Performance*	Current Estimate
a. (U) Technical --			
(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)			
3. (U) Air Vehicle:			
Weight (lbs)	NA/NA	2643	2650
Length (in)	NA/NA	219	219
Diameter (in)	NA/NA	20.4	20.4
b. (U) Operational --			
1. (U) Range: Operational (KM)	2500/2500	2882	2500
(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)			
5. (U) Mission Reliability	.85/.80	.69 (Ch-1)	.80

*Best Case

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10. (U)Technical/Operational Characteristics (cont'd):

c. Previous Change Explanations --

Operational Characteristic Nos. 2 to 5 - Operational parameters in the Current Estimate were adjusted to values the contractor can be expected to achieve.

Technical Characteristic No. 1 - Current Estimate of warhead mid-life yields based on results of November 1980 Executive Session of the W84 Warhead Project Officer's meeting.

Technical Characteristic No. 3 - Current weight estimate based on calculation using actual weights of 94% of the production configuration components. Length and diameter are actuals.

Operational Characteristic No. 2a and 3 - Demonstrated performance value previously shown reflected performance demonstrated by a SLCM. Value now shown reflects a GLCM demonstrated value. Current estimate value previously shown reflected estimated performance at maturity in 1988. Value shown now is estimate as of 31 December 1983.

Operational Characteristic No. 4 - Demonstrated performance reflects value demonstrated by additional GLCM flight-testing.

Operational Characteristic No. 5 - Demonstrated performance value is as of 31 December 1983. The .80 values are at maturity in 1988.

d. (U) Current Change Explanations --

(Ch-1) Demonstrated .69 during FOT&E II program. (Result of FOT&E II program. Reliability improvements are being identified and implemented to raise mission reliability to .80 at FOC in April 1989.)

e. (U) References --
Development Estimate: GLCM System Specification No. SS07878 GLCM 001A, 20 February 1979; TAF ROC 304-77, 14 February 1977.

Approved Program: HQ USAF Program Management Directive for BGM-109G Ground Launched Missile PMD No. R-P8010(11)/64362F, 28 February 1983, USDR&E Letter to Department of Energy, 1 September 1978.

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

		Development Estimate	Changes	Current Estimate
(U) a.	Cost--			
	Development (RDT&E)	74.8	189.5	264.3
	Procurement	927.6	545.9	1473.5
	Airframe	(646.9)	(-101.4)	(545.5)
	Launch Equipment	(131.8)	(491.9)	(623.7)
	Total Flyaway	(778.7)	(390.5)	(1169.2)
	Peculiar Support	(129.0)	(134.1)	(263.1)
	Initial Spares	(19.9)	(21.3)	(41.2)
	Construction	51.2	161.9	213.1
	Total Constant FY77 $	1053.6	897.3	1950.9
	Escalation	473.6	1249.4	1723.0
	Development	(13.9)	(112.9)	(126.8)
	Procurement	(437.8)	(971.6)	(1409.4)
	Construction	(21.9)	(164.9)	(186.8)
	Total Program Cost	1527.2	2146.7	3673.9
(U) b.	Quantities			
	Development (RDT&E)	6	-1	5
	Procurement	696	-99	597
	Total	702	-100	602
(U) c.	Unit Cost			
	Procurement:			
	FY77 Base Year $	1.333	+1.135	2.468
	Then Year $	1.962	+2.867	4.829
	Program:			
	FY77 Base Year $	1.501	+1.740	3.241
	Then Year $	2.175	+3.928	6.103

(U) d. Approved Design to Cost Goal-- None

(U) e. Foreign Military Sales-- None

(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)

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12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then Year) Dollars in Millions)

	SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition--			
(1) Cost	3673.9	3745.8	3673.9
(2) Quantity	602	565	602
(3) Unit Cost	6.103	6.630	6.103
b. Current Procurement--	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	516.4	555.2	141.4
Less CY Adv Proc	-9.4	-9.8	-4.6
Plus PY Adv Proc	21.5	11.9	9.4
Net Total	528.5	557.3	146.2
(2) Quantity	95	95	76
(3) Unit Cost	5.563	5.866	1.924

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	88.7	1365.4	73.1	1527.2
Previous Changes:				
Economic	+18.0	+397.7	-23.1	+392.6
Quantity	-13.9	-212.2	0.0	-226.1
Schedule	+29.1	+111.8	+6.6	+147.5
Engineering	+4.6	+56.7	0.0	+61.3
Estimating	+245.5	+674.6	+140.1	+1060.2
Other	0.0	+160.8	-28.0	+132.8
Support	+12.3	+404.0	+234.0	+650.3
Subtotal	+295.6	+1593.4	+329.6	+2218.6
Current Changes:				
Economic	-0.3	-77.5	-2.6	-80.4
Quantity	0.0	+58.1	0.0	+58.1
Schedule	0.0	-8.9	0.0	-8.9
Engineering	0.0	+0.6	0.0	+0.6
Estimating	+7.1	+51.6	-0.2	+58.5
Other	0.0	0.0	0.0	0.0
Support	0.0	-99.8	0.0	-99.8
Subtotal	+6.8	-75.9	-2.8	-71.9
Total Changes	+302.4	+1517.5	+326.8	+2146.7
Current Estimate	391.1	2882.9	399.9	3673.9

13. Cost Variance Analysis (cont'd):
(FY77 Constant (Base Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	74.8	927.6	51.2	1053.6
Previous Changes:				
Economic	0.0	0.0	0.0	0.0
Quantity	-9.4	-124.7	0.0	-134.1
Schedule	+18.0	-1.8	0.0	+16.2
Engineering	+3.5	+32.0	0.0	+35.5
Estimating	+163.4	+348.6	+61.5	+573.5
Other	0.0	+90.8	-16.9	+73.9
Support	+10.4	+199.3	+118.2	+327.9
Subtotal	+185.9	+544.2	+162.8	+892.9
Current Changes:				
Economic	0.0	0.0	0.0	0.0
Quantity	0.0	+26.1	0.0	+26.1
Schedule	0.0	0.0	0.0	0.0
Engineering	0.0	+0.3	0.0	+0.3
Estimating	+3.6	+19.2	-0.9	+21.9
Other	0.0	0.0	0.0	0.0
Support	0.0	-43.9	0.0	-43.9
Subtotal	+3.6	+1.7	-0.9	+4.4
Total Changes	+189.5	+545.9	+161.9	+897.3
Current Estimate	264.3	1473.5	213.1	1950.9

13. b. (U) Previous Change Explanations--

RDT&E:

Economic: Revised economic escalation rates.
Quantity: Reduction of one development missile.
Schedule: Delays/slips in IOC.
Engineering: Increased effort due to unique GLCM warhead decision.
Estimating: TEL/LCC design more complex than originally envisioned. Reduced test requirements; increased requirements for Regency Net, EMP testing, and reliability/maintainability. Transfer of procurement funds to continue Material Improvement Program in FY86 and FY87. Adjustment for prior year escalation.
Support: Support equipment requirements greater than expected.

13. b. (U) Previous Change Explanations (cont'd)--

Procurement:

Economic: Revised economic escalation rates.

Quantity: Reducton of 136 missiles.

Schedule: Delays/slips in IOC. Deferral of 25 backup GLCM missiles from FY86 to FY87 to rephase training assets and maintenance missiles. Deferral of backup (5) TELs and (7) LCCs from FY86 to FY87 in order to align with GLCM missile delivery schedule

Engineering: Due to unique warhead and different tractor for adequate mobility.

Estimating: Revised TEL/LCC estimates. Composite effect of rephasing 689 Navy missiles from FY85 through FY87 to the outyears due to Navy restructure of TOMAHAWK program. Composite effect of amortization funding of tooling and test equipment in FY84 through FY87 as directed by Congress; Air Force distribution of Congressional adjustment to FY83 Air Force procurement; and other Air Force FY85 budget decisions. Also includes revised estimate of missile, TEL and LCC cost based upon current contract experience and recent proposals. Effect on GLCM program due to TOMAHAWK (SLCM) schedule rephasing from FY89-92 to FY86-88. Reduction in missile recurring flyaway costs due to effects of contract competition. Reduction in backup TEL (1) and LCCs (2) due to reduction in requirements. No program impact anticipated. Congressional FY85 action reduced full funding. No program impact anticipated. Transfer of funds to RDT&E to continue Material Improvement Program (MIP). Reestimate of flyaway costs to cover rephase of Support Equipment. Classified program increase in FY85. Adjustment for prior year escalation.

Other: Reduction in SLCM quantities.

Support: Increased support equipment due to increase of bases from 3 to 6. Change in estimate of GLCM support requirements to capture actual experience of prior years; also captures effect of rephasing TEL and LCC procurements. Rephasing of support equipment due to deferral of missile buys. Reduction in FY86 initial spares due to across the board budget cuts.

MILCON:

Economic: Revised economic escalation rates.

Estimating: Revised estimate due to increased MOBs from 3 to 6. Adjustment of construction requirements to reflect Congressional decision in the FY84 Authorization/Appropriation Acts to delete non-appropriated fund (NAF) facilities. Congressional action in FY85 to reduce funds for Main Operating Base (MOB 3) activation resulted in tighter FY86-88 construction schedule. No impact to activation date. Adjustment for prior escalation.

Other: NATO infrastructure funding allowed MILCON reductions.

13. c. (U) Current Change Explanations--

	(Dollars in Millions) Base Year	Then Year
(1) RDT&E		
Revised Jan 86 economic escalation indices (Economic)	-	-0.3
Reprogramming from 3020 for Operational Test Launch Payload (OTLP) (Estimating)	+3.6	+7.0
Adjustment for prior year escalation (Estimating)	0.0	+0.1
(2) Procurement		
Revised Jan 86 economic escalation indices (Economic)	-	-77.5
Add 37 missiles to increase pipeline and OTLP	+29.6	+65.8
Addition of 37 GLCMs. (Quantity)	(+26.1)	(+58.1)
Engineering changes applicable to 37 GLCMs since baseline. (Engineering)	(+.3)	(+.6)
Estimating changes applicable to 37 GLCMs since baseline. (Estimating)	(+3.2)	(+7.1)
Rephase/fund FY87 TELs/LCCs to earlier years to support Regency Net Retrofit and deployment requirements (Schedule)	-	-8.9
Reestimate of support requirements (Support)	-18.2	-39.5
Reestimate of FY85 Adv Proc (Estimating)	+3.3	+6.6
Reestimate of ECO funds, transferred to RDT&E for OTLP (Estimating)	-3.1	-7.0
Reestimate of ECO funds due to Congressional reduction for general, undistributed budget (Estimating)	-17.6	-37.8
Reduction due to dual source competition savings (Estimating)	-5.4	-11.4
Reduction of classified prog funds (Estimating)	-0.6	-2.0
Adjustment for prior year escalation (Estimating)	+13.7	+35.8
Adjustments to refine the mix of previous support and estimating categories primarily related to the impact of escalation on current and prior years.	0.0	0.0
Amount to be taken from support to balance to proper mix. (Support)	(-25.7)	(-60.3)
Amount to be added to estimating to balance to proper mix. (Estimating)	(+25.7)	(+60.3)

13. c. (U)Current Change Explanation (cont'd)--

(3) MILCON

Revised Jan 86 economic escalation indices (Economic)	-	-2.6
Reestimate of requirements in FY86-88 (Estimating)	-1.4	-1.2
Adjustment for prior year escalation (Estimating)	+0.5	+1.0

d. (U) References--

Development Estimate: January 1978 Five Year Defense Plan (FYDP)

14. (U) Program Acquisition Unit Cost (PAUC) History: (TY $ in millions)

Initial SAR/Development Estimate to Current Estimate --

PAUC (Initial SAR/Dev Est)	Changes								PAUC (Cur Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.175	0.519	0.082	0.230	0.103	1.858	0.221	0.915	3.928	6.103

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

a. (U) RDT&E -- NA
b. (U) Procurement -- Two contracts have been dropped this report due to being completed: N00019-83-C-3323 (FY82/83 WCS)
N00032-83-C-3263 (FY82 AUR)

All-Up-Round Missile (FY84)

General Dynamics/Convair, San Diego CA
N00032-83-C-3339, FFP
Award: 15 Mar 84
Definitized: 15 Mar 84

Initial Contract Price		
Target	Ceiling	Qty
187.2	NA	208

Estimated Price at Completion	
Contractor	Program Mgr
189.4	189.4(Ch-1)

Current Contract Price		
Target	Ceiling	Qty
189.4(Ch-1)	NA	208

Cost Variances: NA

(Ch-1) Change due to: definitization of contract mods; replacing SLCM radar altimeter antenna.

All-Up-Round Missile (FY85)

General Dynamics/Convair, San Diego CA
N00032-84-C-4484,FFP
Award: 19 Dec 84
Definitized: 19 Dec 84

Initial Contract Price		
Target	Ceiling	Qty
164.2	NA	180

Estimated Price at Completion	
Contractor	Program Mgr
253.2	253.2(Ch-1)

Current Contract Price		
Target	Ceiling	Qty
253.2(Ch-1)	NA	180

Cost Variances: NA

(Ch-1) Change due to: procuring Recovery Exercise Modules and Range Safety Systems; increased long-lead funding; ST&TE liquidation; various ECPs.

All-Up-Round Missile (FY85)

McDonnell Douglas, St Louis MO
N00032-84-C-4485,FFP
Award: 19 Dec 84
Definitized: 19 Dec 84

Initial Contract Price		
Target	Ceiling	Qty
176.7	NA	120

Estimated Price at Completion	
Contractor	Program Mgr
245.4	245.4(Ch-1)

Current Contract Price		
Target	Ceiling	Qty
245.4(Ch-1)	NA	120

Cost Variances: NA

(Ch-1) Change due to: Exercising contract options for guidance sets and TLAM/C variants; implementation of SLCM vertical launch capability; increased long-lead funding; ST&TE liquidation; various ECPs.

15. (U) Contract Information (cont'd): (Then Year Dollars in Millions)

Weapon Control System (FY85)

McDonnell Douglas, St Louis MO
N00032-84-C-4266,FFP
Award: 1 Jul 85
Definitized: 1 Jul 85

Current Contract Price

Target	Ceiling	Qty
108.5	NA	50

First time reporting.

Initial Contract Price

Target	Ceiling	Qty
108.5	NA	50

Estimated Price at Completion

Contractor	Program Mgr
108.5	108.5

Cost Variances: NA

Launch Equipment (FY84)

General Dynamics/Convair, San Diego CA
N00032-84-C-4120,FFP
Award: Mar 84
Definitized: Mar 84

Current Contract Price

Target	Ceiling	Qty
157.5(Ch-1)	NA	48

Initial Contract Price

Target	Ceiling	Qty
111.5	NA	48

Estimated Price at Completion

Contractor	Program Mgr
139.9	139.9(Ch-1)

Negotiated/Undefinitized price.

Cost Variances: NA

(Ch-1) Change due to: inclusion of the System Engineering/Project Management (SE/PM) letter contract; decrease due to definitization of GLCM System Test Sets (GSETS).

Launch Equipment (FY85)

General Dynamics/Convair, San Diego CA
N00032-84-C-5154,FFP
Award: Jan 85
Definitized: Jan 85

Current Contract Price

Target	Ceiling	Qty
156.6	NA	49

First time reporting.

Initial Contract Price

Target	Ceiling	Qty
156.6	NA	49

Estimated Price at Completion

Contractor	Program Mgr
156.6	156.6

Cost Variances: NA

c. (U) MILCON -- NA

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

a. Program Status --

(1) Percent Program Completed: 81.8% (9 yrs/11 yrs)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 91.5% ($3360.0/$3673.9)
(Funds Appropriated To Date in Millions/Total Program Funding in Millions)

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

Appropriation	Current $ Prior Yrs (FY78-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	383.7	7.4	--	--	391.1
Procurement	2683.7	141.4	57.8	--	2882.9
MILCON	292.6	61.7	45.6	--	399.9
Total	3360.0	210.5	103.4	--	3673.9

c. Annual Summary --

Fiscal Year	Qty	FY77 Base Year Dollars			Then Year Dollars			Escl Rate (%)
		Flaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1978	5	NA	NA	16.9	NA	NA	18.7	7.6
1979	0	NA	NA	28.8	NA	NA	34.9	8.4
1980	0	NA	NA	44.2	NA	NA	59.4	9.4
1981	0	NA	NA	72.2	NA	NA	107.6	11.9
1982	0	NA	NA	50.1	NA	NA	80.1	9.2
1983	0	NA	NA	16.6	NA	NA	27.6	4.9
1984	0	NA	NA	20.9	NA	NA	36.1	3.8
1985	0	NA	NA	10.4	NA	NA	18.6	3.6
1986	0	NA	NA	0.4	NA	NA	0.7	3.2
1987	0	NA	NA	3.8	NA	NA	7.4	4.1
Subtotal	5	NA	NA	264.3	NA	NA	391.1	

16. (U) Program Funding Summary (cont'd): (TY $ in Millions)

c. Annual Summary --

Fiscal Year	QTY	FY77 Base Year Dollars			Then Year Dollars			Escl Rate (1) (%)
		Flaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: Procurement								
1979	0	0.0	0.0	15.2	20.2	0.0	20.2	8.7
1980	0	0.0	0.0	5.4	8.2	0.0	8.2	9.7
1981	11	7.9	42.0	95.4	13.9	-28.4	164.1	11.9
1982	54	6.7	126.8	195.0	29.8	-13.9	350.5	9.6
1983	84	5.6	196.0	241.8	21.5	-29.8	455.4	9.0
1984	120	6.2	237.2	303.7	23.0	-21.5	592.0	8.0
1985	120	3.1	241.3	284.8	21.5	-23.0	576.9	4.1
1986	95	2.8	204.6	243.9	9.4	-21.5	516.4	4.1
1987	76	1.7	60.3	63.4	4.6	-9.4	141.4	4.1
1988	37	0.0	27.0	24.9	0.0	-4.6	57.8	3.9
Subtotal	597	34.0	1135.2	1473.5	152.1	-152.1	2882.9	
Appropriation: MILCON								
1981	NA	NA	NA	2.3	NA	NA	3.8	11.9
1982	NA	NA	NA	43.2	NA	NA	74.5	9.2
1983	NA	NA	NA	42.3	NA	NA	75.0	4.9
1984	NA	NA	NA	40.7	NA	NA	74.5	3.8
1985	NA	NA	NA	10.0	NA	NA	19.0	3.6
1986	NA	NA	NA	23.2	NA	NA	45.8	3.2
1987	NA	NA	NA	29.9	NA	NA	61.7	4.1
1988	NA	NA	NA	21.5	NA	NA	45.6	3.9
Subtotal	NA	NA	NA	213.1	NA	NA	399.9	
Total	602	85.9	1169.3	1950.9	152.1	-152.1	3673.9	

(1) Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures --

Fiscal Year	Then Year Dollars (Current Estimate in Millions) Total	Obligated (1)	Expended (1)
Appropriation: RDT&E			
1978	18.7	18.7	18.7
1979	34.9	34.9	34.6
1980	59.4	59.4	59.4
1981	107.6	107.6	107.6
1982	80.1	79.9	78.8
1983	27.6	27.2	22.1
1984	36.1	35.6	13.7
1985	18.6	6.7	2.3
1986	.7	.3	.2
To Complete	7.4	NA	NA
Total	391.1	370.3	337.4
Appropriation: Procurement			
1979	20.2	20.2	19.3
1980	8.2	8.2	7.2
1981	164.1	164.0	145.8
1982	350.5	344.5	304.0
1983	455.4	445.4	400.7
1984	592.0	496.1	360.8
1985	576.9	419.6	86.6
1986	516.4	1.4	0.0
To Complete	199.2	NA	NA
Total	2882.9	1899.4	1324.4
Appropriation: MILCON (2)			
1981	3.8	3.8	3.8
1982	74.5	60.3	47.7
1983	75.0	39.8	21.5
1984	74.5	32.9	11.4
1985	19.0	10.3	5.0
1986	45.8	0.0	0.0
To Complete	107.3	NA	NA
Total	399.9	147.1	89.4

(1) Reflects Program Office records as of 21 January 1986.
(2) Reflects Air Staff records as of 30 November 1985.

17. (U) Production Rate Data:

a. Annual Production Rates -- (Note: The max prod rate shown below is not currently attained due to the participation of other customers in production program.)

Fiscal Year	Production Rates (Quantity/Year) Development Estimate	Production Estimate	Current Estimate	Maximum
1980	45	--	--	--
1981	120	11	11	11
1982	120	54	54	54
1983	120	120	84	84
1984	120	120	120	120
1985	120	120	120	120
1986	51	120	95	95
1987	--	15	76	113
1988	--	--	37	--

b. Cost Variance -- Dollars in Millions (Note: The costs associated with the max prod rates are subject to the limitations noted in "a." above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less MAX)	MAX
Prog Acq Cost					
(BY$)	1780.0	+170.9	1950.9	+4.9	1946.0
(TY$)	3307.3	+366.6	3673.9	+9.2	3664.7
PAUC (BY$)	3.150	+.091	3.241	+.008	3.233
(TY$)	5.854	+.249	6.103	+.015	6.088

c. Schedule Variance -- (Note: Subject to the limitations on production rates above.)

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less MAX)	MAX
(1)					
Start Date (Mo/Yr)	4/82	NA	4/83	NA	4/83
Duration (In Mos)	61	+16	77	+10	67
End Date (MO/Yr)	5/87	NA	9/89	NA	11/88

(1) Start Date is the first month delivered; end date is last month delivered.

d. Deliveries (Plan/Actual) --

	To Date
RDT&E:	5/5
Procurement:	
All-Up-Round	239/235
TEL	67/64
LCC	35/35
MILCON	NA

18. (U) Operating and Support Costs: NA

A-13 MLRS

~~CONFIDENTIAL~~

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: MULTIPLE LAUNCH ROCKET SYSTEM (MLRS) 85-029

AS OF DATE: December 31, 1985

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Concur in Classification as marked
18 MAR 1986
SECURITY REVIEW, OASDI, HQDA

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

5

AS AMENDED pp 2, 5, 6, 12 pen markings pp 16, 20, 21, 22

1. (U) Designation/Nomenclature (Popular Name): HC/Armored Vehicle - Mounted Rocket Launcher: M270 (Multiple Launch Rocket System (MLRS))

2. (U) DoD Component: Department of the Army

3. (U) Responsible Office and Telephone Number:

MLRS Project Office
Program Management Division
Redstone Arsenal, AL 35898-5700

PM: COL Nicholas Hurst
Assigned: 7 January 1985
AUTOVON: 746-1195
Commercial: 205-876-1195

4. (U) Program Elements:

RDT&E: PE 6431A, Proj D564
PROCUREMENT: PE 2032 SSN C67600/CA0257
MILCON: Project Codes (FY87 and FY88) 553, 554, 555.

5. (U) Related Programs: M77 Munitions, Bradley Fighting Vehicle, Battery Computer System, TACFIRE, 10-Ton Truck/Trailer, Scatterable Mine Warhead (German development), Terminal Guidance Warhead, Field Artillery Meteorological Data System, Test Set AN/USM-410, Binary Chemical Warhead, and Army Tactical Missile System.

~~CLASSIFIED BY: MLRS with XM77 Warhead Security Classification Guide dated December 1984~~
~~DECLASSIFY BY: 31 Dec 1990~~

86 0726

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UNCLASSIFIED WHEN SEPARATED FROM CLASSIFIED ENCLOSURE

6. (U) Mission and Description:

a. (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 with a dual-purpose improved conventional submunition warhead will provide an all-weather, indirect fire capability to attack the enemy's indirect fire weapons, air defense systems, and light materiel and personnel targets, especially during surge conditions when the threat's forces present targets in sufficient quantities and density to saturate available cannon weapon fire support. The system has the growth potential to adapt follow-on warheads such as terminal homing munitions, scatterable antitank mines, and chemical.

b. (U) The system consists of a self-propelled launcher loader (SPLL), two disposable pods containing six rockets each, fire control system, and an azimuth/position reference unit. Rockets 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. The carrier is a derivative of the Bradley Fighting Vehicle (BFV) which uses the same engine, transmission, and other mechanical systems. The carrier, when configured for MLRS, is designated M993.

(b)(1)

AS AMEN

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

(1) (U) The Department of the Army (DA) approved a letter of agreement (LOA) for MLRS in September 1975. The Defense System Acquisition Review Council I (DSARC I) was held in January 1977 with a decision that MLRS would enter validation with two competitive contractors and an option to later enter maturation/low rate production (LRP) with either one or two primes. The validation phase consisted of competitive development contracts signed in September 1977 with Boeing, Seattle and Vought, Dallas for 29 months competitive development efforts. This phase was extended to a 32-month effort with the Secretary of the Army authorization in January 1978 to incorporate design changes so that the MLRS could 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 successfully completed on schedule, within cost, and within DCP development test (DT)/operational test (OT) thresholds. The DSARC III held in May 1980 gave approval for MLRS to proceed into maturation/LRP with Vought as the prime contractor. Contracts were signed

with Vought Corporation in April 1980 for continued development/maturation, LRP, and initial production facilitization. This was a 35-month phase leading to a full-scale production decision in March 1983. The terminal guidance warhead and binary chemical warhead follow-on programs were initiated with approved LOA's October 1980 and March 1981, respectively.

(2) (U) A General Officer Program Review (GOPR) conducted in March 1983 led to a full-scale production decision in April 1983. MLRS was also type classified Standard in April 1983. The initial operational capability (IOC) MLRS battery was fielded in March 1983 at Fort Riley, KS. The first overseas unit was deployed to Europe in September 1983 at Baumholder, Germany. The MLRS multiyear contract was awarded in September 1983 to LTV Aerospace and Defense Company (LTVAD). The contract was a 5-year firm fixed price contract (with economic price adjustment clause) with negotiated two years options (FY88/FY89). The multiyear contract, with options, covers all SPLL's and rockets for the life of the program which were approved at that time.

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

(1) (U) The Comptroller General issued a decision dated 21 December 1984 prohibiting the Army from exercising the MLRS Multiyear Contract (FY85 Option) to provide advance materials without specific enabling legislation. The wording of the enabling legislation was developed by the Army General Counsel's Office and transmitted to the Office of Management and Budget (OMB) from the Deputy Secretary of Defense. The enabling legislative language is included in the Fiscal FY86 DOD Authorization Act. The enabling legislation allowed execution of the FY85 procurement obligation plan for the $56.6M advance materials.

(2) (U) The fly-to-buy (FTB) program is continuing at White Sands Missile Range (WSMR). However, lot acceptance is behind schedule due to several reliability problems primarily associated with the forward tube covers on the launch pod containers (LP/C's). A failure analysis of the tube cover problem was conducted by U.S. Army Missile Command and LTV Aerospace and Defense Company (LTVAD). The analysis resulted in an engineering change proposal (ECP) which modified the front end covers. An 18-round flight test with modified tube covers was conducted on 11 October 1985 and demonstrated a successful modification that appears to reduce tube cover failures. Tests of the modified covers were also conducted at ambient, hot, and cold temperatures on 21 and 30 October, and 7 November 1985 respectively. All tests were successful and the modified design was released to full production and modification of all unaccepted and follow-on lots for delivery. Production deliveries are expected to be back on schedule in March 1986.

(3) (U) MLRS fieldings are being accomplished on schedule. Seven batteries were fielded in FY85 (CONUS-4; Europe-3). These fieldings included the first pure MLRS battalions fielded in CONUS (Fort Sill) and USAEUR (Wertheim).

(4) (U) The FY 1987 President's Budget includes an additional 143 SPLL's for the current DA MLRS/LANCE fielding schedule for Deep Attack capability.

(5) (U) Present data available indicate that all mission requirements can be achieved.

c. (U) Changes Since "As of" Date -- None.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches:

(U) There are currently no DCP (dated 15 May 1979) or SDDM (dated 14 April 1983) threshold breaches.

9. (U) Schedule:

a. (U) Milestones --	Planning Estimate/ Approved Program	Current Estimate
DSARC I	Jan 77/Jan 77	Jan 77
Validation Contract Awards (2)	Sep 77/Sep 77	Sep 77
DT/OT I (Government)		
Start	Nov 79/Nov 79	Nov 79
Complete	Feb 80/Feb 80	Feb 80
DSARC IIIa	May 80/May 80	May 80
Maturation Contract Award	May 80/May 80	Apr 80
Low Rate Production Contract Award	May 80/May 80	Apr 80
Initial Production Delivery		
(Rocket)	Jan 82/Jan 82	May 82
(SPLL)	Feb 82/Feb 82	Aug 82
Production Qualification Test		
Start	Jan 82/Jan 82	May 82
Complete	Sep 82/Sep 82	Feb 83
OT III		
Start	Jun 82/Jun 82	Oct 82
Complete	Sep 82/Sep 82	Mar 83
ASARC IIIb	Nov 82/ N/A	NA
DSARC IIIb	Nov 82/NA	NA
GOPR	NA/ Mar 83	Mar 83
Initial Operational Capability (IOC) (nine launchers fielded with 60 rockets per launcher)	Nov 82/Nov 82	Mar 83

b. (U) Previous Change Explanations --

(1) (U) The maturation and LRP contracts were awarded 1 month earlier than planned. The schedule variances for milestones Initial Production Delivery through IOC are due to the FMC strike which resulted in a 4 month slip in the MLRS program schedule.

(2) (U) Army delegated management review authority of MLRS. ASARC IIIa downgraded to a GOPR, which satisfied Milestone IIIa requirements.

(3) (U) Schedule Milestone Initial SPLL Delivery was 1 month later than planned due to problems encountered with production start-up.

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

d. (U) References --

Planning Estimate: DCP No. 165, 15 May 1979.

Approved Program: SDDM, 7 August 1980, subject: Decision Memorandum on Multiple Launch Rocket System (MLRS) DSARC III. Memorandum, Secretary of the Army, 14 April 1983, subject: System Acquisition Decision Memorandum---Multiple Launch Rocket System (MLRS) General Officer Program Review, 3 March 1983.

10. (U) Technical/Operational Characteristics:

	Plng Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. (U) Technical --			
(b)(1) AS AMENDED			
b. (U) Operational --			
(U) Reliability			
Rocket Preflight, Launch, & Inflight	.97/.95 to.97	.94 (CH-1)	.96
Launcher (SPLL)	.92/.88 to .92	.87	.87
Mean Fire Cycle Between Failure (MFCBF)	250/NA	NA	NA
Mean Kilometers Between Failure (MKBF)	750/NA	NA	NA
(U) Maintainability			
SPLL (Mean Time to Repair (MTTR))			
Organizational	1.0/1.0	2.3	2.3
Direct/General Support	4.0/4.0	2.4	2.4
(U) Availability			
Operational	NA/.78	.78	.78
Essential Unscheduled Maintenance Actions Per 1000 Hours of Launcher Module Operation	NA/50	23	23
Percent of Items Removed with no Evidence of Failure	NA/7%	7.2%	7%
(b)(1) AS AMENDED			

c. (U) Previous Change Explanations --

(b)(1)

(2) (U) Demonstrated performance data based upon DT/OT III results. System accuracy changed from 7.5 to 9.0 based on test data acquired through 1984.

d. (U) Current Change Explanations -- (CH-1): (.95 to .94) The value of .95 was inadvertently reported in the last SAR. Demonstrated performance based on DT/OT III was .94.

e. (U) References --

Planning Estimate: Draft DCP, 15 May 1979.

Approved Program: Secretary of Defense Decision Memorandum, 7 August 1980, subject: Decision Memorandum on Multiple Launch Rocket System (MLRS) DSARC III. Memorandum, Secretary of the Army, 14 April 1983, subject: System Acquisition Decision Memorandum -- Multiple Launch Rocket System (MLRS) General Officer Program Review, 3 March 1983.

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Planning Estimate	Changes	Current Estimate
a. (U) Cost --			
Development (RDT&E) 1/	261.0	+6.1	267.1
Procurement	1,971.3	-99.5	1871.8
M77	(1,624.6)	(-430.1)	(1194.5)
Practice Rounds	(97.9)	(-20.5)	(77.4)
SPLL	(118.9)	(+379.1)	(498.0)
Total Flyaway	(1,841.4)	(-71.5)	(1769.9)
Other Weap Sys Cost	(123.0)	(-107.0)	(16.0)
Initial Spares	(6.9)	(+79.0)	(85.9)
Construction (MILCON)	0	+44.3	44.3
Total FY78 Base Year $	2,232.3	-49.1	2183.2
Escalation	1,221.7	+841.3	2063.0
Development (RDT&E)	(39.2)	(+28.5)	(67.7)
Procurement	(1,182.5)	(+770.7)	(1953.2)
Construction (MILCON)	(0)	(+42.1)	(+42.1)
Total Then-Year $	3,454.0	+792.2	4246.2

1/ Does not include $37.6 (escalated) funding by MOU participants.

11. (U) Program Acquisition Cost (Cont'd)

	Planning Estimate	Changes	Current Estimate
b. (U) Quantities --			
Development (RDT&E)			
Rounds	654	-150	504
SPLL	10	0	10
Procurement			
M77 Rounds	362,832	0	362,832
Practice Rounds	27,648	0	27,648
SPLL	173	+318	491
Total			
Rounds	391,134	-150	390,984
SPLL	183	+318	501
c. (U) Unit cost --			
Procurement:			
M77 Rd: FY78 Base Year $	0.004	-0.001	0.003
Then-Year $	0.007	-0-	0.007
Pract Rd: FY78 Base Year $	0.004	-0.001	0.003
Then-Year $	0.006	-0-	0.006
SPLL: FY78 Base Year $	1.388	-0.178	1.210
Then-Year $	1.931	+0.433	2.364
Program (per SPLL):			
FY78 Base-Year $	12.2	-7.8	4.4
Then-Year $	18.9	-10.4	8.5

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

(Average Unit Flyaway Cost)

		Plng Estimate (FY78 $)	Approved Program (FY 80 $)	Current Estimate (FY 80 $)	Latest Approved Threshold (FY80 $)
Qty Total:	M77 Rd 362,832 / Pract Rd 27,648 / SPLL 393				
Peak Rate:	6,000 / 330 / 10				
M77 Rd:	FY78 Base-Year $	4,477	4,726	4010	6843
	Then-Year $	7,838	8,273	6863	
Pract Rd:	FY78 Base-Year $	3,539	2,714	3411	
	Then-Year $	6,221	4,771	5812	
SPLL:	FY78 Base-Year $	687,387	1,249,469	1,235,438	1,499,000
	Then-Year $	1,089,289	1,980,052	1,969,450	

e. (U) Foreign Military Sales -- Sales to date to co-development partners, Netherlands, NATO Maintenance and Supply Agency (NAMSA) and Special Defense Acquisition Fund (SDAF) equal $72,844,275.

f. (U) Nuclear Costs -- None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate (FY 1986)	UCR Baseline Estimate (FY 1986)	UCR Baseline Estimate (FY 1987)
a. (U) Program Acquisition --			
(1) Cost	4246.2	4118.6	4246.2
(2) Quantity	501	358	501
(3) Unit Cost	8.5	11.5	8.5
b. (U) Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	539.9	569.4	491.3
Less CY Adv Proc	- 41.0	- 41.0	0.0
Plus PY Adv Proc	+ 71.7	+ 71.7	+ 67.8
Net Total	570.6	600.1	559.1
(2) Quantity	44	44	44
(3) Unit Cost	13.0	13.6	12.7

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	+300.2	+3153.8	0	+3454.0
Previous Changes:				
Economic	+ 18.2	+ 904.9	+ 4.4	+ 927.5
Quantity	-	+ 180.4	-	+ 180.4
Schedule	-	- 2.0	-	- 2.0
Engineering	-	-	-	-
Estimating	+ 6.9	- 473.6	+83.8	- 382.9
Other	+ 9.5	+ 9.1	-	+ 18.6
Support	-	- 77.0	-	- 77.0
Subtotal	+ 34.6	+ 541.8	+88.2	+ 664.6
Current Changes:				
Economic		- 116.3	- 1.7	- 118.0
Quantity		+ 323.1		+ 323.1
Schedule				
Engineering				
Estimating		- 145.0	- 0.1	- 145.1
Other				
Support		+67.6		+67.6
Subtotal	0	+ 129.4	- 1.8	+ 127.6
Total Changes	+34.6	+ 671.2	+86.4	+ 792.2
Current Estimate	334.8	3825.0	86.4	4246.2

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

(FY 1978 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	261.0 1/	1971.3	0	2,232.3
Previous Changes:				
Quantity	-	+ 90.7	-	+ 90.7
Schedule	-	-27.5	-	-27.5
Engineering	-	-	-	-
Estimating	+3.2	- 224.9	+44.7	-177.0
Other	+3.5	+6.5	-	+10.0
Support	-	-50.7	-	-50.7
Subtotal	+6.7	-205.9	+44.7	-154.5
Current Changes:				
Quantity		+141.6		+141.6
Schedule				
Engineering				
Estimating	-0.6	-65.4	-0.4	-66.4
Other				
Support		+30.2		+30.2
Subtotal	-0.6	+106.4	-0.4	+105.4
Total Changes	+6.1	-99.5	+44.3	-49.1
Current Estimate	267.1	1871.8	44.3	2183.2

1/ Adjusted by $+.7M to reflect true FY78 Constant (Base Year) Dollars.

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices through January 1985.

Estimating: Increase in cost based on validation phase (VP) program; deletion of RDTE effort funded by MOU contribution; adjustment in prior year escalation and deletion of anticipated reprogramming. Residual RDTE requirements resulting from operational testing and development of test program sets for system automatic test equipment. Conversion of prior base year dollars to base year and cost growth on finalization of R&D contract.

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

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

Procurement

Economic: Revised escalation indices through January 1985.

Quantity: + 103 SPLL's for force structure changes; + 57 SPLL's for POMCUS; + 60 SPLL's for POMCUS, net reduction of 45 SPLL's in FY 1986 President's Budget

Schedule: Restoration of production rate; establishment of multiyear procurement.

Estimating: Revised round and SPLL cost based on VP program. Revised cost estimate for maturation phase changes to LRP 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.

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

Support: Refinement of funding requirement for initial spares.

MILCON

Estimating: Addition of MCA funding requirements to SAR reporting; revised estimate, increase in construction requirements.

c. (U) Current Change Explanations --

(Dollars in Millions)

		Base-Year	Then-Year
(1)	RDT&E		
	Revised January 1986 Economic escalation rates. (ECONOMIC)	N/A	0
	Correction of previous error in deescalating from escalated to base year dollars (ESTIMATING)	-0.6	0
(2)	Procurement		
	Revised February 1986 economic escalation rates. (ECONOMIC)	N/A	-116.3

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

c. (U) Current Change Explanations --

(Dollars in Millions)

	Base-Year	Then-Year
Addition of 143 SPLL's for expanded MLRS force structure. (QUANTITY)	+141.6	+323.1
Reduction in cost of submunitions and revised escalation forecast for multiyear contract EPA clause. (ESTIMATING)	-65.4	-145.0
Addition of initial spare to support additional SPLL's. (SUPPORT)	+30.2	+67.6
(3) MILCON Revised January 1986 economic escalation rates. (ECONOMIC)	N/A	-1.7
Refinement of MILCON requirements (ESTIMATING)	-0.4	-0.1

d. (U) References -- DCP, No. 165, 15 May 1979.

14. (U) Program Acquisition Unit Cost (PAUC) History:

(U) Planning Estimate to Current Estimate

PAUC (Planning Est)	Changes (Then Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
$18.9	+1.615	-10.978	-.004	-	-1.054	-.016	+ .037	-10.4	$8.5

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

a. (U) RDTE -- Contracts complete.

b. (U) Procurement --

Initial Production Facilities	Initial Contract Price Target	Ceiling	Qty
LTV Aerospace & Defense Co., Dallas, TX DAAH01-80-C-0679, (FY82 Buy),CPIF Award: 27 October 1981 Definitized: 6 January 1984 (final submission since effort is over 93 percent complete.)	$ 12.0	N/A	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$12.1	N/A	N/A	$ 17.8	$17.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-6.6	$-2.0
Cumulative Variances To Date (10/27/85)	$-7.1	$-0.7
Net Change	$-0.5	$+1.3

Explanation of Change: Performance data reflects the contract is 93 percent complete. The cost variance is due to continued growth experienced for tooling equipment to load motors, fabricate launch tubes, and the retrofit of equipment to enhance productivity to meet the required production rate. Improvement in schedule variance reflects receipt of high rate tooling. Impact of the above is included in the PM's estimate.

SPLL's/RP/C's-Tact/Prac	Initial Contract Price Target	Ceiling	Qty
LTV Aerospace & Defense Co., Dallas, TX DAAH01-80-C-0681, (FY83 Buy), FPI, Award: 5 November 1982 Definitized: 9 October 1984 (final submission since effort is 100 percent complete.)	$189.1	$208.6	72/3711/503

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$189.1	$ 208.8	72/3711/503	(b)(4)	

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.2	$-1.7
Cumulative Variances To Date (10/27/85)	$-7.0	$+0.2
Net Change	$-5.8	$+1.9

Explanation of Change: The contract is 100 percent complete. The cost variance is due to delay in release of Stammets machine to production which necessitated procurement of motor case machining; late availability of fuzes; and increased overhead costs due to actual rates higher than negotiated. Improvement in schedule variance reflects delivery of hardware. Impact of the above is included in the PM's estimate. Difference in PM's and contractor's estimate at completion is that the PM's estimate considers anticipated reductions due to contract close-out.

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

b. (U) Procurement (Cont'd) --

SPLL's/RP/C's/Tact/Prac		Initial Contract Price Target	Ceiling	Qty
LTV Aerospace & Defense Co., Dallas, TX	MYP-1	$ 89.9	N/A	0/229/110
DAAH01-83-C-A107, FFP	MYP-2	$415.0	N/A	76/6000/658
Award: September 1983	MYP-3	$260.3	N/A	44/8412/658
Definitized: September 1983	MYP-4	$294.7	N/A	29/12000/658

	Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
MYP-1	$ 89.8	N/A	0/229/110	$ 89.8	$ 89.8
MYP-2	416.4	N/A	76/6000/658	416.4	416.4
MYP-3	317.3	N/A	44/8412/658	317.3	317.3
MYP-4	294.7	N/A	29/12000/658	294.7	294.7

Firm fixed price contract. Cost and schedule variances are not applicable.

Test Program Sets	Initial Contract Price Target	Ceiling	Qty
LTV Aerospace & Defense Co., Dallas, TX	$ 7.6	$ 8.4	303
DAAH01-84-C-1022, FPI,			
Award: September 1984			
Definitized: September 1984			

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$ 7.6	$ 8.5	265	$ 7.5	$ 7.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 0.0	$ 0.0
Cumulative Variances To Date (10/27/85)	$-0.2	$-1.9
Net Change	$-0.2	$-1.9

Explanation of Change: The contract is 47 percent complete. The schedule variance was caused by delays in manpower build-up and priority given to completion of effort on TPS 1 (BOA contract). The cumulative to date cost variance is attributed to delayed start-up of effort and increased training of Camden personnel. No impact to program schedule or cost is anticipated.

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

a. (U) Program Status --

(1) (U) Percent Program Completed: 75% (12 yrs/16 yrs)

(2) (U) Percent Program Cost Appropriated: 66.9% ($2842.5/$4246.2)

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

b. (U) Appropriation Summary --

Appropriation	Current + Prior Yrs (FY76-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP	TOTAL
RDT&E 1/	334.8	0	0	0	334.8
Procurement	2439.7	491.3	894.0	0	3825.0
MILCON	75.2	4.4	6.8	0	86.4
TOTAL	2849.7	495.7	900.8	0	4246.2

1/ Does not include $37.6 (escalated) funding by MOU participants.

c. (U) Annual Summary --

Fiscal Year	Qty Rnds/ SPLL's	FY Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl Rate (%)
Appropriation: RDT&E								
1976				1.1			1.0	6.6
1977				0.4			0.4	2.9
1977				7.1			6.9	2.6
1978				44.4			46.4	7.0
1979				61.9			70.9	8.4
1980				53.7			67.8	9.4
1981				50.9			70.0	11.9
1982				27.4			40.2	7.6
1983				17.0			26.1	4.9
1984				2.0			3.2	3.8
1985				1.2			1.9	3.6
Subtotal	504/10			267.8			334.8	

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

c. (U) Annual Summary (Continued)--

Fiscal Year	Qty Rnds/ SPLL's	FY Base-Year Dollars: Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars: Advance Proc Debit	Advance Proc Credit	Total	Escl Rate (%)
Appropriation: Procurement 1/								
1980	1374/ 12	14.2	32.0	47.4			67.3	9.7
1981	2340/ 32	15.5	56.1	73.4			117.5	11.9
1982	2496/ 68	9.9	89.4	111.5			197.2	14.3
1983	23640/ 72	7.7	205.9	235.4	53.2		444.4	9.0
1984	36000/ 44		267.3	278.6	114.1	11.7	544.4	8.0
1985	50472/ 44		249.5	260.7	137.4	55.2	529.0	4.1
1986	72000/ 44		241.2	253.0	41.0	71.7	539.9	4.1
1987	72000/ 44		217.0	222.7		67.8	491.3	4.1
1988	72000/ 44		213.5	226.7		82.7	514.9	3.9
1989	30510/ 44		138.1	147.4		56.6	343.4	3.4
1990	0/11		11.0	13.4			31.8	2.9
1991	0/0		1.6	1.6			3.9	2.3
Sub-total	362832/ 491	47.3	1722.6	1871.8	345.7	345.7	3825.0	

1/ Includes initial spares.

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

c. Annual Summary (Cont'd) --

Fiscal Year	Qty	FY Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: MILCON								
1982				11.5			20.4	7.6
1983				14.1			26.6	4.9
1984				3.4			6.7	3.8
1985				4.6			9.4	3.6
1986				5.7			12.1	3.2
1987				2.0			4.4	4.1
1988				1.5			3.4	3.9
1989				1.5			3.4	3.4
Subtotal				44.3			86.4	
Total				2183.2			4246.2	

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1976	1.0	1.0	1.0
1977	0.4	0.4	0.4
1977	6.9	6.9	6.9
1978	46.4	46.4	46.4
1979	70.9	70.9	70.9
1980	67.8	67.8	67.4
1981	70.0	70.0	70.0
1982	40.2	40.0	39.8
1983	26.1	26.1	25.3
1984	3.2	3.2	2.6
1985	1.9	1.9	0.5
Total	334.8	334.6	331.2

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

d. (U) Obligations and Expenditures (Cont'd) --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: Procurement 1/		
1980	67.3	65.4	65.3
1981	117.5	114.3	113.6
1982	197.2	173.7	173.1
1983	444.4	420.9	344.3
1984	544.4	516.0	360.1
1985	529.0	478.5	15.2
1986	539.9	371.4	0
To Complete	1385.3	-	-
Total	3825.0	2140.2	1071.6

1/ Obligated and expended amount exclude initial spares.

	Appropriation: MILCON		
1982	20.4		
1983	26.6		
1984	6.7		
1985	9.4		
1986	12.1		
To Complete	11.2		
Total	86.4		

17. (U) Production Rate Data:

a. (U) Annual Production Rates (SPLL) --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum 2/
1980	36	12	12	36
1981	48	32	32	48
1982	68	68	68	68
1983	72	72	72	72
1984	76	76	44	76
1985	48	44	44	48
1986	70	29	44	48
1987		0	44	48
1988		33	44	48
1989		27	44	48
1990			11	66
1991				

17. (U) Production Rate Data: (cont'd)

a. (U) Annual Production Rates (M77 Rounds) --

Fiscal Year	Production Rates (Quantity/Year)			
	Planning Estimate	Production Estimate	Current Estimate	Maximum
1980	1832	1374	1374	1832
1981	2552	2340	2340	2552
1982	3328	2496	2496	3328
1983	21821	23640	23640	21821
1984	33230	36000	36000	33230
1985	50472	50472	50472	50472
1986	72000	72000	72000	72000
1987	72000	72000	72000	72000
1988	72000	72000	72000	72000
1989	61020	30510	30510	61020 2/
1990				
1991				

2/ Maximum economical rate for the quantities being procured, unless annual procurement quantities could be adjusted.

b. (U) Cost Variance -- Dollars in Millions

Item - SPLL		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	2216.0	-32.8	2183.2	-0-	2183.2
	(TY $)	4302.7	-56.5	4246.2	-0-	4246.2
PAUC	(BY $)	5.5	- 1.1	4.4	-0-	4.4
	(TY $)	10.7	- 2.2	8.5	-0-	8.5

c. (U) Schedule Variance --

Item - SPLL	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	4/80	N/A	4/80	N/A	5/80
Duration (in Months)	92	+14	106	-0-	106
End Date (Mo/yr)	12/87	N/A	2/90	N/A	2/90

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

c. (U) Schedule Variance (Cont'd)

Item - M77 Rounds	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	4/80	N/A	4/80	N/A	4/80
Duration (in Months)	114	0	114	-0-	114
End Date (Mo/yr)	10/90	N/A	10/90	N/A	10/90

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

	To Date
RDT&E	
(U) Rockets	504/470 1/
(U) SPLL	10/10
Procurement	
(U) Tactical Rockets	49110/40830 2/
(U) Practice Rockets	5988/5340 2/
(U) SPLL	223/230

1/ LTV deleted 17 rockets from their program due to cost ceiling placed on contract on 10 April 1979 (validation phase). An additional 17 rockets were deleted from maturation phase in June 1981 due to restructuring of the test program.

2/ Reference paragraph 7.b.(2).

18. (U) Operating and Support Costs: N/A

6 -16- HARM

SAR-85-036

~~(CONFIDENTIAL)~~

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: HARM (AGM-88A)

AS OF DATE: (December 31, 1985)*

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1. Designation/Nomenclature (Popular Name): AGM-88A/High Speed Anti-Radiation Missile (HARM)

2. DoD Component: U. S. Navy

3. Responsible Office and Telephone Number:

Defense Suppression Systems
Program Office
Naval Air Systems Command
Washington, D.C. 20361

PM: CAPT L. E. Kaufman, USN
Assigned: 25 May 83
AUTOVON 222-2137
Commercial: (202) 692-2137

4. Program Elements:
RDT&E: 63313N (W1188, W1189); 63363N (WSH07)
64360N (W0553, W1240); 25601N (W1780)
Procurement: 24162N ICN 302227 APPN: 1507

~~Classified by: OPNAVINST 5513.2A-30~~
~~Review on: OADR~~

(THIS PAGE IS UNCLASSIFIED)

AS AMENDED

APR 2 1986 11

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

~~(CONFIDENTIAL)~~

OASD(PA) DFOISR 86-T-0864

5. Related Programs: The WGU-2A/B/Guidance Section/Low Cost Anti-Radiation Seeker (popular name, HARM Low Cost Seeker or LCS) Program, currently in the full-scale development phase under Naval Weapons Center, China Lake direction, is intended to impact HARM production beginning in FY 1990.

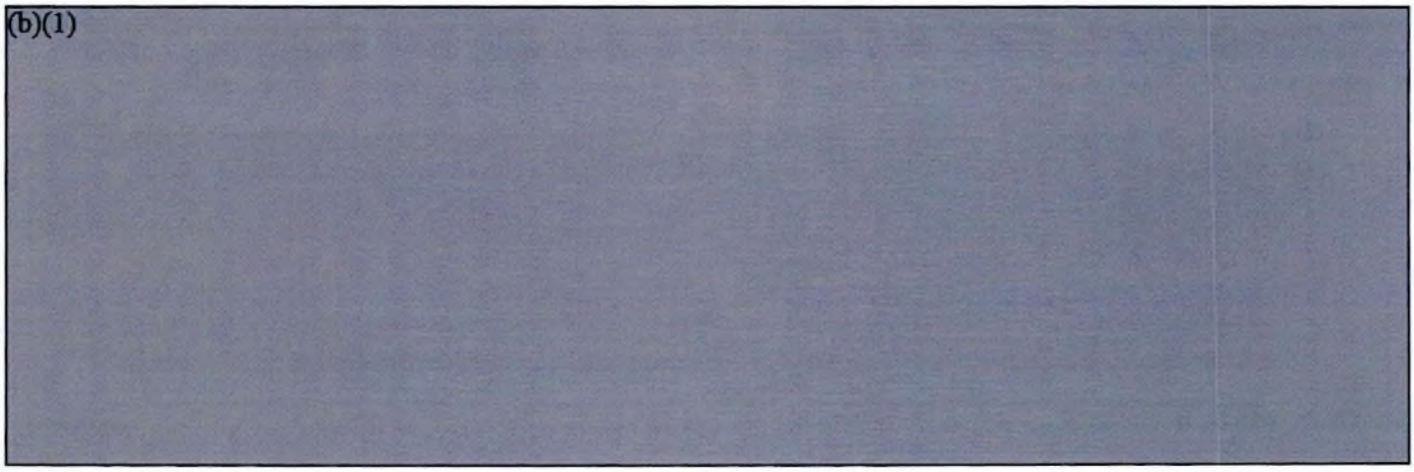
6. Mission and Description: HARM is an air-to-surface missile designed to suppress or destroy land and sea based radars which direct enemy air defense systems. HARM is a design evolution of current ARM weapons (SHRIKE and STANDARD ARM) and is replacing them in the Navy and Air Force inventory. HARM will be integrated on the A-7E, the A-6E, EA-6B, F/A-18, and F-4G aircraft. Performance characteristics include: high speed, large footprint, high sensitivity to weak signals, and software intensity so as to adapt to the constantly changing threat. HARM weighs 807 lbs, is 164 inches long and 10 inches in diameter.

7. (U) Program Highlights:

a. Significant Historical Developments --

(U) DCP 93 dated July 1972 recommended development of the HARM Weapon System. A DSARC I Management Review in October 1972 authorized Advanced Development. In May 1974, Texas Instruments, Dallas, TX, was awarded a contract through a competitive source selection for integration of the weapon system which included some government furnished equipment (GFE). Twenty-nine Advanced Development missiles were tested and all test objectives were met. At a HARM DSARC II in January 1977 the program was directed to remain in Advanced Development to prototype an expanded capability (EXCAP) in frequency and aerodynamic maneuverability. A DSARC IIA in February 1978 directed the HARM program to proceed to Full Scale Engineering Development with the EXCAP version. The engineering development prototype program was successfully completed in October 1980 with thirteen successes in eighteen firings. The Secretary of Defense notified Congress of readiness for production on 8 December 1980.

(b)(1)



a. Significant Historical Developments (Cont'd) --

(U) The results of operational testing together with a plan for bringing on a second production source for HARM were presented to a DSARC III on 30 March 1983. Based on this review the Secretary of Defense on 20 April 1983 approved full-scale production for the HARM missile program, directed a single source acquisition strategy to include implementation of vendor-level competition, and directed that the HARM production program be complemented with an accelerated RDT&E effort to develop a lower cost seeker for HARM, through unconstrained competition. FY 84 Congressional action affirmed the SECDEF position.

(U) FY 81 and FY 82 production deliveries were completed on schedule.

b. Significant Developments Since Last Report --

(U) Development testing (DT-IIIB) conducted jointly by the Navy and Air Force of missile software changes (known as "FY 84 Software Update") made to correct noted operational testing deficiencies was completed. Six of six test firings, two each from the F-4G, F/A-18, and A-7E, were successes and confirmed that all operational testing deficiencies were corrected. The upgrade is being incorporated in FY 84 missiles.

(U) Another block software upgrade (Block III software development) and a hardware change to incorporate reprogrammable memory has been initiated to enhance tactical and update ELINT software and to provide reprogrammability of software in the field without necessitating further hardware changes.

(U) FY 83 production deliveries were completed on schedule. FY 84 production deliveries started in November 1985 and are being delivered ahead of schedule. The FY 85 procurement of 1684 missiles (813 Navy) is on firm contract and negotiations on the FY 86 production contract are nearing completion.

(U) In response to early 1985 congressional direction requiring certification of the HARM weapon system, a complete audit of HARM including teardown of a missile was completed in August 1985. On the basis of this review the Secretaries of the Navy and Air Force certified to the Congress on 31 October 1985 that HARM satisfies the mission requirement.

c. Changes Since "As Of" Date -- None.

8. Decision Coordinating Paper (DCP) Threshold Breaches:

a. (U) DCP 93 was approved on 19 July 1972. It was revised on 10 July 1978 as DCP 93A to reflect the HARM DSARC II guidance and was forwarded to OSD for approval on 30 August 1978. DCP 93 Revision B was forwarded to OSD for approval on 1 December 1982. DSARC III guidance was provided by Secretary of Defense Decision Memoranda of 20 April 1983 and 16 June 1983.

8. Decision Coordinating Paper (DCP) Threshold Breaches (Cont'd)

b. (U) The currently approved design to cost (DTC) threshold is $200K for the flyaway unit cost based upon the average cost in FY78 dollars of the first 5000 missiles produced after the initial production of 80 missiles and according to the production profile established in DCP 93B.

9. Schedule:

a. Milestones -- (U)

	Development Estimate/ Approved Program	Current Estimate
DSARC I	Oct 72/Oct 72	Oct 72
Weapon Systems Integration Contract Award	May 74/May 74	May 74
Contractor Initial Guided Missile Firing	Oct 76/Oct 76	Oct 76
DSARC II	Feb 78/Feb 78	Feb 78
Demonstrate Increased Maneuverability	Feb 79/Feb 79	Feb 79
Prototype Phase DT&E		
Start	Mar 78/Mar 78	Mar 78
Complete	Dec 79/Dec 79	Oct 80
DSARC IIB	Sep 79/Sep 79	Nov 80
NTE		
Start	Apr 80/Feb 81	May 81
Complete	Sep 80/Jun 81	Oct 81
Joint Navy OPEVAL/Air Force IOT&E		
Start	Dec 80/Nov 81	Nov 81
Complete	Jul 81/Apr 82	Nov 82
Initial Production Contract (Definitized)	N/A/N/A	Dec 81
Full-Scale Production Contract (Definitized)	N/A/N/A	Sep 82
DSARC III (Full Rate Production)	Sep 81/Apr 82	Mar 83
Navy IOC (A-7E)	Oct 81/Oct 83	Nov 83
Air Force IOC (F-4G)	Aug 82/Aug 84	Sep 84

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Development Estimate: DCP 93A dated 10 July 1978.

Approved Program: FY 1987 President's Budget.

10. Technical/Operational Characteristics:

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a. Technical --			
(U) Length (ft)	13/13	13.7	13.7
(U) Weight (lbs)	780/800	807	796
(U) Diameter (in)	10/10	10	10
(b)(1)			
b. Operational --			
(b)(1)			
Reliability			
(U) Missile Free Flight	.95/.85	.91	.95
(U) MTBF Missile Captive Carry (Hrs)	125/125	170	508 (Ch-1)
(U) MTBF Navy Avionics (AWG 25)	351/351	311	700 (Ch-2)
(U) MTBF Navy Avionics (CP-1001)	351/351	270	351
(U) Missile Storage (5 yrs/90% conf)	.90/.90	TBD	.90
(U) Probability of fault detection using BIT (BIT Circuitry only) (90% conf)			
(b)(1)			
Maintainability			
(U) Mean time to fault locate using BIT (sec)	20/30	14	14
(U) Mean time to repair (min)			
(U) Avionics "O" Level	55/60	30	30
(U) Avionics "I" Level	60/60	TBD	60
(U) Missile "O" Level	20/20	20	20
(U) Missile "I" Level	60/60	55	55

c. Previous Change Explanations --

Technical --

(U) Weight (lbs), Demonstrated Performance: Change 780 to 807. Incorporation of hardware to facilitate DSARC II direction to expand capability (EXCAP) in frequency and aerodynamic maneuverability.

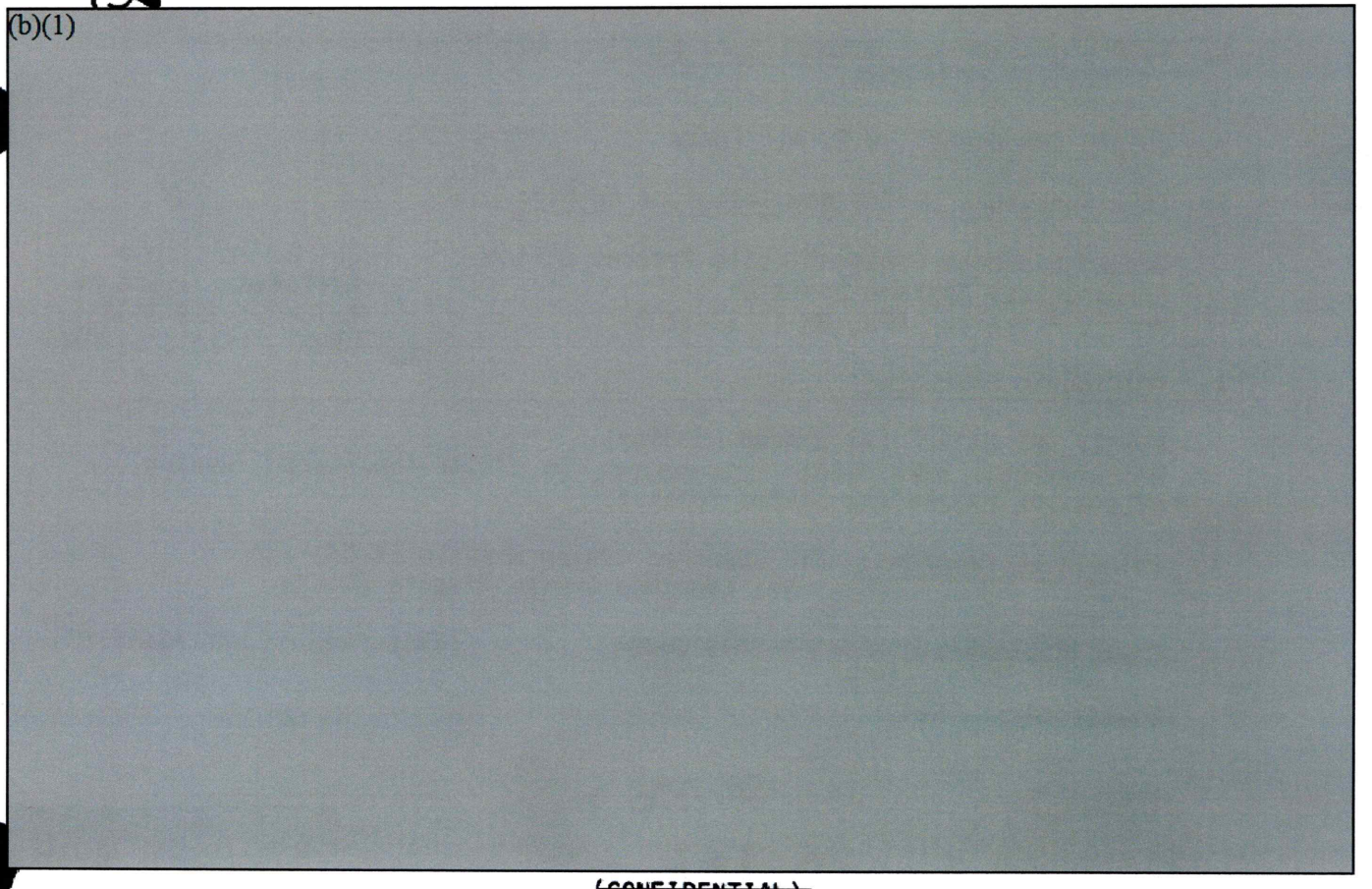
(U) Diameter (in), Demonstrated Performance: Change 10.5 to 10. Demonstrated diameter of prototype missiles.

(U) Frequency Coverage (Band): Changed "Frequency Coverage (GHz)" to "Frequency Coverage (Band)." Downgrades the classification of the SAR to ~~CONFIDENTIAL~~ in lieu of ~~SECRET~~

(U) Changes to approved program are the approved program changes reflected in DCP 93B of 1 December 1982 and approved at DSARC III on 30 March 1983. Changes to Demonstrated Performance and Current Estimate are demonstrations from NTE or OPEVAL/IOT&E and estimated performance which is expected to be demonstrated during FOT&E.

~~(S)~~ Operational --

(b)(1)



c. Previous Change Explanations --

Operational (Cont'd)

(b)(1)

(U) Reliability: Missile captive MTBF previously reported in percentiles is now converted to hours to reflect the basis for warranty effectivity.

(U) Reliability, Missile Free Flight, Demonstrated Performance: Change TBD to .75. Interim results of operational testing. Change .75 to .91. Interim results of operational testing.

(U) Reliability, MTBF Navy Avionics (AWG 25), Demonstrated Performance: Change TBD to 550. Extrapolated from performance demonstrated in laboratory tests. Change 550 to 311. Interim results of operational testing.

(b)(1)

(U) Maintainability, Mean time to fault locate using BIT (sec), Demonstrated Performance: Change TBD to 14. Current Estimate: Change 20 to 14. Interim results of operational testing indicates Demonstrated Performance and Current Estimate of performance is better than Development Estimate.

(U) Maintainability, Mean time to repair (min), Avionics "O" level, Demonstrated Performance: Change TBD to 30. Current Estimate: Change 55 to 30. Interim results of operational testing indicated Demonstrated Performance and Current Estimate of performance is better than Development Estimate.

(U) Maintainability, Mean time to repair (min), Missile "O" level, Demonstrated Performance: Change TBD to 20. Extrapolated from performance of Maintainability Demonstration testing.

(U) Maintainability, Mean time to repair (min), Missile "I" level, Demonstrated Performance: Change TBD to 55. Extrapolated from performance of Maintainability Demonstration testing.

(U) Maintainability, Mean time to repair (min), Missile "I" level, Current Estimate: Change 60 to 55. Interim results of operational testing indicates Current Estimate of performance is better than Development Estimate.

10. Technical/Operational Characteristics (Cont'd)

d. Current Change Explanations --

(Ch-1) CE revised on basis of Production Reliability Assessment Test (PRAT) data through December 1985.

(Ch-2) CE reflects current actual experience in fleet.

e. References --

Development Estimate: DCP 93A dated 10 July 1978.

Approved Program: FY 1987 President's Budget.

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	$ 216.5	$ +85.2	$ 301.7
Procurement	761.3	+331.0	1092.3
Hardware	(523.1)	(+333.5)	(856.6)
Prod Support	(108.4)	(+36.2)	(144.6)
Total Flyaway	(631.5)	(+369.7)	(1001.2)
Fleet Support	(54.3)	(-2.9)	(51.4)
Initial Spares	(75.5)	(-35.7)	(39.8)
Construction (MILCON)	0.0	0.0	0.0
Total FY 78 Base-Year $	977.8	+416.2	1394.0
Escalation	380.1	+893.7	1273.8
Development (RDT&E)	(10.9)	(+56.5)	(67.4)
Procurement	(369.2)	(+837.2)	(1206.4)
Construction (MILCON)	0.0	0.0	0.0
Total Then-Year $	$1357.9	$+1309.9	$2667.8
b. Quantities --			
Development (RDT&E)	99	0	99
Procurement	6636	+937	7573
Total	6735	+937	7672
c. Unit Cost --			
Procurement:			
FY 78 Base-Year $	$0.115	$+0.029	$0.144
Then-Year $	0.170	+0.134	0.304
Program:			
FY 78 Base-Year $	$0.145	$+0.037	$0.182
Then-Year $	0.202	+0.146	0.348

11. Program Acquisition Cost (Cont'd):

d. Approved Design to Cost Goal --

	(Average Unit Flyaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Appr Threshold
@ Qty: 5000			
@ Peak Rate: 185/mo			
FY 78 Base-Year $	93.3/198.3	187.6	200.0
Then-Year $	127.8/372.1	369.4	375.2

e. Foreign Military Sales --

Contracts: FMS contract N00019-84-C-0341, for the Federal Republic of Germany, was awarded on 12 December 1984 for 23 test and training missiles. Contract type, FFP; $5,466,000.

Letters of Offer and Acceptance (LOA). Federal Republic of Germany signed DD Form 1513 on 6 December 1985 for 368 tactical missiles. Estimated cost is $150,145,728.

f. Nuclear Costs -- None.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	2667.8	2631.1	2667.8
(2) Quantity	7672	7121	7672
(3) Unit Cost	.348	.369	.348
b. Current Procurement --	(FY86)	(FY86)	(FY87)
(1) Cost	235.7	266.7	262.1
Less CY Adv Proc	-	-	-
Plus PY Adv Proc	-	-	-
Net Total	235.7	266.7	262.1
(2) Quantity	825	904	1110
(3) Unit Cost	.286	.295	.236

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	227.4	1130.5	-	1357.9
Previous Changes:				
Economic	-2.7	+451.1	-	+448.4
Quantity	-	+9.9	-	+9.9
Schedule	+20.0	+725.3	-	+745.3
Engineering	+14.0	-	-	+14.0
Estimating	+104.5	-41.6	-	+62.9
Other	-	-	-	-
Support	0.0	-7.3	-	-7.3
Subtotal	+135.8	+1137.4	-	+1273.2
Current Changes:				
Economic	-0.1	-29.3	-	-29.4
Quantity	-	+103.1	-	+103.1
Schedule	-	+23.7	-	+23.7
Engineering	-	-	-	-
Estimating	+6.0	-45.6	-	-39.6
Other	-	-	-	-
Support	-	-21.1	-	-21.1
Subtotal	+5.9	+30.8	-	+36.7
Total Changes	+141.7	+1168.2	-	+1309.9
Current Estimate	369.1	2298.7	-	2667.8

(FY 1978 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	216.5	761.3	-	977.8
Previous Changes:				
Quantity	-	+38.5	-	+38.5
Schedule	+14.1	+195.2	-	+209.3
Engineering	+12.0	-	-	+12.0
Estimating	-39.4	+56.9	-	+17.5
Other	-	-	-	-
Support	-	-11.8	-	-11.8
Subtotal	-13.3	+278.8	-	+265.5
Current Changes:				
Quantity	-	+43.5	-	+43.5
Schedule	-	+8.8	-	+8.8
Engineering	-	-	-	-
Estimating	+98.5	+9.0	-	+107.5
Other	-	-	-	-
Support	-	-9.1	-	-9.1
Subtotal	+98.5	+52.2	-	+150.7
Total Changes	+85.2	+331.0	-	+416.2
Current Estimate	301.7	1092.3	-	1394.0

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations --

RDT&E

Economic:	Revised escalation indices.
Schedule:	Increase in initial manufacturing cost due to delay in prototype effort; increased hardware lead times, and delay of A-6E/HARM integration by one year.
Engineering:	FY 80 thru FY 82 cost increase for A-6E/HARM integration and FY 80 cost increase for HARM design improvements.
Estimating:	Increased contractor costs for prototype development; deletion of FY 80 Initial Production funds; increased cost for 45 pilot production missiles; Congressional addition to start second source development; funding of operational deficiencies in FY 84 thru FY 86; transfer of Project W1240 (A-6E) FY 83 program to airframe program manager; Congressional adjustments and escalation reductions; additional funds for deficiency corrections through FYDP; transfer of project W1780 ($47.2M) to Low Cost Seeker program.

Procurement

Economic:	Revised escalation indices.
Quantity:	Changes to program objective: FY 81/FY 82 -463 missiles; FY 83 +1782 missiles; FY 84 -1002 missiles.
Schedule:	One year delay in initial production; stretch out of Navy procurement offset by approval of second source allowing larger annual procurement quantities, and one year less stretch in program; and Congressional action on FY 83 appropriations; program rephasing in January FY 85 FYDP.
Estimating:	Increases in estimate to adjust for actual cost data derived from contract negotiations; funds for second source development; 1982 cost study revised estimate; deletion of second source fund coincident with Congressional direction to continue as sole source program; decrease in unit cost trend attributable to credible threat of competition (dual source initiative) and other cost reduction initiatives.
Support:	Decrease in PGSE and ILS requirements associated with decrease in 1002 missiles.

MILCON
None

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Revised escalation rates. (Economic)	N/A	-0.1
Increase required to complete OPEVAL deficiency corrections and accomplish Block III software update (+6.0 then year, +3.1 base year). +95.3 of the increase in base year $ is due to a correction to the base year $ calculation of the prior year's SAR baseline. (Estimating)	+98.5	+6.0
(2) Procurement		
Revised escalation rates. (Economic)	N/A	-29.3
Addition of 551 missiles reflecting recalculation of inventory requirement.	+54.5	+129.2
o Baseline (DE) value of adding 551 missiles. (Quantity)	(+43.5)	(+103.1)
o Balance of quantity change allocable to schedule. (Schedule)	(+13.5)	(+32.0)
o Balance of quantity change allocable to estimating. (Estimating)	(-2.5)	(-5.9)
Decrease in rate tooling required as a result of leveling the program quantity profile. (Schedule)	-4.7	-8.3
Multi-year procurement savings (-30.9 then-year $); reduced risk factored in costing methodology resulting from less aggressive production ramp-up plan (-8.8 then-year $). (Estimating)	+11.5	-39.7
Reduced estimate of equipment required to implement depot and other reduced ILS associated with implementation of a comprehensive warranty. (Support)	-9.1	-21.1

c. References -- DCP 93A dated 10 July 1978.

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

a. Development Estimate to Current Baseline Estimate

PAUC (Initial SAR/DE)	Changes								PAUC (Baseline Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
.202	+.055	-.010	+.100	+.002	+.003	-.004	.000	+.146	.348

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

a. RDT&E -- None.

b. Procurement --

HARM All-Up-Round

Texas Instruments, Inc.
Lewisville, TX
N00019-84-C-0145, FFP
Award: February 15, 1984

Contract Price: $313.5
Firm Fixed Price
(Variances not applicable)

Texas Instruments, Inc.
Lewisville, TX
N00019-85-C-0044, FFP
Award: May 31, 1985

Contract Price: $522.1
Firm Fixed Price
(Variances not applicable)

16. Program Funding Summary:

a. Program Status --
(1) Percent Program Completed: 75.0% (15 yrs/20 yrs)
(2) Percent Program Cost Appropriated: 51.5% ($1373.6/2667.8)

b. Appropriation Summary --

Appropriation	Current & Prior Yrs (FY77-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	349.4	3.9	15.8	0	369.1
Procurement	1024.2	262.1	1012.4	0	2298.7
MILCON	-	-	-	-	-
Total	1373.6	266.0	1028.2	0	2667.8

16. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	FY 78 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1972				2.1			2.1	4.6
1973				6.7			6.7	4.4
1974				9.7			9.7	8.0
1975				14.3			14.3	10.9
1976	13			27.4			27.4	6.6
1977				3.9			3.9	2.9
1977	16			31.4			31.4	2.6
1978	25			28.5			29.7	6.8
1979				38.7			44.6	8.4
1980	45			50.1			63.8	10.6
1981				52.3			72.6	10.6
1982				15.2			22.2	7.6
1983				3.7			5.7	4.9
1984				5.5			8.7	3.8
1985				2.4			4.0	3.6
1986				1.2			2.6	3.2
1987				1.8			3.9	4.1
1988				1.4			3.1	3.9
1989				1.2			2.8	3.4
1990				2.1			4.9	2.9
1991				2.1			5.0	2.3
Subtotal	99			301.7			369.1	
Appropriation: Procurement								
1981	80	7.8	31.1	74.9			120.3	11.6
1982	118	10.5	14.8	63.2			110.3	14.3
1983	160	0.0	11.6	47.6			88.2	9.0
1984	318	16.6	10.8	94.5			184.8	8.0
1985	813	11.9	3.5	140.0			284.9	4.1
1986	825	5.8	3.9	111.5			235.7	4.1
1987	1110	0.7	3.4	119.9			262.1	4.1
1988	1492	0.9	3.5	158.6			357.4	3.9
1989	2452	1.4	3.6	243.6			563.6	3.4
1990	205	0.1	2.8	32.5			76.9	2.9
1991	0	0.0	0.0	6.0			14.5	2.3
Subtotal	7573	55.7	89.0	1092.3			2298.7	
TOTAL	7672			1394.0			2667.8	

MILCON: None

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1982 & Prior	328.4	328.4	327.7
1983	5.7	5.7	5.5
1984	8.7	8.7	7.7
1985	4.0	4.0	2.1
1986	2.6	0.0	0.0
To Complete	19.7	N/A	N/A
Total	369.1	346.8	343.0
Appropriation: Procurement			
1982 & Prior	230.6	230.6	223.6
1983	88.2	88.2	78.9
1984	184.8	170.9	77.5
1985	284.9	248.2	11.5
1986	235.7	0.0	0.0
To Complete	1274.5	N/A	N/A
Total	2298.7	737.9	391.5

MILCON: None

17. Production Rate Data:.

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate(1)	Production Estimate	Current Estimate	Maximum(2)
1981		80	80	80
1982		236	236	236
1983		289	283	283
1984		722	635	635
1985		1674	1684	1684
1986		2461	2275	2275
1987		3275	3240	3240
1988		3761	3240	3240
1989		3084	3240	3240
1990		1778	481	481

Note (1) -- Not Available.

Note (2) --Production is already at maximum economic rate (two shifts, eight hours per shift, five days per week).

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	3211.1	-663.0	2548.1	0	2548.1
(TY $)	6363.4	-1416.1	4947.3	0	4947.3
PAUC (BY $)	183.2	-18.7	164.5	0	164.5
(TY $)	363.0	-43.7	319.3	0	319.3

c. Schedule Variance --

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start date (Mo/Yr)	11/82	0	11/82	0	11/82
Duration (in Months)	120	0	120	0	120
End date (Mo/Yr)	11/92	0	11/92	0	11/92

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	99/99
Procurement	632/680

18. Operating and Support Costs: N/A

AF-19 HARM

(2)

SAR-85-074

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: HARM (AGM-88A)

AS OF DATE: December 31, 1985

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1. Designation/Nomenclature (Popular Name): AGM-88A/High Speed Anti-Radiation Missile (HARM)

2. DoD Component: U. S. Air Force (Navy is Executive Service)

3. Responsible Office and Telephone Number:

Defense Suppression Systems
Program Office
Naval Air Systems Command
Washington, D.C. 20361

PM: CAPT L. E. Kaufman, USN
Assigned: 25 May 83
AUTOVON 222-2137
Commercial: (202) 692-2137

Deputy Project Manager for HARM
Naval Air Systems Command PMA-242-1
Washington, D.C. 20361

LtCol Edward F. O'Keefe, Jr., USAF
Assigned: 15 Jun 85
AUTOVON 222-2137
Commercial: (202) 692-2137

4. Program Elements:
RDT&E: PE 27162F (No Shared Funding)
Procurement: APPN 3020 ICN M88AAG (No Shared Funding)
MILCON: None

5. Related Programs: The WGU-2A/B/Guidance Section/Low Cost Anti-Radiation Seeker (popular name, HARM Low Cost Seeker or LCS) Program, currently in the full-scale development phase under Naval Weapons Center, China Lake direction, is intended to impact HARM production beginning in FY 1990.

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MAR 10 1986 18

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

OASD(PA) DECISR 86-T-0556

SAF/PAS

86-179

7. Program Highlights:

a. Significant Historical Developments --

HARM development began in 1972 as a Navy program. The inability of current antiradiation missiles to successfully defeat increasingly sophisticated and lethal enemy anti-aircraft systems threatened tactical aviation's ability to accomplish its mission and survive combat. HARM was initiated to address these deficiencies. The Air Force joined the HARM program in 1975 after a memorandum of agreement was signed designating the Navy as the executive service and the Air Force as the participating service. DSARC III was successfully completed in March 1983. Initial Air Force operational capability occurred on 27 September 1984 at George AFB, California.

b. Significant Developments Since Last Report --

Development testing (DT-IIIB) conducted jointly by the Navy and Air Force of missile software changes (known as "FY 84 Software Update") made to correct operational testing deficiencies was completed. Six of six test firings, two each from the F-4G, F/A-18, and A-7E, were successes and confirmed that all operational testing deficiencies were corrected. The upgrade is being incorporated in FY 84 missiles.

Another block software upgrade (Block III software development) and a hardware change to incorporate reprogrammable memory has been initiated to enhance tactical capability and update ELINT software and to provide reprogrammability of software in the field without necessitating further hardware changes.

FY 83 production deliveries were completed on schedule. FY 84 production deliveries started in November 1985 and are being delivered ahead of schedule. The FY 85 procurement of 1684 missiles (871 Air Force) is on firm fixed price contract and negotiations on the FY 86 production contract are nearing completion.

In response to early 1985 congressional direction requiring certification of the HARM weapon system, a complete audit of HARM including teardown of a missile was completed in August 1985. On the basis of this review the Secretaries of the Navy and Air Force certified to the Congress on 31 October 1985 that HARM satisfies the mission requirement.

The HARM system is meeting mission requirements.

c. Changes Since "As Of" Date -- None.

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	$ 10.3	$ +16.4	$ 26.7
Procurement	693.7	+433.0	1126.7
Air Vehicle	(654.1)	(+407.4)	(1061.5)
Total Flyaway	(654.1)	(+407.4)	(1061.5)
Peculiar Support	(26.2)	(+8.8)	(35.0)
Initial Spares	(13.4)	(+16.8)	(30.2)
Construction	0.0	0.0	0.0
Total FY 78 Base-Year $	704.0	+449.4	1153.4
Escalation	348.0	+778.1	1126.1
Development (RDT&E)	(1.2)	(+9.8)	(11.0)
Procurement	(346.8)	(+768.3)	(1115.1)
Construction	0.0	0.0	0.0
Total Then-Year $	$1052.0	$+1227.5	$2279.5
b. Quantities --			
Development (RDT&E)	0	0	0
Procurement	7118	+703	7821
Total	7118	+703	7821
c. Unit Cost --			
Procurement:			
FY 78 Base-Year $	$0.097	+$0.047	$0.144
Then-Year $	0.146	+0.141	0.287
Program:			
FY 78 Base-Year $	$0.099	+$0.048	$0.147
Then-Year $	0.148	+0.143	0.291

d. Approved Design to Cost Goal -- see Navy SAR.

e. Foreign Military Sales -- see Navy SAR.

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition --			
(1) Cost	2279.5	2686.5	2279.5
(2) Quantity	7821	9167	7821
(3) Unit Cost	.291	.293	.291
b. Current Procurement --	(FY86)	(FY86)	(FY87)
(1) Cost	420.6	485.3	505.2
Less CY Adv Proc	-	-	-
Plus PY Adv Proc	-	-	-
Net Total	420.6	485.3	505.2
(2) Quantity	1450	1715	2130
(3) Unit Cost	.290	.283	.237

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	11.5	1040.5	-	1052.0
Previous Changes:				
Economic	+1.1	+122.9	-	+124.0
Quantity	-	+335.1	-	+335.1
Schedule	+8.5	+1197.8	-	+1206.3
Engineering	-	-	-	-
Estimating	+20.3	-4.4	-	+15.9
Other	-	-	-	-
Support	-	-46.8	-	-46.8
Subtotal	+29.9	+1604.6	-	+1634.5
Current Changes:				
Economic	-0.4	-123.3	-	-123.7
Quantity	-	-233.7	-	-233.7
Schedule	-	-32.6	-	-32.6
Engineering	-	-	-	-
Estimating	-3.3	-97.9	-	-101.2
Other	-	-	-	-
Support	-	+84.2	-	+84.2
Subtotal	-3.7	-403.3	-	-407.0
Total Changes	+26.2	+1201.3	-	+1227.5
Current Estimate	37.7	2241.8	-	2279.5

13. Cost Variance Analysis (Cont'd):

(FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	10.3	693.7	-	704.0
Previous Changes:				
Quantity	-	+167.1	-	+167.1
Schedule	+5.9	+437.4	-	+443.3
Engineering	-	-	-	-
Estimating	+12.5	-7.0	-	+ 5.5
Other	-	-	-	-
Support	-	-29.8	-	-29.8
Subtotal	+18.4	+567.7	-	+586.1
Current Changes:				
Quantity	-	-105.8	-	-105.8
Schedule	-	-21.7	-	-21.7
Engineering	-	-	-	-
Estimating	-2.0	-62.6	-	-64.6
Other	-	-	-	-
Support	-	+55.4	-	+55.4
Subtotal	-2.0	-134.7	-	-136.7
Total Changes	+16.4	+433.0	-	+449.4
Current Estimate	26.7	1126.7	-	1153.4

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.
Schedule: Increase in cost due to delay in production.
Estimating: Increase due to Pre-Planned Product Improvement program; addition of Launcher development effort; adjustment to breakout SIDEARM 1 program from HARM report; impact of Congressional cut on corrections to IOT&E deficiencies; correction of operational test deficiencies.

Procurement

Economic: Revised economic escalation indices.
Quantity: Changes to procurement quantity: FY 82 & Prior, +7213 missiles; FY 83, -5,325 missiles; FY 84, +399 missiles; FY 85, -238 missiles.
Schedule: One year delay in initial production; schedule decrease associated with decreased quantity; program rephasing and reduction in procurement quantity in FY 83; accelerated procurement of missiles in FY 89 vs FY 91 due to reassessment of USAF HARM inventory requirements; program rephasing of 154 missiles in FY 90 vs FY 89 and accelerated procurement in FY 87/88.

13. Cost Variance Analysis (Cont'd):

Estimating: Program repricing based on negotiated contract cost data; estimating decrease associated with reduced quantity; 1982 cost study revised estimate; decrease in unit cost trend attributable to credible threat of competition (arising from Navy second sourcing initiative); introduction of cost reducing producibility changes; repricing associated with rephasing of program profile; adjustment for prior year escalation.

Support: Decrease in support requirements associated with reduction of 238 missiles; revised estimates of spares requirements; increased estimate for peculiar support equipment; revised estimate of peculiar support equipment based on reduced cost; revised esti- of spares based on reduced unit cost.

MILCON -- None

c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Revised economic escalation indices. (Economic)	-	-0.4
Reduced scope of correction of deficiencies resulting from Air Force and Congressional reductions. (Estimating)	-2.0	-3.3
(2) Procurement		
Revised economic escalation indices. (Economic)	-	-123.3
Reduction of 1346 missiles.	-127.4	-294.4
o Baseline (DE) value of deleting 1346 missiles from program. (Quantity)	(-105.8)	(-233.7)
o Balance of change associated with quantity assignable to schedule. (Schedule)	(-21.7)	(-60.8)
o Balance of change associated with quantity assignable to estimating. (Estimating)	(+0.1)	(+0.1)
Leveling of program profile FY 87-89	-9.2	+9.2
o Rephasing of production schedule FY86-90. (Schedule)	-	(+28.2)
o Deletion of production rate tooling and test equipment. (Estimating)	(-9.2)	(-19.0)

	(Dollars in Millions) Base Year $	Then Year $
Multi-year procurement savings (-28.8 then-year $); outyear repricing based on FY 85 negotiated contract actuals (+20.5 then year $). (Estimating)	-5.1	-8.3
Increase in spares and PGSE. (Support)	+7.0	+13.5
Adjustment to refine the mix of previous support and estimating changes primarily related to the impact of escalation on current and prior years.	0.0	0.0
o Amount to be added to support to balance to proper mix. (Support)	+48.4	+70.7
o Amount to be taken from estimating to balance to proper mix. (Estimating)	-48.4	-70.7

d. References--
Development Estimate: Draft Decision Coordinating Paper (DCP) #93A, 10 July 1978.

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

Initial SAR/Development Estimate (DE) to Current Estimate (CE)

PAUC (Initial SAR/DE)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
.148	.000	-.001	+.150	.000	-.011	.000	+.005	+.143	.291

15. Contract Information: see Navy SAR.

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

a. Program Status --
(1) Percent Program Completed: 71.4% (10 yrs/14 yrs)
(2) Percent Program Cost Appropriated: 48.7% ($1109.5/2279.5)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY77-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-90)	Beyond FYDP	Total
RDT&E	32.9	2.4	2.4	0.0	37.7
Procurement	1076.6	505.2	660.0	0.0	2241.8
MILCON	-	-	-	-	-
Total	1109.5	507.6	662.4	0.0	2279.5

16. Program Funding Summary (Con't):

c. Annual Summary --

Fiscal Year	Qty	FY 78 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 1/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1977				0.5			0.5	7.3
1978				3.9			4.0	9.2
1979				2.0			2.3	8.4
1980				1.5			1.9	9.4
1981				7.0			9.7	11.9
1982				2.9			4.3	9.2
1983				3.1			4.8	4.9
1984				1.0			1.6	3.8
1985				1.1			1.9	3.6
1986				1.1			1.9	3.2
1987				1.3			2.4	4.1
1988				1.3			2.4	3.9
Subtotal				26.7			37.7	
Appropriation: Procurement								
1982	118	10.1	42.8	60.7			99.7	9.6
1983	123	3.2	33.5	43.3			75.5	9.0
1984	317	17.8	68.7	96.2			174.8	8.0
1985	871	13.6	138.5	162.6			306.0	4.1
1986	1450	9.8	196.4	213.9			420.6	4.1
1987	2130	1.4	234.1	246.1			505.2	4.1
1988	1748	1.1	183.7	191.2			408.7	3.9
1989	788	0.5	78.8	82.4			182.2	3.4
1990	276	0.2	27.3	30.3			69.1	2.9
Subtotal	7821	57.7	1003.8	1126.7			2241.8	
TOTAL	7821			1153.4			2279.5	

Appropriation: Milcon (None)

1/ Since spend out rates are not shown, the escalation rate cannot be used to verify the composite index.

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures -- 2/

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1977	0.5	0.5	0.5
1978	4.0	4.0	3.5
1979	2.3	2.3	1.9
1980	1.9	1.8	1.7
1981	9.7	8.7	8.5
1982	4.3	1.8	1.7
1983	4.8	4.7	4.5
1984	1.6	1.6	1.3
1985	1.9	1.4	0.2
To Complete	6.7	N/A	N/A
Total	37.7	26.8	23.8
Appropriation: Procurement			
1982	99.7	93.6	85.0
1983	75.5	70.9	64.1
1984	174.8	164.2	63.8
1985	306.0	278.6	7.0
To Complete	1585.8	N/A	N/A
Total	2241.8	607.3	219.9

Appropriation: MILCON (None)

2/ Reflects program office records as of 31 Dec 1985.

17. Production Rate Data: see Navy SAR

Deliveries (Plan/Actual)--

	To Date
RDT&E	NA/NA
Procurement	259/268

18. Operating and Support Costs: N/A

N-17. HARPOON

SAR-85-037

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q7A)823)
PROGRAM: HARPOON (AGM/RGM/UGM-84A/C/D)

AS OF DATE: DECEMBER 31 1985*

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AS AMENDED

CLEARED
FOR OPEN PUBLICATION
APR 1 1986
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. Designation/Nomenclature (Popular Name)AGM-84A,C,D/RGM-84A,C,D/UGM-84A, C,D/Anti-Ship Weapon System (ASWS)

2. DoD Component: U.S. Navy

3. Responsible Office and Telephone Number:

Anti-Ship Weapon System Program Office
PMA-258
Naval Air Systems Command
Washington, DC 20361

PM: Roger V. Goodson
Assigned: September 13, 1982
Telephone: (202) 692-3340
Autovon: 222-3340

4. Program Elements:

RDT&E,N: P.E. 63312N, P.E. 64364N - development of AGM-84/RGM-84
P.E. 63364N - Development of UGM-84
P.E. 25603N - Harpoon Improvements - FY 79 only
P.E. 64227N - Harpoon Range Extension
P.E. 63306N - Standoff Land Attack Missile (SLAM)

PROCUREMENT: APPN 1507 INC 2224 P.E. 24229N
P.E. 24271N
P.E. 24284N

5. Related Programs None

~~Classified by: OPNAVINST 5513.2~~
~~Review on: 31 December 1992~~

(THIS PAGE IS UNCLASSIFIED)

OASD(PA) DFOISR 84-T-0867

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6. Mission and Description: Ship/Air/Submarine launched all-weather anti-ship missile effective against enemy destroyers, light crusers, surfaced submarines, patrol craft and other (e.g., merchant, surveillance etc.) enemy shipping. The Advanced Strike Weapon System (ASWS) is a stand-off land attack missile effective against fixed targets and ships in harbor.

The Harpoon will utilize altitude reference mid-course guidance with an active or passive seeker for target acquisition and terminal guidance. Missile shall be capable of being launched from the following platforms:

Ships: FF-1052, DDG, CG, CGN, PHM, DD-963, FFG-7, BB.

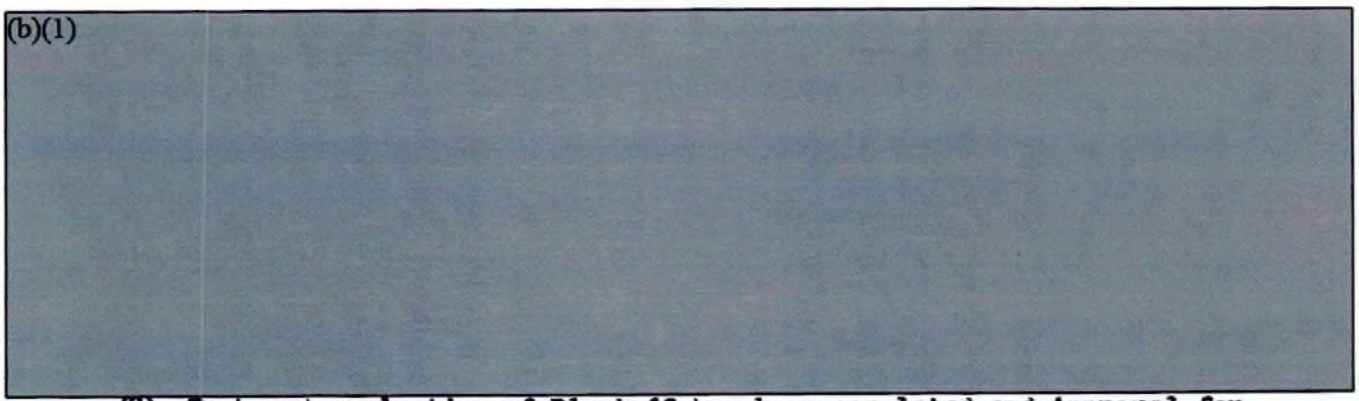
Air: P-3, A-6, F-18, S-3, B-52 (USAF)

Submarine: SSN-594/637/688 Class

7. (U) Program Highlights:

a. (U) Significant Historical Developments - - The Weapon System Development phase was completed in July 1975. The OPEVAL phase was completed March 1977 and PASU was granted 18 July 1977. DNSARC reviewed the program 25 July 1977 resulting in the approval to procure 225 U.S. plus 229 FMS missiles in FY 1977, not to exceed production of 40 missiles per month. DT&E of seeker changes (Block 1A) that improve performance against countermeasures was completed January 1978. OPEVAL (OT&E) was completed June 1978 with successful results and the final report was released by OPTEVFOR in August 1979.

(b)(1)



(U) Test and evaluation of Block 1C has been completed and Approval for Limited Production (ALP) was received 16 Jun 83. Approval for full production will be granted upon sucessful completion of full system tests aboard the various launch platforms.

(U) The Harpoon Missile as met or exceeded all operational performance requirements of DCP #77 dated May 16,1973, amended by DSARC IIB, dated June 25, 1974.

b. (U) Significant Developments: A second Approval for Limited Production (ALP) of Block 1C was received 30 September 1984. Approval for full production will be granted upon successful completion of full system tests aboard the various launch platforms. Block 1C missile tests aboard a surface platform configured with an improved command and launch system (AN/SWG-1A) were completed Oct 1985. A seeker product improvement effort was begun to improve performance in passive and active countermeasures environments. A Interim Advanced Strike Weapon System will be initiated in FY 87 in the stand-off land attach missile project, with a Congressional reprogramming request to be submitted in order to commence SLAM development in FY 86. The Harpoon is expected to fully satisfy its mission requirements.

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

8. DCP Threshold Breaches - There are currently no DCP (dated May 1979) threshold breaches.

9. Schedule:

a. Milestones	Dev. Est/Approved Program	Current Estimate
Initiate Development (Validation Phase)	Mar 70	Mar 70
AwardEngineAdvancedDevelopmentContract	Feb 71	Feb 71
Award Design Phase Contract	Jun 71	Jun 71
First Control Test Vehicle Launches	Aug 72	Oct 73
Complete 4 Successful Guidance Test Vehicle Launches	Mar 73	Mar 73
Award Weapon System Development Contract	Jun 73	Jun 73
First Prototype Missile Launch	Feb 74	Mar 74
Award Pilot Line Production Contract	Jun 74	Jul 74
Start Navy Technical Evaluation	Dec 74	Nov 74
Start OPEVAL (Msl,P-3 & FF-1052)	Jul 75	Aug 75
Complete OPEVAL (P-3 & FF-1052)	Dec 75	Mar 77
Approval for Service Use for Harpoon Weapon System	Dec 75	Feb 81
First Delivery to Fleet	Dec 75	Jul 77
IOC (FF-1052)	Jun 76	Jul 77
Definitization First Production Contract	Mar 76	Nov 76
IOC (Submarine)	Apr 76	Jul 77
Accept First Production Missile	Feb 77	Feb 77
IOC (P-3 Aircraft)	Jun 76	Aug 79
IOC (A-6 Aircraft)	Oct 81	Oct 81
Block 1C Missile - Approval for Limited Production	Nov 82	Jun 83

b. Previous Change Explanations - - Integration testing at the section and assembly level required more time than planned. Incorporation of design improvements for the engine, fuel control and electrical power delayed sustained delivery.

c. Current Change Explanations - - None

d. References - -

Development Estimate -- Development Concept Paper (DCP) No. 77 dated May 16, 1973 Amended by DSARC IIB, June 25, 1974.

Approved Program: FY87 President's Budget

10. (U) Operational Characteristics:

a. (U) Operational	Development Estimate	Demonstrated Performance	Current Estimate
(U) Speed (mach)	0.8	0.8	0.8
(U) Range (nm)			
(b)(1)			
(U) Altitudes/Launch Depth (ft)			
(b)(1)			
(U) Reliability			
Missile (free flt %)	90	90	90
Missile (Ready storage, ship 6 mos)	0.90	0.90	0.90
A/C C&L sys (MTBF hrs)	150	251	251
Ship C&L sys (MTBF hrs)	150	537	537
Misisle (air carry MTBF hrs)			
P-3	250	381	250
A-6	250	148	250
(U) Hit Probability			
(b)(1)			

b. (U) Previous Change Explanations - - Variances are due to results of captive - carry program, other tests, and actual fleet experience.

c. (U) Current Change Explanations - - None

d. (U) References --

Development Estimate: Development Concept Paper No. 77 dated May 16, 1973 Amended by DSARC IIB, June 25, 1974.

Approved Program: FY 87 President's Budget

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PROGRAM ACQUISITION COSTS
SYSTEM: HARPOON (AGM/RGM/UGM-84A/C/D)

11. PROGRAM ACQUISITION COST	(1) DEVELOPMENT ESTIMATE	(2) CHANGES	(3) CURRENT ESTIMATES
a. Cost			
Development	272.0	+13.2	285.2
Field Stations	(55.9)	—	(55.9)
Ordnance Section	(11.2)	—	(11.2)
Contract (GFE Engine)	(28.2)	—	(28.2)
Contract (Prime)	176.7	+13.2	(189.9)
Procurement (Missile)	523.0	+784.4	1307.4
Fly-A-Way	(457.6)	(+625.7)	(1083.3)
Fleet Support	(31.4)	(+111.9)	(143.3)
Initial Spares	(34.0)	(+ 46.8)	(80.8)
Construction	—	+.3	.3
Total: Constant FY 70$	795.0	+797.9	1592.9
Escalation	236.8	+2172.3	2409.1
Development	(43.9	(+55.9)	(99.8)
Procurement	(192.9)	(+2116.0)	(2308.9)
Construction	—	(+.4)	(.4)
Total Program Cost	1031.8	2970.2	4002.0
b. Quantities			
Development	52	0	52
Procurement	2870	+1181	4051
Total	2922	+1181	4103
c. Unit Cost			
Procurement			
FY 70 Base Year	$.182	+ $.141	$.323
Then-Year $	$.249	+ $.644	.893
Program			
FY 70 Base-Year $	$.272	+ $.116	$.388
Then-Year $	.353	+ .622	.975

d. Approved Design to Cost Goal

(Average Unit Fly Away Cost)

	Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ QTY: 2870			
@ Peak Rate: 46/MO			
FY 70 Base-Year $	.159/.159	.267	.159
Then Year	.218/.218	.735	.218

(b)(1)

f. Nuclear Costs - - None

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current, (Then Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	4,002.0	3,866.1	4,002.0
(2) Quantity	4,103	3,765	4,103
(3) Unit Cost	.975	1.027	.975
b. Current Procurement --	(FY 1986)	(FY 1986)	(1987)
(1) Cost	306.2	338.6	153.8
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	N/A	N/A	N/A
(2) Quantity	370	395	94
(3) Unit Cost	.828	.857	1.636

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate (DE)	315.9	715.9		1031.8
Previous Changes				
Economic		+102.8		+ 102.8
Quantity		+ 577.6		+ 577.6
Schedule				
Engineering	+93.7			+ 93.7
Estimating		+1412.3		+1412.3
Other				
Support		+ 647.9	+.7	+ 648.6
Subtotal	+93.7	+2740.6	+.7	+2835.0
Current Changes				
Economic		+ 24.4		+ 24.4
Quantity		+ 260.8		+260.8
Schedule				
Engineering	-24.6			- 24.6
Estimating				
Support		-125.4		-125.4
Subtotal	-24.6	+159.8	-	+135.2
Total Changes	+69.1	+2900.4	+.7	+2970.2
Current Estimates	385.0	3616.3	.7	4002.0

(FY 1970 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate (DE)	272.0	523.0		795.0
Previous Changes				
Quantity		+ 178.4		+ 178.4
Schedule				
Engineering	+ 68.9			+ 68.9
Estimating		+ 348.7		+ 348.7
Other				
Support		+ 202.4	+ .3	+ 202.7
Subtotal	+ 68.9	+ 729.5	+ .3	+ 798.7
Current Changes				
Quantity		+ 83.9		+ 83.9
Schedule				
Engineering	- 55.7			- 55.7
Estimating				
Other				
Support		- 29.0		- 29.0
Subtotal	- 55.7	+ 54.9	-	- .8
Total Changes	+ 13.2	+ 784.4	+ .3	+ 797.9
Current Estimate	285.2	1307.4	.3	1592.9

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b. Previous Change Explanations -

RDT&E

Engineering:	Deletion of Range Extension Development

PROCUREMENT

Economic:	Revised escalation rates.
Quantity:	Addition of 604 missiles.
Engineering:	Added Reliability/Quality Assurance Requirements. Increased Seeker Complexity. Implemented Product Improvements.
Estimating:	Increase because of underestimation of Rate Tooling, Engineering Change Proposals and Government In-house Costs. Prior year funding adjustments.
Support:	Increase spares requirements due to increased missile requirements. Increase out year support cost due to program stretch. Decrease due to revision of Fleet Support/Spares Requirement.
Milcon:	Building modification at NWS, Concord

C. Current Change Explanations - -

	Base Year	Then Year
(1) RDT&E		
Deletion of Interim Extended Range	- 23.4	- 88.8
Addition of ASWS. (SLAM)	+ 22.0	- 64.2
Correction of Base Yr Error In Dec 1984 Report (Engineering)	- 54.3	0
(2) Procurement		
Added FY 91 Quantity of 150 Increase/Decrease FY 86-90 (+188) for Net Increase of 338 Missiles (Quantity)	+ 83.9	+260.8
Support for Increase Quantity (Support)	- 29.0	-125.4
Revised Feb 86 Escalation Rates (Economic) and correction of previous error	N/A	+ 24.4

c. References --

. Dev. Est.: DCP No. 77 dated May 16, 1973, Amended by DSARC IIB,June 25,1974.

. Approved Program: FY 1987 Presidential Budget.

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14. Program Acquisition Unit Cost (PAUC) History:

a. Initial SAR Estimate To Current Baseline Estimate

First Authorization: FY 1970
Program Acquisition Unit Cost:
First Authorization: .251
Development Estimate: .353

b. Current Baseline Estimate to Current Estimate

PAUC (Development Estimate)	Changes (Then Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
.353	+.031	+.103	-	+.017	+.344	+.127	-	+.622	.975

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

a. RDT&E -- None

b. Procurement

Missile:	Initial Contract Price Target	Ceiling	Qty
McDonnell Douglas Astronautics St.Charles, Mo. N00019-82-C-0013/FFP Award: March 31, 1982	$229.5	$229.5	406

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Mgr
FFP	307.7	406	307.7	$307.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 43.4	None
Cumulative Variances To Date	$ 43.2	None
Net Change	-.2	

Explanation of Change: The favorable cost variance is due to negotiations of not to exceed ordering items at a lower price. The program manager's assessment remains at the current negotiated contract price and is within approved funding.

Missile:
McDonnell Douglas Astronautics
St. Charles, Mo.
N00019-82-C-0017/FFP
Award: March 8, 1983

Initial Contract Price

Target	Ceiling	Qty
$215.5	$215.5	364

Current Conractor Price

Target	Ceiling	Qty
FFP	$281.5	364

Estimated Price at Competion

Contractor	Program Mgr
$281.5	$281.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 52.1	None
Cumulative Variance To Date	$ 66.0	None
Net Change	+ 13.9	

Explanation of Change: The unfavorable cost variance is due to negotiations of not to exceed ordering items. The program manager's assessment remains at the current negotiated contract price and is within approved funding.

Missile
McDonnell Douglas Astronautics
St. Charles, Mo.
N00019-83-C-0036C/FFP
Award: March 31, 1982

Initial Contract Price

Target	Ceiling	Qty
$282.6	$282.6	437

Current Contract Price

Target	Ceiling	Qty
FFP	$311.7	437

Estimated Price At Completion

Contractor	Program Mgr
$311.7	$311.7

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$ 29.1	None
Cumulative Variance To Date	$ 29.1	None
Net Change	$ 0	

Missile
McDonnell Douglas Astronautics
St. Charles, Mo.
N00019-85-C-00161/FFP
Award: March 28, 1983

Initial Contract Price

Target	Ceiling	Qty
$330.2	$330.2	565

Current Contract Price

Target	Ceiling	Qty
FFP	$330.2	565

Estimate Price at Completion

Contractor	Program Mgr
$330.2	$330.2

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$ 0	None
Cumulative Variance To Date	$ 0	None
Net Change	$ 0	

Engine

Teledyne CAE
Toledo, Ohio
N00019-81-C-0034/FFP
Award: May 29, 1981

Initial Contract Price

Target	Ceiling	Qty
$25.0	$25.0	423

Current Contract Price

Target	Ceiling	Qty
FFP	$25.5	423

Estimated Price At Completion

Contractor	Program Mgr
$25.5	$25.5

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$ 0.5	None
Cumulative Variance To Date	$ 0.5	None
Net Change	0	

Engine

Teledyne CAE
Toledo, Ohio
N00010-82-C-0011/FFP
Award: June 30, 1982

Initial Contract Price

Target	Ceiling	Qty
FFP	$24.3	426

Current Contract Price

Target	Ceiling	Qty
FFP	$24.3	426

Estimated Price At Completion

Contractor	Program Mgr
$24.3	$24.3

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$ 0.2	None
Cumulative Variance To Date	$ 0.2	None
Net Change	0	

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16. Program Funding Summary:

a. Program Status - -

(1) Percent Program Completed: 77.3% (17/22 Yrs)

(2) Percent Program Cost Appropriated: 68.5% ($2740-4002.0)

b. Appropriation Summary - -

Approp	Current Prior Yrs (FY71-86)	Budget Year (FY87)	Balance F-1 DP (FY88-91)	To Comp Beyond FYDP	Total
RDT&E	332.5*	37.5	15.0	-	385.0
Proc	2407.1	153.8	1055.4	-	3616.3
Milcon	.7	-	-	-	.7
Total	2740.3	191.3	1070.4	-	4002.0

* Anticipate Approval of $11.7 Congressional Reprogramming action in FY 86 to commence SLAM development effort.

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C. Annual Summary

Fiscal Year	Qty	FY 70 Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl Rate %
Appropriation: RDT&E								
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1970	-	—	—	5.0	—	—	5.1	5.51
1971	12	—	—	18.1	—	—	19.3	5.14
1972	-	—	—	38.1	—	—	42.3	4.61
1973	-	—	—	61.6	—	—	71.8	4.35
1974	40	—	—	74.0	—	—	92.0	7.97
1975	-	—	—	51.7	—	—	69.1	10.94
1976	-	—	—	13.9	—	—	19.7	6.61
1979	-	—	—	.8	—	—	1.5	8.40
1986	-	—	—	4.2	—	—	11.7*	3.20
1987	-	—	—	12.8	—	—	37.5	4.10
1988	-	—	—	5.0			15.0	3.90
Total	52	—	—	285.2	—	—	385.0	
APPROPRIATION: PROCUREMENT								
1975	100	7.0	42.8	58.3	—	—	82.4	8.81
1976	170	7.4	68.6	87.6	—	—	133.3	6.59
197T	66	1.0	22.6	27.5	—	—	43.9	3.56
1977	220	—	78.3	89.3	—	—	150.8	3.78
1978	234	—	63.6	73.8	—	—	139.2	6.80
1979	240	—	59.4	66.1	—	—	137.4	8.72
1980	240	—	56.2	64.3	—	—	147.4	11.80
1981	240	—	61.0	84.7	—	—	216.8	11.60
1982	240	—	67.5	82.5	—	—	229.6	14.30
1983	223	—	59.9	78.2	—	—	232.3	9.00
1984	315	—	73.1	89.3	—	—	283.5	8.00
1985	354	—	73.1	91.3	—	—	304.3	4.10
1986	370	—	71.5	88.1	—	—	306.2	4.10
1987	94	—	31.5	42.7	—	—	153.8	4.10
1988	204	—	48.0	61.1	—	—	219.1	3.90
1989	258	—	63.1	75.6	—	—	278.3	3.40
1990	333	—	84.0	92.9	—	—	350.1	2.90
1991	150	—	43.6	53.9	—	—	207.8	2.30
Total	4051	15.4	1067.8	1307.4	—	—	3616.3	
Appropriation: Milcon								
1979	—	—	—	.3	—	—	.7	
TOTAL	4051	15.4	1067.8	1592.9	—	—	4002.0	

* Anticipate approval of $11.7 Congressional Reprogramming action in FY86 to commence SLAM developemnt effort.

d. Obligations and Expenditures

Fiscal Year	Then-Year Dollars (MIllions) Total	Obligated	Expended
	Appropriation: RDT&E		
1970	5.1	5.1	5.1
1971	19.3	18.9	18.9
1972	42.3	42.3	42.3
1973	71.8	71.8	71.7
1974	92.0	91.9	91.8
1975	69.1	69.1	68.7
1976	19.7	19.7	16.7
1979	1.5	1.5	1.5
1986	11.7*	-	-
1987	37.5	-	-
1988	15.0	-	-
Total	385.0	320.3	316.7
	Appropriation: Procurement		
1975	82.4	82.4	82.2
1976	133.3	133.2	130.8
197T	43.9	43.9	43.9
1977	150.8	150.8	148.4
1978	139.2	139.1	136.5
1979	137.4	137.4	134.3
1980	147.4	145.2	145.2
1981	216.8	216.8	209.9
1982	229.6	227.2	199.2
1983	232.3	230.8	191.0
1984	283.5	255.7	142.8
1985	304.3	235.1	65.9
1986	306.2	13.5	NA
To Complete	1209.2	NA	NA
Total	3616.3	2011.1	1630.1
	Appropriation: Milcon		
1979	.7	.7	.7
TOTAL	.7	.7	.7

* Anticipate approval of $11.7 Congressional Reprogramming action in FY 86 to commence SLAM dvelopment effort.

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17. Production Rate Data:

a. Annual Production Rates: (NOTE: Maximum rate is attainable with additional customer participation. Maximum rates not reached to date)

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1986	NA	346	346	660
1987	NA	351	351	660
1988	NA	255	255	660
1989	NA	139	139	660
1990	NA	229	229	660
1991	NA	280	280	660
1992	NA	295	295	660

b. Cost Variance (NOTE: Subject to the limitations on production rate above)

ITEM	PRODUCTION ESTIMATE	VARIANCE CE LESS PdE	CURRENT ESTIMATE	VARIANCE (DE LESS MAX)	MAXIMUM
PROGR. ACQ COST (BY $)	1,592.9	NONE	1592.9 ~~1307.4~~		PROGRAM NOT PRICED AT MAX RATE
~~PAUC~~ (TY $)	4,002.0	NONE	4,002.0 ~~3616.3~~		
PAUC (BY $)	.388	NONE	.388 ~~.323~~		
(TY $)	.975	NONE	.975 ~~.893~~		

c. Schedule (NOTE: Subject to the limitations on production rates above)
(Date based on Procurement Year 1985 Thru 1991)

	PRODUCTION ESTIMATE	VARIANCE (CE VS PdE)	CURRENT ESTIMATE	VARIANCE (CE VS MAX)	MAXIMUM
START DATE (MO/YR)	8/86	NONE	8/86	N/A	8/86
DURATION (IN MONTHS)	84	NONE	84	+49	35
END DATE (MO/YR)	7/93	NONE	7/93	N/A	4/89

d. Deliveries (Plan/Actual) - -

	To Date
RDT&E	52/52
Procurement	2123/2031

18. Operating and Support Costs: NA

N-19 : LAMPS MK III

SAR-85-038

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

PROGRAM: LAMPS MK III

AS OF DATE: December 31, 1985 *

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AS AMENDED

CLEARED

APR 1 1986

DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Popular Name): Light Airborne Multi-Purpose System (LAMPS MK III)

2. DoD Component: U.S. Navy

3. Responsible Office and Telephone Number:

Light Airborne Multi-Purpose System
Project Office
Naval Air Systems Command
Washington, D.C. 20361

PM: Capt R.G. Harrison
Assigned: May 23, 1984
AV 286-1534; COMM (202)746-1534

4. Program Elements/Procurement Line Items:

RDT&E,N: PE 64212N Project W1707 (Shared funding)

PROCUREMENT: APPN 1506 ICN 0180 PE 24243N, PE 24262N (No shared funding)
APPN 1810 ICN 4255 PE 24243N (No shared funding)

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~~REVIEW ON OADR~~

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OASD(PA) DPOISR 86-T-0865

Related Programs: Army UH-60A BLACK HAWK; Army EH-60A Quickfix; Air Force HH-60A T HAWK Combat SAR Helicopter; Kidd Class Guided Missile Destroyer (DDG-993 Class); Arleigh Burke Class Guided Missile Destroyer (DDG-51 Class); Perry Class Guided Missile Frigate (FFG-7 Class); Spruance Class Destroyer (DD-963 Class); Ticonderoga Class Aegis Cruiser (CG-47 Class); Tactical Towed Array Sonar (TACTAS) AN/SQR-19; Penguin Missile Program; Aircraft Carrier Inner Zone Anti-Submarine Warfare Helo (SH-60F).

6. Mission and Description: The Light Airborne Multi-Purpose System (LAMPS MK III) is a computer integrated ship/helicopter system that increases the effectiveness of surface combatants. It is their main Anti-Submarine Warfare (ASW) battery and is optimized for ASW. LAMPS MK III secondary missions include Anti-Ship Surveillance and Targeting (ASST), Search and Rescue (SAR), Medical Evacuation (MEDEVAC), Vertical Replenishment (VERTREP), and Communications Relay (COMM). The ship provides sensor processing, command and control, integrates LAMPS information gained with other sensors, and provides the landing and traversing system, visual landing aids, and maintenance and support facilities for the aircraft. The helicopter provides a remote platform for deployment of sonobuoys and torpedoes, processing of acoustic and Magnetic Anomaly Detection (MAD) sensor information and an elevated platform for Radar and Electronic Warfare Support Measures (ESM). LAMPS MK III supplements but does not replace any existing defense systems. A Chief of Naval Operations Executive Board (CEB) decision made in April 1984 will result in the addition of an Anti-Surface Warfare (ASUW) capability for LAMPS MK III using the Norwegian manufactured PENGUIN anti-ship missile.

7. Program Highlights:

a. Significant Historical Developments -- Development of the LAMPS Program was iated in 1969 with the requirement for a manned helicopter aboard destroyer-class s to enhance Anti-Submarine Warfare (ASW) and Anti-Ship Surveillance and Targeting (ASST). The Validation Phase was completed in December 1976. Authorization was granted at DSARC IIC, in February 1978, to proceed with Full Scale Development. The first flight of the SH-60B helicopter was conducted in December 1979, followed by a successful total weapon system demonstration in May 1980. Following the installation of LAMPS MK III ship equipments in USS MCINERNEY (FFG-8), weapon system testing at sea was successfully conducted. Provisional Approval for Service Use (PASU) was granted in September 1981 following a successful OPEVAL of the Helicopter Landing System (HLS) and exercise of the entire weapon system in various operational scenarios. A Secretary of Defense Decision Memorandum (SDDM) in November 1981 provided guidance to proceed with limited production and directed that specific goal and threshold parameters be addressed at DSARC III. ASU was granted for the HLS and the Sonar Signal Processing System (AN/SQQ-28) on June 25, 1982. PASU was granted for the LAMPS MK III Weapon System and the Radio Terminal set (AN/SRQ-4). DSARC Milestone III was conducted on June 29, 1982. A SDDM was issued on December 8, 1982, granting approval for production.

The baseline program estimated procurement of 204 aircraft over a four year period and procurement of 110 ship systems. The December 1982 SAR estimate extended the aircraft procurement to an eleven year period and reduced ship systems to 94. The December 1983 SAR estimate increased ship systems to 97. With the transfer of FFG-24 and FFG-26 to Naval Reserve and the addition of DDG-51 the current number of ship systems to be procured is 96.

The first production aircraft was delivered in September 1983, one month ahead of edule. The first LAMPS MK III training squadron was established at Naval Air Station, North Island on January 21, 1983. Initial Operational Capability was achieved in July 1984.

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

A CEB decision made in April 1984 will add an ASUW capability to the LAMPS MK III [redacted]apon system by incorporating the Norweign manufactured PENGUIN anti-ship missile.

b. Significant Developments Since Last Report -- As of December 31, 1985, the Navy has accepted a total of 60 production SH-60B airframes, 50 full avionics populated SEAHAWKS, and 36 AN/SQQ 28s, 37 AN/SRQ-4s and 38 HLSs for ship installation. Based on current projections, LAMPS MK III is expected to fulfill all mission requirements.

c. Changes Since "As Of" Date -- None

8.(U) Decision Coordinating Paper (DCP) Threshold Breaches:

a. The program is approved in accordance with the December 8, 1982, SDDM.

b. The LAMPS MK III mission requirements are contained in DCP No. 85 of June 4, 1982, and were presented to the Office of the Secretary of Defense during the June 29, 1982, DSARC III presentation.

c. No technical thresholds have been breached. The funding thresholds reflected in the baseline program reported to Congress in the December 1981 Selected Acquisition Report (SAR) were breached as a result of extending the aircraft procurement from a four year profile (18-48-64-74) to an eleven year profile (18-27-21-18-18-18-18-18-18-18-12). FY 1984 Congressional action changed the eleven year profile to 18-27-21-24-18-18-18-18-18-6. The FY 1987 Congressional Budget changed the procurement estimate to a fourteen year profile (18-27-21-24-18-17-6-6-6-12-12-12-12-13). The Secretary of Defense Decision Memorandum of December 8, 1982, authorized the LAMPS MK III program to proceed with [redacted]oduction in FY 1983. Decisions on the total procurement objective and annual phasing [redacted]r the LAMPS MK III program will be examined at future program and budget reviews.

9.(U) Schedule:

a. Milestones --	Development Estimate/ Approved Program	Current Estimate
Program Initiated (TSOR issued)	Feb 69/Feb 69	Feb 69
DSARC I/II	Jun 72/Jun 72	Jun 72
DSARC IIA	Jul 73/Jul 73	Jul 73
Select System Prime Contractor (Phase I System Integration)	Apr 74/Apr 74	Apr 74
DSARC IIB	May 76/May 76	May 76
Award Full Scale Development Sustaining Engineering Contracts (Prototype System)	Sep 77/Sep 77	Sep 77
DSARC IIC	Feb 78/Feb 78	Feb 78
First Prototype Aircraft Flight	N/A / N/A	Dec 79
First Prototype Aircraft Delivery	Nov 79/Nov 79	Jan 80
Complete Prototype Ship System Installation	Oct 80/Oct 80	Nov 80
Complete OT IIA, HLS OPEVAL	N/A / N/A	Jun 81
Program Review	Aug 81/Aug 81	Sep 81
Award Aircraft Pilot Production Contract	Oct 81/Oct 81	Oct 81
Complete Initial Operational Evaluation	Jan 82/Jan 82	Feb 82
Complete Initial Board of Inspection and Survey Trials	Jan 82/Jan 82	Sep 82
DSARC III	Apr 82/Jun 82	Jun 82
Award Full Scale Production Contracts	Oct 82/Oct 82	Dec 82
First Production Ship ASW System Delivery	Jul 83/Jul 83	Jun 83
First Pilot Production Aircraft Delivery	Oct 83/Oct 83	Sep 83
Initial Operational Capability (IOC)	Jul 84/Jul 84	Jul 84

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

b. Previous Change Explanations --

On September 22, 1981, a Program Review versus the planned DSARC IIIA was conducted on the LAMPS MK III Weapon System by the Under Secretary of Defense for Research and Engineering. Board of Inspection and Survey Initial Trials were delayed due to non-availability of aircraft and OPEVAL concurrency. Scope was reduced to eliminate duplications of test effort. DSARC III was completed on June 29, 1982.

c. Current Change Explanations -- None

d. References --

Development Estimate: DCP No. 85 dated March 5, 1979.

Approved Program: SDDM, dated December 8, 1982, subject "LAMPS MK III Program" (Approval for Production).

10. (U) Technical/Operational Characteristics:

a. (U) Technical --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(U) Weight (Lbs) (Maximum Gross)	20,829/N/A	21,884	21,884
(U) Dimensions			
(U) Length (Ft)			
Overall	64.8/N/A	64.8	64.8
Folded	41.1/N/A	41.1	41.1
(U) Width (Ft)			
Normal (W/O Main Rotor)	14.3/N/A	14.3	14.3
Folded	10.8/N/A	10.8	10.8
(U) Height (Ft)			
Normal	17.2/N/A	17.2	17.2
Folded	13.3/N/A	13.3	13.3

b. (U) Operational --

(U) System Performance

(U) Operate in Sea State	5/4	5	5
(U) Data Transfer Reliability (%)			
(b)(1) [redacted]			
(U) Mission Reliability			
(b)(1) [redacted]			
(U) Mean Flight Hours Between Failures SH-60B Seahawk (Air Vehicle Avionics)	2.0/1.5	4.9	2.3

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10. (U) Technical/Operational Characteristics (Cont'd):

b. (U) Operational (Cont'd) --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(U) Maintainability			
(U) Direct Maintenance Man-Hours/Flight Hour SH-60B SEAHAWK (O-Level Total)	N/A/15.9	11.6	15.9 (Ch-1)
(U) Mean Time to Repair (Hrs) (Elapsed Maintenance Time/ Maintenance Action)			
Air Vehicle	1.0/2.0	1.3	2.0 (Ch-1)
Ship Electronics	1.5/2.5	0.15	2.0 (Ch-1)
(b)(1)			
(U) Aircraft Performance			
(b)(1)			

c. (U) Previous Change Explanations --

The increase in aircraft maximum gross weight is the result of incorporating approved Engineering Change Proposals. The increase in Mean Flight Hours Between Failures SH-60B SEAHAWK is the result of performance improvements. The changes in Direct Maintenance Man-Hours/Flight Hour SH-60B SEAHAWK and Mean Time to Repair Air Vehicle are derived from maintenance statistics and indicate performance less than prior estimates. The Operational Availability (%) (Total System) is the current estimate of the DCP-85 mature system goal.

d. (U) Current Change Explanations --

(Ch-1) (U) Demonstrated results of OT-IIIB testing as reported in COMOPTEVFOR Ser 412/C187 of July 2, 1985. Current estimate changes reflect this data plus current Fleet data.

(b)(1)

e. (U) References --

Development Estimate: DCP No. 85 dated March 5, 1979.

Approved Program: FY 87 President's Budget.

1/ (o) represents results obtained during operational testing. (d) represents results obtained during developmental testing.

1. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate	Changes	Current Estimate
Development (RDT&E,N)	$ 579.7	$ +16.1	$ 595.8
Procurement (Aircraft)	1482.8	+463.7	1946.5
Airframe & Changes	(342.1)	(+201.8)	(543.9)
Engine	(67.9)	(+28.8)	(96.7)
Electronics & Comm.	(399.6)	(-288.6)	(111.0)
Armament & Other GFE	(18.1)	(-3.8)	(14.3)
Weapon System Integration	(62.2)	(+431.6)	(493.8)
Total Flyaway	(889.9)	(+369.8)	(1259.7)
Peculiar Support Equip.	(169.9)	(-23.9)	(146.0)
Other Support Costs	(269.6)	(+ 97.6)	(367.2)
Total Support	(439.5)	(+73.7)	(513.2)
Initial Spares	(153.4)	(+20.2)	(173.6)
Procurement (Ship Systems)	325.2	+97.2	422.4
Equipment (OPN)			
Sailaway	(124.4)	(-6.6)	(117.8)
Support	(40.3)	(+58.9)	(99.2)
Spares	(36.0)	(-22.8)	(13.2)
Total (OPN)	(200.7)	(+29.5)	(230.2)
Installation (O&MN)(FMP)*	(124.5)	(+67.7)	(192.2)
Construction (MILCON)	9.0	+3.3	12.3
Total FY 76 Base-Year $	2396.7	+580.3	2977.0
Escalation	1510.9	+1846.0	3356.9
Development (RDT&E,N)	(142.1)	(+28.8)	(170.9)
Procurement	(1362.4)	(+1814.4)	(3176.8)
Construction (MILCON)	(6.4)	(+2.8)	(9.2)
Total Then-Year $ **	$3907.6	$+2426.3	$6333.9

b. Quantities -- See page 6a for Aircraft and page 6b for Ship Systems.
c. Unit Cost -- See page 6a for Aircraft and page 6b for Ship Systems.
d. Approved Design to Cost Goal -- See page 6a for Aircraft and page 6b for Ship Systems.
e. Foreign Military Sales -- See page 6a for Aircraft and page 6b for Ship Systems.
f. Nuclear Costs -- See page 6a for Aircraft and page 6b for Ship Systems.

* FMP - Fleet Modernization Program.

** Excludes SCN costs of $725.1M for 46 ship systems (20 FFG-7 class ships, 25 CG-47 class ships, and 1 DDG-51 class ship). The applicable systems/costs are reported in the FFG-7, CG-47, and DDG-51 Selected Acquisition Reports. RDT&E,N costs of $16.3M (included in PE 64212N, W1707) for the Penguin Missile are also excluded.

11. (U) Program Acquisition Cost (Cont'd): (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate	Changes	Current Estimate
(1) Aircraft --			
Development (RDT&E,N)	$ 527.2	$ +10.6	$ 537.8
Procurement	1482.8	+463.7	1946.5
Airframe & Changes	(342.1)	(+201.8)	(543.9)
Engine	(67.9)	(+28.8)	(96.7)
Electronics & Comm.	(399.6)	(-288.6)	(111.0)
Armament & Other GFE	(18.1)	(-3.8)	(14.3)
Weapon System Integration	(62.2)	(+431.6)	(493.8)
Total Flyaway	(889.9)	(+369.8)	(1259.7)
Peculiar Support Equip.	(169.9)	(-23.9)	(146.0)
Other Support Costs	(269.6)	(+97.6)	(367.2)
Total Support	(439.5)	(+73.7)	(513.2)
Initial Spares	(153.4)	(+20.2)	(173.6)
Construction (MILCON)	7.2	+2.6	9.8
Total FY 76 Base-Year $	2017.2	+476.9	2494.1
Escalation	1222.3	+1669.4	2891.7
Development (RDT&E,N)	(131.8)	(+22.7)	(154.5)
Procurement	(1085.5)	(+1644.4)	(2729.9)
Contruction (MILCON)	(5.0)	(+2.3)	(7.3)
Total Then-Year $	$3239.5	$+2146.3	$5385.8
b. Quantities --			
(1) Aircraft			
Development (RDT&E,N)	5	-	5
Procurement	204	-	204
Total	209	-	209
c. Unit Cost --			
(1) Aircraft			
Procurement:			
FY 76 Base-Year $	$7.3	$+2.2	$9.5
Then-Year $	12.6	+10.3	22.9
Program:			
FY 76 Base-Year $	9.7	+2.2	11.9
Then-Year $	$15.5	$+10.3	$25.8

d. Approved Design to Cost Goal --

(1) Aircraft

	(Average Unit Flyaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty: 204			
@ Peak Rate: 5/mo			
FY 76 Base-Year $	4.4/N/A	6.2	N/A
Then-Year $	7.6/N/A	15.1	N/A

e. Foreign Military Sales -- Spanish Letter of Offer and Acceptance was signed January 15, 1985, for an estimated total cost of $173.4M for the purchase of six (6) LAMPS MK III helicopters and associated spares, support equipment, and services.

f. Nuclear Cost -- None.

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11. Program Acquisition Cost (Cont'd): (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate	Changes	Current Estimate
(2) Ship Systems --			
Development (RDT&E,N)	$ 52.5	$ +5.5	$ 58.0
Procurement (Ship Systems)	325.2	+97.2	422.4
Equipment (OPN)			
Sailaway	(124.4)	(-6.6)	(117.8)
Support *	(40.3)	(+58.9)	(99.2)
Spares	(36.0)	(-22.8)	(13.2)
Total (OPN)	(200.7)	(+29.5)	(230.2)
Installation (O&MN)(FMP)**	(124.5)	(+67.7)	(192.2)
Construction (MILCON)	1.8	+0.7	2.5
Total FY 76 Base-Year $	379.5	+103.4	482.9
Escalation	288.6	+176.6	465.2
Development (RDT&E,N)	(10.3)	(+6.1)	(16.4)
Procurement	(276.9)	(+170.0)	(446.9)
Construction (MILCON)	(1.4)	(+0.5)	(1.9)
Total Then-Year $	$ 668.1	$+ 280.0	$ 948.1
b. Quantities --			
(2) Ship Systems			
Development (RDT&E,N)	3	-	3
Procurement	58	-8	50
Total	61	-8	53
c. Unit Cost --			
(2) Ship Systems			
Procurement:			
FY 76 Base-Year $	$ 5.6	$+2.8	$ 8.4
Then-Year $	10.4	+7.0	17.4
Program:			
FY 76 Base-Year $	6.2	+2.9	9.1
Then-Year $	$ 10.9	$+7.0	$17.9

d. Approved Design to Cost Goal --
(2) Ship Systems - Not Applicable.
e. Foreign Military Sales -- Three (3) LAMPS MK III ship electronics systems and three (3) Helicopter Landing Systems (HLS) at approximately $15.6M are being procured under a separate Spanish FMS case. The Australian government has purchased six (6) HLS at approximately $9.1M through FMS.
f. Nuclear Cost -- None.
* Includes trainers.
** FMP - Fleet Modernization Program.

Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

(Aircraft)	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	5385.8	5850.0	5385.8
(2) Quantity	209	209	209
(3) Unit Cost	25.8	28.0	25.8
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	292.9	378.8	234.9
Less CY Adv Proc	-52.7	-54.9	-21.1
Plus PY Adv Proc	+57.9	+57.9	+52.7
Net Total	298.1	381.8	266.5
(2) Quantity	18	18	17
(3) Unit Cost	16.6	21.2	15.7

(Ship Systems)	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	948.1	978.9	948.1
(2) Quantity	53	53	53
(3) Unit Cost	17.9	18.5	17.9
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	54.1	47.1	36.9
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	54.1	47.1	36.9
(2) Quantity	6	6	6
(3) Unit Cost	9.0	7.9	6.2

(U) Cost Variance Analysis:

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

	RDT&E,N	PROC	MILCON	TOTAL
Development Estimate	721.8	3170.4	15.4	3907.6
Previous Changes:				
Economic	+25.8	-61.9	+1.1	-35.0
Quantity	-	-228.9	-	-228.9
Schedule	-	+1149.8	-	+1149.8
Engineering	+92.3	+180.7	-	+273.0
Estimating	+69.0	+1053.0	+5.0	+1127.0
Other	-	-	-	-
Support	+1.6	+633.8	-	+635.4
Subtotal	+188.7	+2726.5	+6.1	+2921.3
Current Changes:				
Economic	-2.6	-175.1	-	-177.7
Quantity	-	-	-	-
Schedule	-	+416.6	-	+416.6
Engineering	-	-13.7	-	-13.7
Estimating	-141.2	-500.1	-	-641.3
Other	-	-	-	-
Support	-	-78.9	-	-78.9
Subtotal	-143.8	-351.2	-	-495.0
Total Changes	+44.9	+2375.3	+6.1	+2426.3
Current Estimate	766.7	5545.7	21.5	6333.9

(FY 1976 Constant (Base-Year) Dollars in Millions)

	RDT&E,N	PROC	MILCON	TOTAL
Development Estimate	579.7	1808.0	9.0	2396.7
Previous Changes:				
Quantity	-	-119.8	-	-119.8
Schedule	-	+199.3	-	+199.3
Engineering	+44.0	+57.2	-	+101.2
Estimating	+37.7	+366.3	+3.2	+407.2
Other	-	-	-	-
Support	+1.2	+163.2	-	+164.4
Subtotal	+82.9	+666.2	+3.2	+752.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-3.9	-	-3.9
Estimating	-66.8	-60.6	+0.1	-127.3
Other	-	-	-	-
Support	-	-40.8	-	-40.8
Subtotal	-66.8	-105.3	+0.1	-172.0
Total Changes	+16.1	+560.9	+3.3	+580.3
Current Estimate	595.8	2368.9	12.3	2977.0

(A)

Cost Variance Analysis (Cont'd):

b. Previous Change Explanations --

RDT&E,N

Economic: revised escalation indices

Estimating: reconfiguration of test and evaluation ship and addition of Preplanned Product Improvement (P^3I) program

Support: cost change to fund tasks directed by Office of the Secretary of Defense relating to availability

Procurement

Economic: revised escalation indices

Quantity: deletion of fourteen (14) FFG class ships from LAMPS MK III backfit program (OPN/O&MN(FMP))

Schedule: revised aircraft procurement production schedules (APN) and ship installation schedules (OPN/O&MN(FMP))

Engineering: design engineering for production tooling; engineering testing; and production impact of development-derived improvements to the aircraft, avionics, and engine (APN)

Estimating: impact of projected change in Army's BLACK HAWK procurement plan and refinement of estimates to reflect contract actuals (APN) and refinement of ship electronics and HLS procurement and installation cost estimates (OPN/O&MN(FMP))

Support: refinement of support requirements, equipment, and spares to support revised aircraft procurement schedules and to reflect contract actuals (APN) and refinement of support and spares to support revised ship procurement schedules (OPN)

MILCON

Economic: revised escalation indices

Estimating: refinement of requirements for Applied Instruction Building and Operational/Maintenance Trainer Building

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E,N		
Revised escalation indices. (Economic)	N/A	-2.6
Refinement of estimate of Preplanned Product Improvement Program. (Estimating)	-66.8	-141.2
(2) Procurement		
(a) APN		
Revised escalation indices. (Economic)	N/A	-163.4
Extension of buy schedule with the same total quantity of aircraft over a longer buy period. (Schedule)	N/A	+452.1
Incorporation of an approved ECP matrix. (Engineering)	-3.9	-13.7
Refinement of prior estimates based on additional procurement cost history (includes impact of six (6) Spanish FMS aircraft). (Estimating)	-63.9	-551.7
Reconciliation of program support requirement based on more accurate cost history. (Support)	-43.5	-88.2

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

c. Current Change Explanations (Cont'd) --

	(Dollars in Millions) Base-Year	Then-Year
(b) OPN		
Revised escalation indices. (Economic)	N/A	-4.3
Revised procurement schedule: SQQ-28 slipped buy; SRQ-4 accelerated buy; HLS accelerated buy. (Schedule)	N/A	-1.4
Refinement of prior esitmates to reflect contract actuals. (Estimating)	-12.3	-24.6
Revised procurement schedule (same as schedule explanation); refinement of support equipment and spares. (Support)	+2.7	+9.3
(c) O&MN		
Revised escalation indices. (Economic)	N/A	-7.4
Revised procurement schedule. (Schedule)	N/A	-34.1
Refinement of prior estimates. (Estimating)	+15.6	+76.2
(3) MILCON		
Prior year escalation changes. (Estimating)	+0.1	N/A

d. References --
Development Estimate: DCP No. 85 dated March 5, 1979.
Approved Program: SDDM, dated December 8, 1982, subject "LAMPS MK III Program" (Approval for Production).

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

a. Initial SAR Estimate to Current Baseline Estimate --

(1) Aircraft

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
15.5	--	--	--	--	--	--	--	--	15.5

(2) Ship Systems

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
10.9	--	--	--	--	--	--	--	--	10.9

b. Current Baseline Estimate to Current Estimate --

(1) Aircraft

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
15.5	-0.8	--	+7.6	+1.3	-0.2	--	+2.4	+10.3	25.8

(2) Ship Systems

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
10.9	-1.3	-4.9	-0.3	-0.4	+12.9	--	+1.0	+7.0	17.9

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

a. RDT&E,N -- Not Applicable.

b. Procurement

System Integrator:	Initial Contract Price Target	Ceiling	Qty
IBM Corporation, Owego, NY, N00019-82-C-0025, Lot II/III, FFP, Award: April 29, 1982 Definitized: August 15, 1983	$290.1	N/A	48

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$331.0	N/A	48	$331.0	$331.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change: Initial contract price is the definitized hardware costs which omitted minimum avionics. Current contract price and current estimate include all nitized flyaway hardware and minimum avionics costs.

System Integrator:	Initial Contract Price Target	Ceiling	Qty
IBM Corporation, Owego, NY, N00019-83-C-0368, Lot IV, FFP, Award: March 14, 1984 Definitized: January 28, 1985	$134.0	N/A	24

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$134.0	N/A	24	$139.5	$139.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change: This is a firm fixed price contract, therefore, the cost and schedule variance section above is not applicable. The current estimates at completion include anticipated engineering change proposals.

Airframe:	Initial Contract Price Target	Ceiling	Qty
rsky Aircraft Division, tford, CT, N00019-81-C-0350, II/III, FPI, Award: March 8, 1982 Definitized Lot II: March 28, 1983 Definitized Lot III: October 28, 1983	$253.3	$277.0	48

15(U) Contract Information (Cont'd): (Then-Year Dollars in Millions)

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$336.4	$365.7	48	$329.1	$328.8
			Cost Variance	Schedule Variance
Previous Cumulative Variances			$ -0.9	$+20.5
Cumulative Variances to Date (11/30/85)			$+17.3	$ -0.4
Net Change			$+18.2	$-20.9

Explanation of Change: The overall favorable cost variance reflects an estimated underrun at completion. Sikorsky is experiencing an unfavorable schedule variance due to a behind schedule condition for support equipment and data. Initial contract price is the definitized flyaway costs for Lots II/III. Current contract price includes all flyaway and provisioned items on contract. The current estimates at completion include the shared underrun.

Airframe:
Sikorsky Aircraft Division,
Stratford, CT, N00019-83-C-0297,
Lot IV, FFP,
Award: March 12, 1984
Definitized: November 8, 1984

Initial Contract Price		
Target	Ceiling	Qty
$112.2	N/A	18

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$112.2	N/A	18	$118.5	$118.5
			Cost Variance	Schedule Variance
[redacted]ious Cumulative Variances			N/A	N/A
[redacted]lative Variances to Date			N/A	N/A
Net Change			N/A	N/A

Explanation of Change: The current estimates at completion include anticipated engineering change proposals.

RAST/HRS:
Canadian Commercial Corporation
Mississauga, Ontario, N00019-82-C-0097,
Lot II/III, FPI,
Award: April 30, 1982
Definitized: December 30, 1982

Initial Contract Price		
Target	Ceiling	Qty
$49.8	$53.5	27

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$51.1	$54.0	27	$48.3	$48.7
			Cost Variance	Schedule Variance
Previous Cumulative Variances			$+0.7	$-1.3
Cumulative Variances to Date (11/30/85)			$+1.0	$-0.5
Net Change			$+0.3	$+0.8

Explanation of Change: The positive net change to the cumulative cost variance reflects continued favorable performance in most elements. The positive net change to the [redacted]lative schedule variance is expected to continue to improve with the shipsets [redacted]veries. Initial contract price is the definitized hardware price. The currrent contract price includes all provisioned items. The current estimates at completion includes all hardware (except the Australian unit added in 1985), provisioned items and the shared underrun.

15) Contract Information (Cont'd): (Then-Year Dollars in Millions)

RAST/HRS:	Initial Contract Price Target	Ceiling	Qty
Canadian Commercial Corporation Mississauga, Ontario, N00019-84-C-0030, Lot IV, FFP, Award: March 5, 1984 Definitized: March 5, 1984	$20.0	N/A	12

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$20.1	N/A	12	$20.8	$20.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change: Initial contract price is the definitized hardware price. The current contract price also includes Engineering Change Proposals (ECPs) on contract. The estimate at completion also includes anticipated ECPs.

c. MILCON -- Not Applicable.

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

a. Program Status --

(1) Percent Program Completed: 62.1% (18 yrs/29 yrs)

(2) Percent Program Cost Appropriated: 62.1% ($3934.1/$6333.9)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY69-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP (FY92-97)	Total
RDT&E,N	764.2	2.0	0.5	-	766.7
APN	2786.5	234.9	699.0	956.0	4676.4
OPN	295.9	36.9	129.5	-	462.3
O&MN	66.0	62.7	261.4	16.9	407.0
MCON	21.5	-	-	-	21.5
Total	3934.1	336.5	1090.4	972.9	6333.9
(Aircraft)					(5385.8)
(Ship Systems)					(948.1)

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

c. Annual Summary --

Fiscal Year	Qty	FY 76 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E,N[1]								
1969				0.8			0.8	
1970				3.0			3.0	
1971				3.4			3.4	
1972				22.7			22.7	
1973				18.6			18.6	
1974				9.5			9.5	
1975				19.1			19.1	
1976				24.4			24.4	
197T				3.3			3.5	2.9
1977				65.9			71.9	2.6
1978				115.5			135.8	6.8
1979				72.8			94.5	8.4
1980				123.8			177.6	10.6
1981				63.8			99.8	10.6
1982				42.0			69.3	7.6
1983				5.2			8.9	4.9
1984				0.8			1.4	3.8
1985								3.6
1986								3.2
1987				1.0			2.0	4.1
1988				0.2			0.5	3.9
Subtotal	5A/C, 3S/S[2]			595.8			766.7	
Appropriation: APN								
1981				52.2	103.8		103.8	11.6
1982	18	40.7	199.8	346.6	126.6	103.8	697.8	14.3
1983	27	8.8	159.6	359.1	56.4	82.6	766.2	9.0
1984	21		119.5	223.2	58.8	100.4	504.5	8.0
1985	24	1.7	118.3	179.9	57.9	58.8	421.3	4.1
1986	18	0.8	88.7	120.4	52.7	57.9	292.9	4.1
1987	17		82.3	92.9	21.1	52.7	234.9	4.1
1988	6	12.6	33.7	59.9	22.1	21.1	158.6	3.9
1989	6		33.4	52.0	25.0	22.1	141.7	3.4
1990	6	4.7	34.8	59.9	44.4	25.0	167.1	2.9
1991	12		64.0	82.0	45.2	44.4	231.6	2.3
1992	12		63.1	81.0	47.8	45.2	234.2	2.3
1993	12		62.8	77.0	49.0	47.8	228.1	2.3
1994	12		62.6	78.8	56.2	49.0	239.0	2.3
1995	13		67.7	65.9		56.2	205.4	2.3
1996				8.0			24.9	2.3
1997				7.7			24.4	2.3
Subtotal	204	69.3	1190.3	1946.5	767.0	767.0	4676.4	

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

c. Annual Summary --

Fiscal Year	Qty	FY 76 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: OPN								
1982	5		16.4	22.6			39.9	7.6
1983	9		24.7	41.8			76.6	4.9
1984	9		19.0	32.2			61.4	3.8
1985	10		23.1	32.3			63.9	3.6
1986	6		14.3	26.4			54.1	3.2
1987	6		11.1	17.4			36.9	4.1
1988	5		9.2	20.5			44.8	3.9
1989				12.7			28.4	3.4
1990				12.2			28.0	2.9
1991				12.1			28.3	2.3
Subtotal	50		117.8	230.2			462.3	
Appropriation: O&MN (FMP)								
1984	1			1.3			2.3	3.8
1985	7			16.3			30.8	3.6
1986	4			16.8			32.9	3.2
1987	6			30.8			62.7	4.1
1988	9			44.6			94.2	3.9
1989	9			35.3			77.0	3.4
1990	5			20.3			45.4	2.9
1991	6			19.6			44.8	2.3
1992	3			7.2			16.9	2.3
Subtotal	50			192.2			407.0	
Appropriation: MILCON								
1982				7.3			12.5	7.6
1983				5.0			9.0	4.9
Subtotal				12.3			21.5	
Total				2977.0			6333.9	
(Aircraft)				(2494.1)			(5385.8)	
(Ship Systems)				(482.9)			(948.1)	

1/ Excludes RDT&E,N costs for the Penguin missile.
Includes 5 aircraft and 3 ship systems which were incrementally funded with no annual procurement quantities identified.

(U) Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E,N 1/			
1969	0.8	0.8	0.8
1970	3.0	3.0	3.0
1971	3.4	3.4	3.4
1972	22.7	22.7	22.7
1973	18.6	18.6	18.6
1974	9.5	9.5	9.5
1975	19.1	19.0	18.9
1976	24.4	24.4	24.4
197T	3.5	3.4	3.3
1977	71.9	71.9	71.7
1978	135.8	135.8	135.6
1979	94.5	94.5	94.0
1980	177.6	177.6	172.8
1981	99.8	99.8	98.1
1982	69.3	69.3	66.5
1983	8.9	8.9	6.8
1984	1.4	1.4	
To Complete	2.5	N/A	N/A
Total	766.7	764.0	750.1
Appropriation: APN			
1981	103.8	104.4	109.0
1982	697.8	690.0	657.0
1983	766.2	752.4	574.9
1984	504.5	490.6	257.8
1985	421.3	355.8	59.6
To Complete	2182.8	1.7	N/A
Total	4676.4	2394.9	1658.3
Appropriation: OPN			
1982	39.9	39.9	31.5
1983	76.6	76.6	52.5
1984	61.4	55.2	24.8
1985	63.9	49.8	7.5
To Complete	220.5	1.6	N/A
Total	462.3	223.1	116.3

1/ Note: Excludes $47.0M for Penguin Missile

(U) Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: O&MN (FMP)[1/]			
1984	2.3		
1985	30.8		
To Complete	373.9		
Total	407.0		
Appropriation: MILCON			
1982	12.5	12.1	12.1
1983	9.0	7.5	7.2
Total	21.5	19.6	19.3

1/ Ship alterations are done on a per ship basis. Obligations and expenditures are not broken out by weapon system.

(U) Production Rate Data:

a. Annual Production Rates -- The maximum economic production rate is the combination of SH-60B/SH-60F.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate*	Current Estimate	Maximum
1982	16	16	18	60
1983	48	48	27	60
1984	48	48	21	60
1985	48	48	24	60
1986	44	44	18	60
1987			17	60
1988			6	60
1989			6	60
1990			6	60
1991			12	60
1992			12	60
1993			12	60
1994			12	60
1995			13	60

* Development Estimate used.

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

b. Cost Variance -- Dollars in Millions

Item	Production Estimate*	Variance (CE less PdE)*	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	2017.2	+476.9	2494.1	+103.1	2391.0
(TY $)	3239.5	+2146.3	5385.8	+706.3	4679.5
PAUC (BY $)	9.7	+2.2	11.9	+0.5	11.4
(TY $)	15.5	+10.3	25.8	+3.4	22.4

* Development Estimate used.

c. Schedule Variance --

	Production Estimate*	Variance (CE vs PdE)*	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	10/83	N/A	10/83	N/A	10/83
Duration (in Months)	59	109	168	127	41
End Date (Mo/Yr)	8/88	N/A	9/97	N/A	2/87

* Development Estimate used.

d. Deliveries (Plan/Actual) --

Aircraft:	To Date
RDT&E,N	5/5
Procurement	48/50

Ship Systems:	To Date
RDT&E,N	3/3
Procurement	11/11**

** OPN ship systems only.

18.(U) Operating and Support Costs: Not Reported.

AF-1 AGM-65

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SAR-85-059

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: AGM-65D & AGM-65G

AS OF DATE: December 31, 1985

(U) INDEX

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

1. (U) Designation/Nomenclature (Popular Name): AGM-65D & G/IR Maverick

2. (U) DoD Component: U.S. Air Force

3. (U) Responsible Office and Telephone Number:

Maverick Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433

Col R. Jennings
Assigned: June 27, 1984
AV 785-2417; COMM (513) 255-2417

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

RDT&E: PE 64608F (No shared funding)
PROCUREMENT: PE 27313F (No shared funding) APPN 3020 ICN M65DAG

5. (U) Related Programs: IR GBU-15 (V)/B Cruciform Wing Weapon
F-4D, A-7D, A-10A, F-16, F-111D/F, F-4G
NAVY IR Maverick (AGM-65F)

6. (U) Mission and Description:
The AGM-65D is a rocket propelled, air-to-surface precison guided missile that develops tracking signals from the naturally occurring thermal energy of the target. It is designed to destroy small hard tactical targets during day or night even under limited adverse weather conditions in the counter-air, interdiction, and close air support operations of the tactical air

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forces. The AGM-65D will be compatible with F-4D/E, A-7D, A-10A, F-16, F-111/F, and F-4G aircraft. It will increase the capability of the Maverick Weapon System by providing a day or night launch and leave mission capability and complements the capabilities of the AGM-65A and B missiles. It does not replace any existing Air Force missile system. The AGM-65G, the Maverick Alternate Warhead Missile, contains the same guidance and control hardware and is designed to destroy specific hardened targets.

7. (U) Program Highlights :

a. (U) Significant Historical Developments - The IR Maverick Development Estimate assumed start of engineering development in April 1977. Congress denied FY78 funding for IR Maverick with direction to use FY77 funds for additional advanced development and testing of an IR Centroid Tracker. Extensive captive flight tests were completed at Fort Polk, Louisiana and in Germany in 1977 and 1978. Engineering development was initiated in October 1978. The IR Maverick Preliminary Design Review was in June 1979 and the Critical Design Review was conducted in June 1980. The DT&E/IOT&E for the AGM-65D began in early FY81 and concluded in August 1982. During this test program, 334 captive missions and 26 actual launches were accomplished. Of the 26 firings, 20 were direct hits. AFOTEC IOT&E results were reported during the September 1982 AFSARC/OSD Review cycle. Operational Effectiveness was reported as satisfactory and Operational Suitability as deficient. OSD directed the production of 200 missiles with FY82 funds. The next OSD Review, held in April 1983, approved the FY83 buy of 900 missiles. Test data from the Reliability Maintainability Validation Program (RMVP) presented at this review showed a favorable improvement in reliability.

Part 1 of FOT&E took place at Eglin AFB from May-Oct 1984 and consisted of captive carry and launch missions with F-111F and F-16 aircraft. A total of 220.3 captive carry hours were recorded along with 17 missile launches. Part 2 consisted of 211.8 captive carry hours (no launches) with the emphasis on target acquisition and delivery aircraft survivability.

Phase 1, Part 3 of FOT&E concluded on the 6th of September, 1985. Twelve launches of the post-ECP 604 producibility version of the IR Maverick were completed at Nellis AFB from A-10 launch aircraft against a variety of targets. This was an AFOTEC piggy-back test effort with TAC FOT&E Phase II. Out of 12 launches, 11 direct hits were accomplished. TAC's FOT&E Phase II efforts have included 6 launches as of September 1985 with 6 hits.

The Raytheon OT&E efforts have produced three launches as of September 1985 with one miss and two hits. The miss was attributed to a sensor loss of lock problem which was corrected prior to the second launch.

The Hughes production line was temporarily shut down in August 84 to correct quality problems. The line resumed production in December 84. Hughes Aircraft Company has presented a revised forecast which reflects a get-well in May of 1986.

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

(b) (U) Significant Developments Since Last Report

The Raytheon QT&E Program was completed with the successful launch of the eighth flight test missile on the 4th of December. This Maverick program milestone set in motion the final efforts to award the production option to Raytheon for 800 missiles scheduled for delivery from May 1987 through November 1988.

The TAC Phase II of FOT&E was completed on 20 Nov 85 with 13 hits for 13 launches.

The Hughes Tucson Contractor Operations Review (COR) was conducted in October . The results of the COR reflected a significant effort had been made by Hughes to correct the deficiencies identified during the summer of 1984 that resulted in the shutdown of the assembly line. All areas received a satisfactory rating, (only satisfactory, marginal, and unsatisfactory ratings are given), with the exception of Manufacturing which was rated marginal.
The IR Maverick is expected to satisfy current mission requirements.

(c) (U) Change since "As Of" date - None

8. (U) Decision Coordinating Paper Threshold Breaches: DCP #154, 20 Sep 1976. IOC Threshold of Dec 81 was breached due to Congressional action on FY 1978 budget.

9. (U) Schedule:

a. (U) Milestones	Dev Estimate/ Appr Program	Current Estimate
DSARC II	Sep 76/Sep 76	Sep 76
Engineering Development Contract Award	Apr 77/Oct 78	Oct 78
DT&E/IOT&E Flight Tests Start	Nov 78/Jul 80	Jun 80
Demonstration Milestones	May 79/N/A	N/A
DSARC III A (Pilot Prod. Partial Release)	Jun 79/N/A	Mar 82
Complete DT&E/IOT&E	Jan 80/Sep 81	Aug 82
DSARC III B (Pilot Production Full Go-Ahead)	Mar 80/N/A	Sep 82
DSARC III	N/A /Sep 81	N/A
IOC	Jun 81/Dec 83	Feb 86
OSD Review (Reliability/Maintainability Review)	N/A / N/A	Apr 83
OSD Review (Full Production go-ahead)	N/A / N/A	Mar 86

b. (U) Previous Change Explanations --

The Engineering Contract Development Award date was changed to May 77 because of a Dec 76 PBD cut of $16.2M in FY78 RDT&E funds. Again changed to Aug 77 because of OSD referral of FY77 IR Maverick funds pending Congressional action on the FY78 program. Further changed to Oct 78 because all FY78 funds were deleted and also because additional advance development and testing was required for the IR Centroid Tracker.

The DT&E/IOT&E Flight Tests Start Date was first changed to Apr 79 because of a Dec 76 PBD cut of $16.2M in FY78 RDT&E funds. Further changed to Jul 80 because all FY78 funds were deleted and because additional advanced development and testing was required for the IR Centroid Tracker.

b. (U) Previous Change Explanations - Cont'd:

Demonstration Milestones was first changed to Sep 79 because of a Dec 76 PBD cut of $16.2M in FY78 RDT&E funds. Further changed to Dec 80 because all FY78 funds were deleted and because additional advanced development and testing was required for the IR Centroid Tracker. The need for Demonstration Milestones was deleted when DSARC III milestone was created.

DSARC III A was first changed to Apr 80 because of a Dec 76 PBD cut of $16.2M in FY78 RDT&E funds. Changed to Jan 81 because all FY78 funds were deleted and because additional advanced development and testing was required for the IR Centroid Tracker. Late missile deliveries delayed DT&E completion and the need to reaccomplish winter site testing due to abnormally warm weather during Feb and Mar 81 tests precluded AFOTEC from completing IOT&E until Mar 82. Production decision milestones have been restructured to allow interim decision in Jan 82 to support FY82/490 missile pilot production start with a follow-on full scale production decision in May 82 after completion of DT&E/IOT&E testing. Combined into one DSARC III (Milestone 8) and deleted the need for Demonstration Milestones (Milestone 4). OSD Program Review on 2 Mar 82 changed AFSARC/DSARC decision points.

The date of completion for DT&E/IOT&E was first changed to Jul 80 because of a Dec 76 PBD cut of $16.2M in FY78 RDT&E funds. Changed to Jul 81 because all FY78 funds were deleted and because additional advanced development and testing was required for the IR Centroid Tracker. Delayed release of FY79 development funds and increased emphasis on operational testing precluded AFOTEC from completing IOT&E until Sep 81. Changed because DOD guidance and Program Management Directive, dated 21 Feb 80, recognized a delay in completion of IOT&E which will impact DSARC III and IOC (Milestone 8 and 9 respectively). Late missile deliveries delayed DT&E completion and the need to reaccomplish winter site testing due to abnormally warm weather during Feb and Mar 81 tests precluded AFOTEC from completing IOT&E until Mar 82. Production decision milestones were restructured to allow interim decision in Jan 82 to support FY82/490 missile pilot production start with a follow-on full scale production decision in May 82 after completion of DT&E/IOT&E testing. Changed to accomodate delays encountered in completing DT&E/IOT&E due to limited test support resources. This milestone was accomplished in Aug 82.

DSARC III B was first changed to Dec 81 because of a Dec 76 PBD cut of $16.2M in FY78 RDT&E funds. Late misssile deliveries delayed DT&E completion and the need to reaccomplish winter site testing due to abnormally warm weather during Feb 80 and Mar 81 tests precluded AFOTEC from completing IOT&E until Mar 82. Changed to accomodate delays encountered in completing DT&E/IOT&E due to limited test support resources. OSD Program Review on 2 Mar 82 changed AFSARC/DSARC decision points. OSD Review occurred 21 Sep 82 and approved Pilot Production.

Late missile deliveries delayed DT&E completion and the need to reaccomplish winter site testing due to abnormally warm weather during Feb and Mar 1981 tests precluded AFOTEC from completing IOT&E until Mar 82. DSARC III was changed to accomodate delays encountered in completing DT&E/IOT&E due to limited test

b. (U) Previous Change Explanations - Cont'd:

support resources. Revised by 29 Mar 82 OSD memorandum restructuring the program and establishing new program milestones. DSARC III was replaced by two-phased DSARC III A (Pilot Production) and DSARC III B (Pilot Production, Full Go-ahead).

The IOC was changed to Mar 83 because all FY78 funds were deleted and because additional advanced development and testing was required for the IR Centroid Tracker. Changed to accomodate temporary suspension of DT&E/IOT&E testing needed to correct missile problem identified at Ft. Drum winter testing. Due to production line shutdown and the resultant delay in shipment of hardware, the IOC was slipped from Apr 85 to Sep 85 and then again to Feb 86.

The Reliability/Maintainability Review was accomplished on Apr 83.

The decision of the Apr 83 OSD Review was that the next review should not occur until completion of FOT&E, approximately Aug 85. The Full Production go-ahead slipped from Aug 85 to Mar 86 due to the impact of the production delays previously mentioned, the resulting slip in FOT&E, and a slower build-up of the production rate.

c. (U) Current Change Explanations -- None

d. (U) References --

Development Estimate: DCP 154, dated September 20, 1976, subject "Imaging Infrared Maverick Missile System."

Approved Program: Same as Development Estimate

10. (U) Technical/Operational Characteristics:

	Dev Estimate/ Appr Program	Demonstrated Performance *	Current Estimate
a. (U) Technical			
(b)(1)			
(U) Boresight Accuracy (mr)	4.0 /4.0	4.0	4.0
b. (U) Operational			
(b)(1)			
(U) Mission Success Probability	.80/.80	.83(CH-2)	.80

* Mean Values

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

d. (U) Current Change Explanations --

(b)(1)

(CH-2) (U) Change in the Demonstrated Performance of Mission Success Probability from .77 to .83 reflect cumulative results through completion of FOT&E.

(b)(1)

e. (U) References --

Development Estimate: DCP 154, dated September 20, 1976, subject "Imaging Infrared Maverick Missile System."

Approved Program: Same as Development Estimate

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate (FY75-86)	Changes	Current Estimate (FY75-93)
a. (U) Cost --			
Development (RDT&E)	$ 100.0	+6.7	$ 106.7
Procurement	895.1	+1345.6	2240.7
Total Flyaway	(792.1)	(+1310.0)	(2102.1)
Peculiar Support	(99.1)	(+14.6)	(113.7) 1/
Other Weapon System Cost	---		---
Initial Spares	(3.9)	(+21.0)	(24.9)
Construction(MILCON)	---		---
Total Constant FY75 $	995.1	+1352.3	2347.4
Escalation	597.8	+3290.9	3888.7
Development (RDT&E)	(34.4)	(+26.9)	(61.3)
Procurement	(563.4)	(+3264.0)	(3827.4)
Total Program Cost (TY$)	1592.9	+4643.2	6236.1

1/ Includes $56.0 in recurring flyaway costs for 891 training missiles.

b. (U) Quantities --

Development (RDT&E)	35	-2	33
Procurement	31078	+29586	60664
Total	31113	+29584	60697

c. (U) Unit Cost --

Procurement:			
Constant FY75 $	$ 0.029	$+ 0.008	$ 0.037
Current (TY $)	0.047	+ 0.053	0.100
Program:			
Constant FY75 $	0.032	$+ 0.007	0.039
Current (TY $)	0.051	+ 0.052	0.103

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

		(Average Unit Flyaway Cost)	
	Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
Qty: 14740			
Peak rate: 500			
Constant FY 1975 $	0.032/0.032	0.060	0.032
Current (TY $)	0.050/0.072	0.147	0.050

e. (U) Foreign Military Sales -- None

f. (U) Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	6236.1	6122.6	6236.1
(2) Quantity	60697	60697	60697
(3) Unit Cost	.103	.101	.103
b. Current Procurement--	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	408.5	489.8	586.6
Less CY Adv Proc	-	-	-
Plus PY Adv Proc	+15.0	+15.0	-
Net Total	423.5	504.8	586.6
(2) Quantity	2600	3500	4700
(3) Unit Cost	.163	.144	.125

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Development Estimate	134.4	1458.5	1592.9
Previous Changes			
Economic	+10.4	+302.3	+312.7
Quantity	-1.1	+1564.4	+1563.3
Schedule	+18.6	+1039.6	+1058.2
Engineering	0.0	+42.5	+42.5
Estimating	-0.4	+1470.7	+1470.3
Other	0.0	0.0	0.0
Support	+5.9	+76.8	+82.7
Subtotal	+33.4	+4496.3	+4529.7
Current Changes			
Economic	0.0	-375.3	-375.3
Quantity	0.0	0.0	0.0
Schedule	0.0	+ 98.0	+ 98.0
Engineering	0.0	-12.5	-12.5
Estimating	+0.2	+362.2	+362.4
Other	0.0	0.0	0.0
Support	0.0	+40.9	+40.9
Subtotal	+0.2	+113.3	+113.5
Total Changes	+33.6	+4609.6	+4643.2
Current Estimate	168.0	6068.1	6236.1

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

a. Summary--(FY1975 Constant Dollars (Base Year) In Millions)

	RDT&E	PROC	TOTAL
Development Estimate	100.0	895.1	995.1
Previous Changes			
Quantity	- 0.7	+ 512.7	+ 512.0
Schedule	+ 6.4	+ 135.8	+ 142.2
Engineering	0.0	+ 15.0	+ 15.0
Estimating	- 2.6	+ 526.1	+ 523.5
Other	0.0	0.0	0.0
Support	+ 3.5	+ 21.4	+ 24.9
Subtotal	+ 6.6	+1211.0	+1217.6
Current Changes			
Quantity	0.0	0.0	0.0
Schedule	0.0	0.0	0.0
Engineering	0.0	- 4.4	- 4.4
Estimating	+ 0.1	+ 124.8	+ 124.9
Other	0.0	0.0	0.0
Support	0.0	+ 14.2	+ 14.2
Subtotal	+ 0.1	+ 134.6	+ 134.7
Total Changes	+ 6.7	+1345.6	+1352.3
Current Estimate	106.7	2240.7	2347.4

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised Economic Escalation indicates.
Quantity: RDT&E Change from 35 missiles to 33.
Schedule: PBD changes, Congressional cancellation of FY78 funds.
Estimating: Definitization of FSD Contract, restoration of IR test and second source, estimating offset for economic change due to change in prior year escalation, program amounts aligned to actual obligations in prior years.

Support: Addition of initial support items.

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

b. (U) Previous Change Explanations (Cont'd):

PROCUREMENT

Economic: Revised Economic Escalation Rates.

Quantity: Procurement change from 31078 to 60664.

Schedule: PBD changes, Congressional Cancellation of FY78 funds, realignment of buy quantities, slippage of production start from FY81 to FY82 and program restructure, net change(loss) in production efficiency due to rescheduling units to 1990 time frame due to funding cuts, program schedule extended one year due to amendment to FY85 P.B.

Engineering: Engineering change on 1800 units to modify them to AGM-65Gs.

Estimating: Revised estimate from definitization of Segment I, revised estimate from DSARC III ICA, recategorization of containers from Support to Flyaway, reestimate of containers using contract settlement, reestimate of Value Engineering Royalties using contract settlement, 300 unit increase in Raytheon pilot production for FY86 and change in FY87 Competition assumptions estimate updated using contract proposal and Hughes productivity plan, adjustment for prior year escalation, one-time change resulting from correction to methodology for computing inflation on programs with advance procurement funding.

Support: Deletion of FDT, addition of initial spares and support items, reestimate of training equipment, support equiment and data using Hughes Production Contract, recatagorization of containers from Support to Flyaway, Plant 44 environmental clean-up, reduction of initial spares due to funding cuts contained in the amended FY85 P.B. and the FY86 P.B., reestimate of Support using contract settlements.

c. (U) Current Change Explanations: (Dollars in Millions)

	Base Year $	Then Year $
(1) RDT&E		
Extension and completion of Rapid Fire II effort (Estimating)	+.1	+.2
(2) PROCUREMENT		
Revised economic escalation indices (Economic)	---	-375.3
Impact of prior year inflation adjustment (Estimating)	+12.8	+28.6

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

c. (U) Current Change Explanations -- (Cont'd)

(2) PROCUREMENT (Cont'd)

	Base Year $	Then Year $
Inflation impact due to delay in missile procurement caused by out year budget cuts (Schedule)	0.0	+ 98.0
Cost impact to unit prices (production rate inefficiencies) and fixed costs (additional fiscal year buys) caused by schedule delays (Estimating)	+118.1	+ 345.5
Addition of VECP 718, Rate of Acceleration Meter (ROAM) resulted in incorporated savings to hardware price (Engineering)	- 4.4	- 12.5
Refined estimating methodology based on negotiated and current proposed values. (Estimating)	+ 4.8	+ 19.6
Amount to be taken from estimating to balance to proper mix (Estimating)	- 1.9	- 6.0
Reestimate of initial spares requirement (Support)	+ 4.1	+ 12.6
Amount to be added to support to balance to proper mix (Support)	+ 1.9	+ 6.0
Additional peculiar support equipment (depot work stations) for missile inventory build-up in FY88 (Support)	+ 4.7	+ 12.8
Additional data for second source (Support)	+ 3.5	+ 9.5
Budget reductions absorbed by ECO line (Estimating)	- 9.0	- 25.5

d. (U) References --

Development Estimate: DCP 154, dated September 20, 1976, subject "Imaging Infrared Maverick Missile System."

Approved Program: Same as Development Estimate

14. (U) Program Acquisition Unit Cost (PAUC) History:

Initial SAR Estimate to Current Estimate

Changes (Then-Year Dollars in Millions)									
PAUC Initial SAR Development Estimate	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	PAUC Current Estimate
.051	-.001	.001	.019	.001	.030	.002	.000	.052	.103

15. (U) Contract Information: (Dollars in Millions)

a. RDT&E - N/A

b. Procurement

Second Source Qualification:

Initial Contract Price

Target	Ceiling	Qty
$49.6	$54.9	15

Raytheon Co, Missile Systems Division
Bristol, TN, F33657-83-C-2113, FPIF
Award: May 21, 1983
Definitized: May 21, 1983

Current Contract Price

Target	Ceiling	Qty
$68.0	$75.3	15

Estimated Price At Completion

Contractor	Program Manager
$71.9	$72.6 (CH 1)

CH 1: The program manager's estimate at completion (EAC) decreased from $75.3 (Sep 85 SAR) to $72.6 as a result of recent successful testing in the Qualification Program which subsequently impacted the estimating techniques for the EAC.

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$-2.4	$-1.1
Corrected Previous Cumulative Variance	$-4.0	$-2.6
Cumulative Variance to Date(24 Nov 85)	$-4.3	$-2.3
Net Change	$-0.3	$+0.3

Explanation of Change: Net change to cost and schedule variances are due primarily to the contractor's incorrect calculation of earned value in the July 85 CPR. The corrected values changed the cost variance from -2.4 (Sep 85 SAR) to -4.0 and the schedule variance from -1.1 (Sep 85 SAR) to -2.6. The net change to the cost variance(-.3) and schedule variance(+.3) after corrections resulted from insignificant changes in the overall cost and schedule. The program is expected to complete deliveries in March 86. Since work on this contract is over 90% complete (91%), this will be the final report on this contract.

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

Follow on Production (Segment 2):

Initial Contract Price		
Target	Ceiling	Qty
$163.0	$180.0	900

Hughes Aircraft Co.
Missiles Systems Group
Tucson, AZ, F33657-83-C-2195, FPIF
Award: December 23, 1983
Definitized: December 23, 1983

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$163.8 (CH 1)	$180.8	900	$180.8	$180.8 (CH 1)

CH 1: Target price of $165.1 (Sep 85 SAR) and Program Manager's estimated price at completion of $184.8 (Sep 85 SAR) decreased as a result of a contract modification awarding Test Analysis and Fix effort as a firm fixed price contract.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ - 19.3	$ - 74.6
Cumulative Variance to Date (22 Nov 85)	$ - 38.4	$ - 35.9
Net Change	$ - 19.1	$ + 38.7

Explanation of Change: The 28 Jun 85 CPR reported a schedule variance of $-74.6. The current $-35.9 schedule variance has occurred since a new schedule was adopted in September 85. While missile deliveries are meeting the revised schedule, limited availability of circuit card assemblies is the primary cause of the schedule variance. High value subcontracted items (cryoengines, detectors, etc) are available for assembly but cannot be used until the circuit cards are ready. Thus the value of the subcontracted items has not been earned at the planned rate. The primary contributor to the cost variance of $-38.4 is higher than expected manufacturing engineering labor costs. Deliveries are expected to be complete in June 86. The program manager's estimate remains at ceiling and is within approved funding.

Guided Missile Test Sets (GMTS):

Bendix Corporation
#F33657-81-C-2047, FFP (CH 1)
Award: March 1, 1981 (CH 1)
Definitized: March 1, 1981 (CH 1)

Initial Contract Price		
Target	Ceiling	Qty
$ 1.3	N/A	N/A

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 20.9	N/A	N/A	$ 20.9	$ 20.9

Cost Variance	Schedule Variance
N/A *	N/A *

CH 1: Correction of Contractural Dates
* CPR data is not available on FFP contracts

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

Containers:

Plastics Research Corporation
#F33657-83-C-2063, FFP
Award: August 30, 1983
Definitized: August 30, 1983

Initial Contract Price		
Target	Ceiling	Qty
$0.2	N/A	7

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$2.7 (CH 1)	N/A	1855	$2.7 (CH 1)	$2.7 (CH 1)

CH 1: The current target price and Program Manager's EAC increased from $1.8(Sep 85 SAR) due to the incorporation of the Dec 85 contract modification changing the mold manufacturing process.

Cost Variance	Schedule Variance
N/A*	N/A*

*CPR data is not available on FFP contracts.

Follow on Production(Segment 3):

Hughes Aircraft Company
#F33657-84-C-2220, FFP
Award: March 29, 1985
Definitized: March 29, 1985

Initial Contract Price		
Target	Ceiling	Qty
$269.9	N/A	1980

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$268.7 (CH 1)	N/A	1980	$268.7	$268.7 (CH 1)

CH 1: The current target price and Program Manager's EAC decreased from $269.9(Sep 85 SAR) due to correction of defective purchase order pricing on the rocket motor and the rate of acceleration meter(ROAM).

Cost Variance	Schedule Variance
N/A*	N/A*

*CPR data is not available on FFP contracts.

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

a. (U) Program Status--

(1) Percent Program Completed: 63.2% (12/19)

(2) Percent Program Cost Appropriated: 27.7% ($1726.2/$6236.1)

b. (U) Appropriation Summary --

(Then Year Dollars in Millions)

Appropriation	Current & Prior Years (FY75-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-93)	Total
RDT&E	$ 168.0	$ 0.0	$ 0.0	$ 0.0	$ 168.0
Procurement	$ 1558.2	$ 586.6	$ 2391.9	$ 1531.4	$ 6068.1
MILCON	$ ---	$ ---	$ ---	$ ---	$ ---
Total	$ 1726.2	$ 586.6	$ 2391.9	$ 1531.4	$ 6236.1

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

c. (U) Annual Summary --

FISCAL YEAR	FY75 BASE-YEAR DOLLARS				THEN-YEAR DOLLARS			ESCL RATE 1/
	QTY	FLYAWAY		TOTAL	ADV PROCUREMENT		TOTAL	
		NONREC	REC		DEBIT	CREDIT		
APPROPRIATION: RDT&E								
1975	--	--	--	3.6	--	--	3.9	9.6
1976	-	--	--	3.7	--	--	4.3	9.6
1977	--	--	--	8.2	--	--	10.2	9.9
1978	--	--	--	---	--	--	---	7.4
1979	--	--	--	29.8	--	--	43.4	8.4
1980	--	--	--	30.6	--	--	49.5	9.4
1981	--	--	--	21.9	--	--	39.3	11.9
1982	--	--	--	6.1	--	--	11.6	9.2
1983	--	--	--	2.0	--	--	4.1	4.9
1984	--	--	--	0.8	--	--	1.7	3.8
SUBTTL	33.0	*	*	106.7	--	--	168.0	---
APPROPRIATION: PROCUREMENT								
1982	200	14.4	77.4	104.8	--	--	220.2	9.6
1983	900	30.2	71.9	111.0	--	--	248.9	9.0
1984	1980	6.5	109.9	128.4	--	--	303.1	8.0
1985	2600	0.4	129.3	154.2	15.0	--	377.5	4.1
1986	2600	8.0	156.2	160.6	--	15.0	408.5	4.1
1987	4700	2.8	216.2	222.8	--	--	586.6	4.1
1988	7000	5.7	232.7	246.0	--	--	667.6	3.9
1989	7000	9.0	211.1	223.7	--	--	623.0	3.4
1990	7000	0.0	185.1	188.7	--	--	538.0	2.9
1991	7000	0.4	189.1	193.1	--	--	563.3	2.3
1992	10000	4.0	250.1	257.0	--	--	766.9	2.3
1993	9684	0.0	247.7	250.4	--	--	764.5	2.3
SUBTTL	60664	81.4	2076.7	2240.7	15.0	15.0	6068.1	---
TOTAL	60697	---	---	2347.4	--	--	6236.1	---

*Not Available

1/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite indices.

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

d. (U) Obligations and Expenditures --

Fiscal Year	Then Year Dollars in Millions		
	Total	Obligated 1/	Expended 1/
APPROPRIATION: RDT&E			
1975	3.9	3.9	3.9
1976	4.3	4.3	4.3
1977	10.2	10.2	10.2
1978	---	---	---
1979	43.4	43.4	43.4
1980	49.5	49.5	49.5
1981	39.3	34.5	34.5
1982	11.6	10.5	10.2
1983	4.1	3.7	2.9
1984	1.7	1.5	1.3
TOTAL	168.0	161.5	160.2
Appropriation: Procurement			
1982	220.2	212.7	197.0
1983	248.9	227.7	179.7
1984	303.1	287.2	91.8
1985	377.5	61.3	5.1
TO COMP	4918.4	N/A	N/A
TOTAL	6068.1	788.9	473.6

1/ Reflects Program Office records as of 31 Dec 85.

17. (U) Production Rate Data:

a. (U) Annual Production Rates — The annual production rates shown differ from the annual funded quantity buys because the funded delivery period is 21 months for FY82, 10 months for FY83 and FY84. For FY86 the delivery period is 19 months due to the introduction of the second source.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1979	240			
1980	3100			
1981	5400			
1982	6000	114	114	1800
1983	6000	1080	1080	4200
1984	6000	2376	2376	4200
1985	4338	2600	2600	4200
1986		1642	1642	6000
1987		4700	4700	8400
1988		7000	7000	10800
1989		7000	7000	10800
1990		7000	7000	10800
1991		7000	7000	10800
1992		10000	10000	10800
1993		9684	9684	10800

b. (U) Cost Variance — Dollars in Millions

Item	Development Estimate	Variance (CE less DE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY$)	995.1	+1352.3	2347.4	+134.6	2212.8
Prog Acq Cost (TY$)	1592.9	+4643.2	6236.1	+417.1	5819.0
PAUC (BY$)	.032	+.007	.039	+.003	.036
PAUC (TY$)	.051	+.052	.103	+.007	.096

17. (U) Production Rate Data:

c. (U) Schedule Variance --

	Development Estimate	Variance (CE less DE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	11/81	+36	11/84	---	11/84
Duration (in Months)	73	+60	133	+24	109
End Date (Mo/Yr)	12/87	+96	12/95	+24	12/93

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

	To Date
RDT&E	33/33
Procurement	414/334

18. (U) Operating and Support Costs

Not Applicable

N-23 MK-48 ADCAP

SAR-85-042

~~SECRET~~

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

PROGRAM: Torpedo MK 48 ADCAP

AS OF DATE: December 31, 1985*

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DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE
2
AS AMENDED

1. Designation and Nomenclature (Popular Name): Torpedo MK 48 ADCAP Program

2. DoD Component: Department of the Navy

3. Responsible Office and Telephone Number:

Torpedo MK 48 Weapon Systems Program	CAPT Peter G. Chabot
Naval Sea Systems Command (PMS402)	Assigned: August 17, 1983
Washington, D.C. 20362	AV 222-0610; COMM (202) 692-0610

4. Program Elements/Procurement Line Items:

RDT&E: PE 64675N Project S0366 (No Shared Funding)

PROCUREMENT:	PE 24284N	MK 48 ADCAP	APPN 1507 ICN 3111
	PE 24284N	Spares	APPN 1507 ICN 5120

MILCON: PE 24896N

5. Related Programs: Submarine Fire Control and Launch Systems, Mobile ASW Target

~~CLASSIFIED BY: NAVSEA [illegible] 091321/C201 of 26 NOV 85~~
~~DECLASSIFY ON: OADR~~

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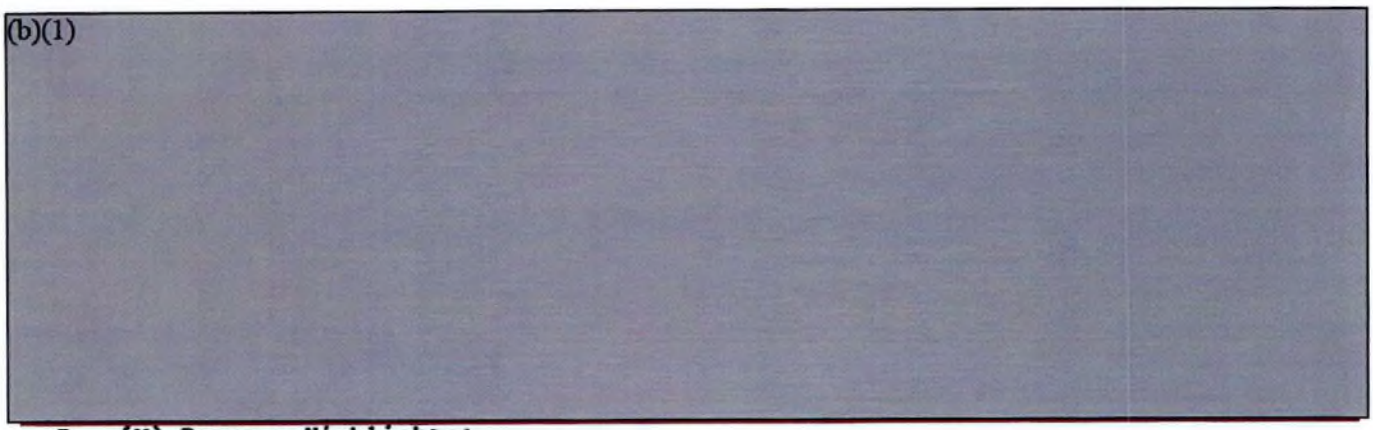
OASD(PA) DFOISR 86-T-0877

~~SECRET~~

(b)(1)



7. (U) Program Highlights:

a. (U) Significant Historical Developments -- In October 1975, CNO established an operational requirement for the Torpedo MK 48 ADCAP, citing need for improvements in ASW and ASUW. Prior to formal approval of this program, emergence of a new Soviet class of submarine caused an increase in program scope. This broader program was reviewed and approved by formal DNSARC I action on 28 September 1979. The Demonstration and Validation (D&V) contract was awarded in October 1979. Cost and schedule difficulties identified in July 1981 resulted in CNM review of the program. The program was restructured in January 1982 in accordance with recommendations from the NAVMAT review team. In November 1981, the program was designated by the Secretary of Defense as a program of the highest national priority and assigned a BRICKBAT, DX priority rating. The program was reviewed and approved by formal DNSARC II action in September 1982. The Full Scale Engineering Development (FSED) contract was awarded in August 1982. A formal production readiness review conducted in March 1984 certified that the program was ready to enter initial production. The D&V phase was completed in April 1984. A CEB review in October 1984 approved initial WPN funding for long lead material, tooling and test equipment. The limited production contract was signed in March 1985. An Approval for Limited Production (ALP) review in September 1985 authorized FY85 WPN funding for fabrication of 28 limited production torpedoes and the approved Milestone III date of January 1987.

b. (U) Significant Developments Since Last Report -- (Initial SAR) Not Applicable

Mission Requirements - ADCAP is expected to satisfy all current mission requirements.

c. (U) Change Since "As of" Date -- None

8. (U) Navy Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated January 1985) threshold breaches. Revision 1 to the DCP has been prepared to document the program as currently structured and is in the review process.

9. (U) Schedule

a. (U) Milestones --

	Development Estimate/ Approved Program	Current Estimate
(U) DNSARC I	Sep 79/Sep 79	Sep 79
(U) FSED Contract Award	Aug 82/Aug 82	Aug 82
(U) DNSARC II	Sep 82/Sep 82	Sep 82
(U) LRIP Contract Award	Mar 85/Mar 85	Mar 85
(U) DNSARC III	Jan 87/Jan 87	Jan 87
(b)(1)		

b. (U) Previous Change Explanations -- Not Applicable

c. (U) Current Change Explanations -- Not Applicable

d. (U) References --

Development Estimate: NDCP Rev. 1, dated (DRAFT), subject "Navy Decision Coordinating Paper (NDCP) for Torpedo MK 48 ADCAP Program".

Approved Program: FY 1987 President's Budget.

1/ (U) IOC is defined as the initial delivery of production MK 48 ADCAP Torpedoes to the fleet following successful completion of OPEVAL and determination of Approval for Full Production.

10. (S) Technical/Operational Characteristics:

a. (S) Technical --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(b)(1)			

c. (U) Previous Change Explanations -- Not Applicable

d. (U) Current Change Explanations -- Not Applicable

e. (U) References --

Development Estimate:

(1) NDCP Rev. 1, dated (DRAFT), subject "Navy Decision Coordinating Paper (NDCP) for Torpedo MK 48 ADCAP Program."

(2) OPNAV TEMP 371 Rev. 2, dated (DRAFT), subject "Test and Evaluation Master Plan No. 371 for Torpedo MK 48 ADCAP."

Approved Program: FY 1987 President's Budget

f. (U) Notes:

(b)(1)

2/ (U) Fleet warshot torpedo (excluding wire coil). Fleet warshot reliability will be assessed based upon exercise system testing and separate warhead subsystem testing.

(b)(1)

5/ (U) Availability (90-day patrol) = $\frac{\text{loadouts - backhauls}}{\text{loadouts}}$

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	1,092.1		1,092.1
Procurement	4,471.7		4,471.7
Total Swimaway	(3,932.3)		(3,932.3)
Other Weapon System Cost	(417.1)		(417.1)
Initial Spares	(122.3)		(122.3)
Construction (MILCON)	0.7		0.7
Total FY86 Base-Year #	5,564.5	0.0	5,564.5
Escalation	749.5		749.5
Development	(-68.3)		(-68.3)
Procurement	(817.8)		(817.8)
Construction (MILCON)	-- *		-- *
Total Then-Year #	6,314.0	0.0	6,314.0
b. Quantities --			
Development (RDT&E)	48		48
Procurement	3,353		3,353
Total	3,401	0	3,401
c. Unit Cost --			
Procurement:			
FY86 Base-Year #	1.3		1.3
Then-Year #	1.6		1.6
Program:			
FY86 Base-Year #	1.6		1.6
Then-Year #	1.9		1.9

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

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

* less than # 0.1

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

(Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.	Program Acquisition --			
	(1) Cost	6,314.0	6,314.0	6,314.0
	(2) Quantity	3,401	3,401	3,401
	(3) Unit Cost	1.9	1.9	1.9
b.	Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	409.5	409.5	530.9
	Less CY Adv Proc	0.0	0.0	0.0
	Plus PY Adv Proc	0.0	0.0	0.0
	Net Total	409.5	409.5	530.9
	(2) Quantity	123	123	227
	(3) Unit Cost	3.3	3.3	2.3

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1,023.8	5,289.5	0.7	6,314.0
Previous Changes:	None	None	None	
Economic				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Current Changes:	None	None	None	
Economic				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Total Changes	0.0	0.0	0.0	0.0
Current Estimate	1,023.8	5,289.5	0.7	6,314.0

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

a. Summary -- (FY 1986 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1,092.1	4,471.7	0.7	5,564.5
Previous Changes:	None	None	None	
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Current Changes:	None	None	None	
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Total Changes	0.0	0.0	0.0	0.0
Current Estimate	1,092.1	4,471.7	0.7	5,564.5

b. Previous Change Explanations --

RDT&E

None

Procurement

None

Milcon

None

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

c. Current Change Explanations --

		(Dollars in Millions) Base Year #	Then Year #
(1)	RDT&E		
	None	0	0
(2)	Procurement		
	None	0	0
(3)	Milcon		
	None	0	0

d. References -- FY 1987 President's Budget

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of [redacted]-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate --

Initial SAR is Current Baseline.

PAUC (Baseline Est) (DE)	Changes (Then Year Dollars in Millions) Econ	Qty	Sch	Eng	Est	Spt	Other	Total	PAUC (Current Estimate)
1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9

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

a. RDT&E --

Prime Contractor (Torpedo):	Initial Contract Price Target	Ceiling	Qty
Hughes Aircraft Company, Fullerton, CA, N00024-82-C-6296, CPAF, Award: August 5, 1982 Definitized: May 9, 1983	$257.5	N/A	37

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$283.8	N/A	32	$290.9	$290.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0.0	0.0
Cumulative Variances To Date (11/30/85)	0.0	0.0
Net Change	0.0	0.0

Explanation of Change: No Variance

Propulsion System:	Target	Ceiling	Qty
Gould, Cleveland, OH, N00024-82-C-6389, CPAF, Award: August 10, 1982 Definitized: July 27, 1983	$40.3	N/A	50

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$48.1	N/A	45	$48.1	$48.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0.0	0.0
Cumulative Variances To Date (11/30/85)	0.0	0.0
Net Change	0.0	0.0

Explanation of Change: No Variance

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

b. WPN --

Prime Contractor (Torpedo):

Hughes Aircraft Company, Fullerton, CA,
N00024-85-C-6098, CPIF,
Award: March 6, 1985
Definitized: Planned February 28,1986

Initial Contract Price		
Target	Ceiling	Qty
$184.5 *	N/A	28

Current Contract Price		
Target	Ceiling	Qty
$184.5 *	N/A	28

Estimated Price at Completion	
Contractor	Program Manager
Left Blank Intentionally; Contract Currently Being Negotiated.	

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0.0	0.0
Cumulative Variances To Date (12/31/85)	0.0	0.0
Net Change	0.0	0.0

Explanation of Change: No Variance

ot-To-Exceed

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

a. Program Status --

(1) Percent Program Completed: 46.7% (7 yrs/15 yrs)

(2) Percent Program Cost Appropriated: 15.6% ($986.0/$6314.0)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs	Budget Year	Balance FYDP	To Complete Beyond FYDP	Total
	(FY79-86)	(FY87)	(FY88-91)	(FY92-95)	
RDT&E	857.6	37.9	128.3	0.0	1,023.8
Procurement	600.5	530.9	2,553.0	1,605.1	5,289.5
MILCON	0.7	0.0	0.0	0.0	0.7
Total	1,458.8	568.8	2,681.3	1,605.1	6,314.0

c. Annual Summary --

Fiscal Year	Qty	FY 86 Base-Year Dollars: Swimaway Nonrec	FY 86 Base-Year Dollars: Swimaway Rec	FY 86 Base-Year Dollars: Total	Then-Year Dollars: Advance Proc Debit	Then-Year Dollars: Advance Proc Credit	Then-Year Dollars: Total	Escl Rate (%)
Appropriation: RDT&E								
1979				25.8			17.9	8.4%
1980				68.6			52.6	10.6%
1981				108.3			90.6	10.6%
1982				175.4			154.4	7.6%
1983				196.1			180.4	4.9%
1984				181.1			173.2	3.8%
1985				127.2			125.9	3.6%
1986				61.0			62.6	3.2%
1987				35.6			37.9	4.1%
1988				38.7			42.7	3.9%
1989				43.0			48.9	3.4%
1990				25.9			30.2	2.9%
1991				5.4			6.5	2.3%
Subtotal	48	N/A	N/A	1092.1			1023.8	

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

a. Annual Summary (Cont'd) --

Fiscal Year	Qty	FY 86 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Swimaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1984		26.4	39.6	78.1	21.7		77.3	8.0%
1985	28	24.4	55.6	110.5		21.7	113.7	4.1%
1986	123	88.2	223.0	383.3			409.5	4.1%
1987	227	58.5	333.1	480.2			530.9	4.1%
1988	296	24.8	398.8	501.8			571.9	3.9%
1989	368	9.2	408.2	499.4			584.1	3.4%
1990	469	0.0	479.2	544.6			652.2	2.9%
1	574	0.0	554.0	608.0			744.8	2.3%
1992	600	0.0	576.4	605.1			758.2	2.3%
1993	668	0.0	632.9	660.7			846.9	2.3%
Subtotal	3353	231.5	3,700.8	4,471.7	21.7	21.7	5,289.5	
Appropriation: MILCON								
1986				0.7			0.7	3.2%
Subtotal				0.7			0.7	
Total				5,564.5			6,314.0	

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1979	17.9	17.9	17.8
1980	52.6	52.6	52.4
1981	90.6	90.6	89.9
1982	154.4	154.4	152.6
1983	180.4	180.4	174.9
1984	173.2	173.2	169.4
1985	125.9	125.6	111.4
To Complete	228.8	N/A	N/A
Total	1,023.8	794.7	768.4
Appropriation: Procurement			
1984	77.3	76.5	17.5
1985	113.7	70.2	15.2
To Complete	5,098.5	N/A	N/A
Total	5,289.5	146.7	32.7

17. (U) Production Rate Data:

a. Annual Production Rates -- Note: The annual production rates shown in FY 85 differ from the annual funded quantities because the funded delivery period is 14 months for FY 85.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1984		N/A		N/A
1985	24	N/A	24	N/A
1986	123	N/A	123	N/A
1987	227	N/A	227	N/A
1988	296	N/A	296	N/A
1989	368	N/A	368	N/A
1990	469	N/A	469	N/A
1991	574	N/A	574	N/A
1992	600	N/A	600	N/A
1993	668	N/A	668	N/A

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

[redacted]. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	5,564.5	N/A	N/A
(TY $)	N/A	N/A	6,314.0	N/A	N/A
PAUC (BY $)	N/A	N/A	1.6	N/A	N/A
(TY $)	N/A	N/A	1.9	N/A	N/A

c. Schedule Variance --

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	3/87	N/A	N/A
Duration (in Months)	N/A	N/A	98	N/A	N/A
[redacted]d Date (Mo/Yr)	N/A	N/A	4/95	N/A	N/A

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	48/43
Procurement	0/0

18. (U) Operating and Support Costs:

Operating and Support Costs are currently not available. They will be available December 31,1986.

N-30 SPARROW

SAR-85-048

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SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
Program: Sparrow (AIM/RIM-7M)

AS OF DATE: December 31, 1985*

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OCT 01 1986
AS AMENDED

1. (U) Desigation and Nomenclature: AIM/RIM-7M/Air-to-Air Guided Missile (Sparrow).

2. (U) DOD Component: Department of the Navy.

3. (U) Responsible Office and Telephone Number:
Air-to-Air Missile Systems Program Office
PMA-259
Washington, D.C. 20361

PM: CAPT L. E. Blose, USN
Assigned: Oct 1, 1982
AUTOVON 222-8222

4. (U) Program Elements/Procurement Line Items:
RDT&E,N: 64354N (W0457) (W1927) (NAVAIR) (Shared Funding)
63609N (S1821) (NAVSEA)
Procurement: 24162N, 26138M (AIM-7M) ICN 2202, 5120 ' APPN: 1507
24229N (RIM-7M)

5. (U) Related Programs: Electronic counter-countermeasures (NAVSEA Element 63609N (S1821)); low altitude fuze improvement (NAVAIR Element 64354N (W1927)).

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REVIEW ON: 04 November 1992

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OASD(PA) DPC/ER 86-0869

6. (U) Mission and Description: The AIM/RIM-7M missile is a semi-active radar-guided intercept missile for use with a number of air-to-air and ship-to-air weapon systems. Provides all-aspect attack capability in all weather conditions against a broad spectrum of targets and in a variety of countermeasures environments. The AIM/RIM-7M utilizes an inverse monopulse seeker to guide semi-actively to a target illuminated by radar signals emanating from the launching aircraft or ship. The missile incorporates on-board digital processing to provide improved counter-countermeasures capabilities and better capabilities to track targets against a clutter background, a new autopilot band with low altitude capability for surface-to-surface firing, and a new active fuze for improved burst control and low altitude capability. The RIM-7M is the ship-to-air version of the AIM-7M which can be launched from NATO SEASPARROW Surface Missile Systems. The AIM/RIM-7M motor, warhead, wings, fins and autopilot design are the AIM-7F design. A new blast fragmentation warhead was developed and was introduced in the FY-81 buy. The AIM/RIM-7M missiles will replace the AIM-7E, AIM-7F and RIM-7H series missiles in the present inventory. The AIM-7M is specified as a primary weapon for use on F-4, F-14, F-15 and F-18 series aircraft. The RIM-7M will be the primary weapon for use with the NATO SEASPARROW Missile System aboard ships of the U.S. Navy and NATO SEASPARROW consortium nations.

7. (U) Program Highlights:

a. Significant Historical Developments -- DSARC II held in April 1978 approved engineering development of the AIM/RIM-7M. The FY 1980 AIM/RIM-7M Sparrow guidance and control section production was approved by the Office of the Secretary of Defense in September 1980 (UNDERSECDEF memo of 9/22/80). The second OSD Program Review of 9 March 1981 authorized go-ahead of the FY 1981 procurement program. DNSARC III held in November 1982 authorized full rate production of the AIM/RIM-7M (ASN memo of 11/2/82). Approval for service use for the AIM-7M was granted in November 1982 (CNO ltr ser 401E/394759 of 11/8/82).

b. Significant Developments Since Last Report -- The total Navy procurement quantity of AIM/RIM-7M has been increased by 724 missiles (FY 1986 - 1991) and 50 in FY 1983 to enhance Fleet readiness level. The 50 FY 1983 missiles were Congressionally approved in 1983 but funds were not available. A slip in support made funds available and these units were procured on the FY 1985 contracts. Congress provided $5.0M in FY 1986 (RDT&EN) to begin development of a modified AIM-7 Sparrow missile with electronic counter-countermeasures (ECCM). Funding is included for the first time and is budgeted in FY 1986 - 1991.

Follow-on test and evaluation to develop employment tactics and to evaluate second source production missiles was successfully completed.

The AIM/RIM-7M system is expected to meet all its current mission requirements based on test and design actions taken to date.

c. Changes Since "As Of" Date -- None.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: Beginning of IOT&E slipped beyond threshold date of October 1980. Early IOT&E events occurred in December 1980. Delays in the test program and rescheduling of IOT&E to 1982 caused approval for service use threshold to be breached. DSARC III (DNSARC III) and IOC thresholds were breached.

9. (U) Schedule:

a. Milestones	Development Estimate/ Approved Program	Current Estimate
AIM/RIM-7M FSD (DSARC II)	Apr 78/Apr 78	Apr 78
Commence Joint TECHEVAL	Feb 80/Feb 80	Jun 80 1/
OSD Program Review	Apr 80/Apr 80	Aug 80 2/
Commence IOT&E	Apr 80/Apr 80	Jun 81 3/
Approval for Service Use	May 81/May 81	Nov 82 3/
DSARC III	Jun 81/Jun 81	-- 3/
IOC (1st delivery to Fleet)	Jul 81/Jul 81	Jan 83 3/
DNSARC III	-- / --	Nov 82 3/

b. Previous Change Explanations --

1/ Delayed due to difficulties in repackaging the government-supplied fuze, and the need to incorporate a new firmware package into the JTE firing missiles.

2/ Delayed due to difficulties in repackaging the government-supplied fuze, and the need to incorporate a new firmware package and routine delays in the firing program.

3/ New milestones are the result of the restarting of IOT&E, delay in receipt of first production units from the contractor, and the change of program status from a major program to a Navy-managed program. Approval for service use for AIM-7M granted November 1982; ASU for RIM-7M granted July 1983.

c. Current Change Explanations -- None.

d. References -- DCP #89, Revision B, dated 19 April 1979 and full approval for service use dated 8 November 1982.

Approved Program: FY 1987 President's Budget.

10. (U) Technical/Operational Characteristics:

a. (U) Technical --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(U) Weight			
Launch, lbs	510/510	510	510
Warhead, lbs	90/90	90	90
(U) Size	Length 144", Diameter 8", Wing Span 40"		
(U) Guidance	Semi-Active Continuous Wave or Pulse Doppler Radar		
(U) Prop Impulse, lb/sec	31,000/31,000	31,000	31,000

10. (U) Technical/Operational Characteristics (Cont'd):

b. (U) Operational --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(b)(1)			

c. (U) Previous Change Explanations --

(Ch-1) (U) Contractor design characteristics performance exceeded specification requirement as demonstrated in Navy Development Laboratory tests.

10. (U) Technical/Operational Characteristics (Cont'd):

c. (U) Previous Change Explanations -- (Cont'd)

(b)(1)

[redacted]

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

e. (U) References -- DCP #89, Revision B, dated 19 April 1979 and full approval for service use dated 8 November 1982.

Approved Program: FY 1987 President's Budget.

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost	Development Estimate (FY75-85)	Changes	Current Estimate (FY75-91)
Development (RDT&E)	51.6	+20.8	72.4
Procurement	581.8	+523.2	1105.0
G,C&A	(448.9)	(+387.0)	(835.9)
Propulsion	(30.8)	(+15.7)	(46.5)
Other Hardware	(23.6)	(+.7)	(24.3)
Procurement	(52.2)	(+31.8)	(84.0)
Total Flyaway	(555.5)	(+435.2)	(990.7)
Fleet Support	(18.3)	(+81.2)	(99.5)
Initial Spares	(8.0)	(+6.8)	(14.8)
Construction	(-)	(-)	(-)
Total FY78 Base Year $	633.4	+544.0	1177.4
Escalation	261.5	+908.4	1169.9
Development (RDT&E)	(2.4)	(+24.3)	(26.7)
Procurement	(259.1)	(+884.1)	(1143.2)
Construction	(-)	(-)	(-)
Total Then-Year $	894.9	+1452.4	2347.3
b. Quantities --			
Development (RDT&E)	44	-	44
Procurement	7305	+4033	11338
Total	7349	+4033	11382
c. Unit Cost --			
Procurement:			
FY78 Base-Year $	$ .080	$ +.017	$ .097
Then-Year $	.115	+.083	.198
Program:			
FY78 Base-Year $	.086	+.017	.103
Then-Year $	$ .122	$ +.084	$ .206

11. (U) Program Acquisition Cost: (Cont'd)

d. Approved Design to Cost Goal --

	(Average Unit Flyaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty: 1000			
@ Peak Rate: 100/mo			
FY78 Base-Year $	.092/.092	.092	.108
Then-Year $	.187/.187	.187	.219

e. Foreign Military Sales: Signed letters of offer to date total up to 2346 for $655.5 including support to the following: Greece, 264/$67.0; Taiwan, 100/$27.9; Australia, 167/$52.3; Israel, 150/$49.5; Canada, 642/$158.4; Egypt, 216/$53.9; Turkey, 61/$14.1; and NATO 746/$232.4.

f. Nuclear Costs: None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	2347.3	2268.4	2347.3
(2) Quantity	11382	10608	11382
(3) Unit Cost	.206	.214	.206
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	342.3	370.0	280.4
Less CY Adv Proc	0	0	0
Plus FY Adv Proc	0	0	0
Net Total	342.3	370.0	280.4
(2) Quantity	1948	1872	1716
(3) Unit Cost	.176	.198	.163

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate (DE)	54.0	840.9	0	894.9
Previous Changes:				
Economic	+.4	+276.1	0	+276.5
Quantity	0	+521.7	0	+521.7
Schedule	0	+300.7	0	+300.7
Estimating	+1.1	+79.5	0	+80.6
Support	0	+194.0	0	+194.0
Subtotal	+1.5	+1372.0	0	+1373.5
Current Changes:				
Economic	+3.6	-70.6	0	-67.0
Quantity	0	+128.5	0	+128.5
Schedule	+43.4	0	0	+43.4
Estimating	-3.4	-37.1	0	-40.5
Support	0	+14.5	0	+14.5
Subtotal	+43.6	+35.3	0	+78.9
Total Changes	+45.1	+1407.3	0	+1452.4
Current Estimate	99.1	2248.2	0	2347.3

(FY 1978 Constant (Base Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	51.6	581.8	0	633.4
Previous Changes:				
Quantity	0	+179.3	0	+179.3
Schedule	0	+123.2	0	+123.2
Estimating	-.6	+75.0	0	+74.4
Support	0	+87.6	0	+87.6
Subtotal	-.6	+465.1	0	+464.5
Current Changes:				
Quantity	0	+49.7	0	+49.7
Schedule	+23.1	0	0	+23.1
Estimating	-1.7	+3.1	0	+1.4
Support	0	+5.3	0	+5.3
Subtotal	+21.4	+58.1	0	+79.5
Total Changes	+20.8	+523.2	0	+544.0
Current Estimate	72.4	1105.0	0	1177.4

b. Previous Change Explanations --

RDT&E
Economic: Revised escalation rates
Estimating: Reprogramming to higher priority programs

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

b. Previous Change Explanations -- (Cont'd)

Procurement

Economic:	Revised escalation rates
Quantity:	Production quantities increased by 3,189 missiles
Schedule:	Total program restructured to reflect revised Air Force and Navy procurement strategies. FY82 Congressional reduction to requested appropriations.
Estimating:	Revised quantities FY83-90; revised estimates based on actual contractor proposals; increase in contract growth from target to ceiling; reprogramming initial spares to Harpoon.
Support:	Increased procurement and revised escalation rates.

MILCON None.

c. Current Change Explanations --

	(Dollars in Millions) Base Year	Then Year
(1) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	N/A	+3.6
Add-on of improved AIM/RIM-7M	+21.4	+40.0
o Change in milestone for improving AIM/RIM-7M (Schedule)	(+23.1)	(+43.4)
o Re-estimate of prior year rates (Estimating)	(-1.7)	(-3.4)
(2) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-70.6
Increase quantity of 774 missiles in FY83, FY86-90 and add-on of FY91.	+58.1	+105.9
o Increase of 774 missiles (Quantity)	(+49.7)	(+128.5)
o Increase missile quantities (50 in FY83, 224 in FY86-90 and an additional 500 in FY91) and a re-estimate of prior year rates. (Estimating)	(+3.1)	(-37.1)
o Increase in support due to additional missile procurement. (Support)	(+5.3)	(+14.5)

(3) MILCON: None.

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

d. References -- DCP #89, Revision B, dated 19 April 1979 and full approval for service use dated 8 November 1982.

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Planning Estimate to Development Estimate --

Same as current baseline estimate.

b. Development Estimate (DE) to Current Estimate (CE) --

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
$.122	+.018	+.014	+.030	0	+.004	+.018	0	+.084	$.206

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

a. Procurement --

GC&A
Raytheon Company, Lowell, MA.
N00019-84-C-0161, FFP,
Award: 14 March 1984
Definitized: 14 March 1984

Initial Contract Price	Target	Ceiling	Qty 1/
	N/A	213.6	1560
(A/F)	N/A	(102.1)	(746)
(FMS)	N/A	(32.4)	(240)

Current Contract Price	Target	Ceiling	Qty 1/
	N/A	213.6	1560
(A/F)	N/A	(102.1)	(746)
(FMS)	N/A	(32.4)	(240)

Estimated Price at Completion	Contractor	Program Manager
	213.6	213.6
	(102.1)	(102.1)
	(32.4)	(32.4)

GC&A
Raytheon Company, Lowell, MA.
N00019-85-C-0075, FFP,
Award: 24 Dec 1984
Definitized: 24 Dec 1984

Initial Contract Price	Target	Ceiling	Qty 1/
	249.8	249.8	1973
(A/F)	(58.4)	(58.4)	(446)
(FMS/Other)	(74.8)	(74.8)	(689)

Current Contract Price	Target	Ceiling	Qty 1/
	288.5	288.5	2275
(A/F)	(59.5)	(59.5)	(453)
(FMS/Other)	(75.1)	(75.1)	(689)

Estimated Price at Completion	Contractor	Program Manager
	288.5	288.5
	(59.5)	(59.5)
	(75.1)	(75.1)

1/ Correction of quantities

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

GC&A
General Dynamics, Pomona, CA.
N00019-83-C-0070, FFP,
Award: 27 Dec 1982
Definitized: 3 May 1985

	Initial Contract Price Target	Ceiling	Qty
	107.9	215.8	1344
(A/F)	(55.1)	(110.1)	(689)
(FMS)	(10.8)	(21.6)	(135)

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
	221.2	221.2	1344	221.2	221.2
(A/F)	(124.4)	(124.4)	(689)	(124.4)	(124.4)
(FMS)	(10.9)	(10.9)	(135)	(10.9)	(10.9)

GC&A
General Dynamics, Pomona, CA.
N00019-85-C-0074, FFP,
Award: 24 Dec 1984
Definitized: 24 Dec 1984

	Initial Contract Price Target	Ceiling	Qty
	207.4	207.4	1300
(A/F)	(66.5)	(66.5)	(370)
(FMS/Other)	(55.7)	(55.7)	(397)

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
	207.4	207.4	1300	207.4	207.4
(A/F)	(66.5)	(66.5)	(370)	(66.5)	(66.5)
(FMS/Other)	(55.7)	(55.7)	(397)	(55.7)	(55.7)

Explanation of Changes: No changes to FFP contracts.

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

a. Program Status --

(1) Percent Program Completed: 70.6% (12 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 54.4% ($1276.4/$2347.3)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY75-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	60.8	3.1	35.2	-	99.1
Procurement	1215.6	280.4	752.2	-	2248.2
Total	1276.4	283.5	787.4	-	2347.3

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

c. Annual Summary --

Fiscal Year	Qty	FY78 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1975	-	-	-	2.4	-	-	2.4	10.9
1976	-	-	-	7.8	-	-	7.8	6.6
197T	-	-	-	.8	-	-	.8	2.9
1977	38	-	-	12.8	-	-	12.8	2.6
1978	-	-	-	-	-	-	-	-
1979	6	-	-	11.1	-	-	12.8	8.4
1980	-	-	-	10.8	-	-	13.8	10.6
1981	-	-	-	-	-	-	-	-
1982	-	-	-	3.6	-	-	5.4	7.6
1983	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	2.9	-	-	5.0	3.2
1987	-	-	-	1.8	-	-	3.1	4.1
1988	-	-	-	2.0	-	-	3.6	3.9
1989	-	-	-	6.2	-	-	11.8	3.4
1990	-	-	-	7.8	-	-	15.1	2.9
1991	-	-	-	2.4	-	-	4.7	2.3
TOTAL	44	-	-	72.4	-	-	99.1	
Appropriation: WPN								
1980	60	2.8	19.3	23.7	-	-	34.3	11.8
1981	625	1.2	81.5	87.7	-	-	141.0	11.6
1982	559	7.7	62.1	73.0	-	-	127.5	14.3
1983	670	-	61.4	69.0	-	-	127.3	9.0
1984	695	-	60.9	77.2	-	-	149.7	8.0
1985	1671	-	133.5	146.0	-	-	293.5 1/	4.1
1986	1948	-	146.0	164.1	-	-	342.3 1/	4.1
1987	1716	-	124.6	130.0	-	-	280.4 2/	4.1
1988	1594	-	115.0	125.6	-	-	274.5	3.9
1989	900	-	74.3	79.9	-	-	178.4	3.4
1990	400	-	42.7	51.9	-	-	119.1	2.9
1991	500	-	57.8	76.9	-	-	180.2	2.3
TOTAL	11338	11.7	979.1	1105.0	-	-	2248.2	

1/ Congressional Data Sheet includes AIM-7F - SAR is only AIM/RIM-7M
2/ Error due to rounding

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: RDT&E		
1975	2.4	2.4	2.4
1976	7.8	7.8	7.8
197T	.8	.8	.8
1977	12.8	12.8	12.8
1978	-	-	-
1979	12.8	12.8	12.7
1980	13.8	13.8	13.3
1981	-	-	-
1982	5.4	5.4	5.0
1983	-	-	-
1984	-	-	-
1985	-	-	-
To Complete	43.3	N/A	N/A
TOTAL	99.1	55.8	54.8
	Appropriation: WPN		
1980	34.3	34.3	27.8
1981	141.0	141.0	139.0
1982	127.5	127.5	101.2
1983	127.3	126.9	88.4
1984	149.7	122.2	82.6
1985	293.5	234.9	84.5
To Complete	1374.9	N/A	N/A
TOTAL	2248.2	786.8	523.5

17. (U) Production Rate Data:

a. Annual Production Rates -- (NOTE: The annual production rate could include the participation of Air Force and FMS.)

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1986	-	N/A	-	-
1987	-	N/A	1716	3804
1988	-	N/A	1594	3804
1989	-	N/A	900	3804
1990	-	N/A	400	3804
1991	-	N/A	500	3804

b. Cost Variance -- Dollars in Millions (NOTE: Subject to limitations on production rates above.)

Item	Development Estimate	Variance (CE less DE)	Current Estimate	Variance (CE less MAX)	Maximum
Prog Acq Cost (BY $)	-	-	603.2	-902.0	1505.2
(TY $)	-	-	1225.3	-1832.3	3057.6
PAUC (BY $)	-	-	.095	+.016	.079
(TY $)	-	-	.193	+.032	.161

c. Schedule Variance -- (NOTE: Subject to the limitations on production rates above.)

Item	Development Estimate	Variance (CE vs DE)	Current Estimate	Variance (CE vs MAX)	Maximum
Start Date (Mo/Yr)	12/81	7yr/1mo	1/88	-	1/88
Duration (in Months)	8 mos	4 mos	12 mos	-	12 mos
End Date (Mo/Yr)	7/82	5yr/5mo	12/88	-	12/88

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	44/44
Procurement	1743/2021

18. (U) Operating and Support Costs: N/A.

NOTE: The baseline for Sparrow was the development estimate, there is no production estimate.

ADDENDUM (FOR DoD USE ONLY)

19. (U) Cost-Quantity Information:

a. Baseline (Type) -- Development Estimate (FY 1978).

b. End Item -- Guidance, Control and Assembly

c. Cost-Quantity Relationship (Type) -- Log-linear unit average.

d. First Unit Cost -- $107 thousand.

e. Slope -- 96.8%, B = (-).04687.

f. Tabular Data --

Fiscal Year	Quantity	Flyaway Cost (BY $ in Millions) USN and USAF		Plot Point (X-Axis)
		Non-Recurring	Recurring	
1980	1000	18.3	80.7	541.17
1981	2525	11.9	183.3	2263.26
1982	2125	3.2	146.8	4670.72
1983	1265	-	98.4	6397.08
1984	2090	-	145.9	8061.82
1985	2090	-	141.7	10156.76
1986	3095	-	212.9	12735.13
1987	2445	-	166.7	15521.04
1988	2117	-	143.4	17807.95
1989	900	-	60.7	19325.92
1990	400	-	26.9	19978.06
1991	500	-	33.6	20426.93
TOTAL	20552	33.4	1441.0	

SAR-85-050

N-32 SSN-688

[redacted]

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: SSN 688 NUCLEAR ATTACK SUBMARINE

AS OF DATE: *December 31, 1985

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CLEARED
FOR OPEN PUBLICATION
APR 01 1986
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE
AS AMENDED

1. Designation and Nomenclature: SSN 688 Class Nuclear Attack Submarine (Los Angeles Class)

2. DoD Component: Department of Navy

3. Responsible Office and Telephone Number: NAVSEASYSCOM CAPT F.J. Richmond PMS 393 Program Office Assigned: June 1983 AV 222-7002; COMM (202) 692-7002

4. Program Elements/Procurement Line Items:

RDT&E: PE 63564N, 64567N PROCUREMENT: PE 24281N, APPN 1611, ICN 2010 (shared funding)

5. Related Programs: HARPOON, TOMAHAWK, SSBN (TRIDENT), AN/BSY-1, SSN 21

~~CLASSIFIED BY: ERDA-DOD CLASSIFICATION GUIDE FOR THE NAVAL NUCLEAR PROPULSION PROGRAM, CG-RN-1 AND ITS [illegible] GUIDANCE BULLETINS DECLASSIFY ON OADR~~

(THIS PAGE IS UNCLASSIFIED)

OASD(PA) DPOISR 86-M-0892

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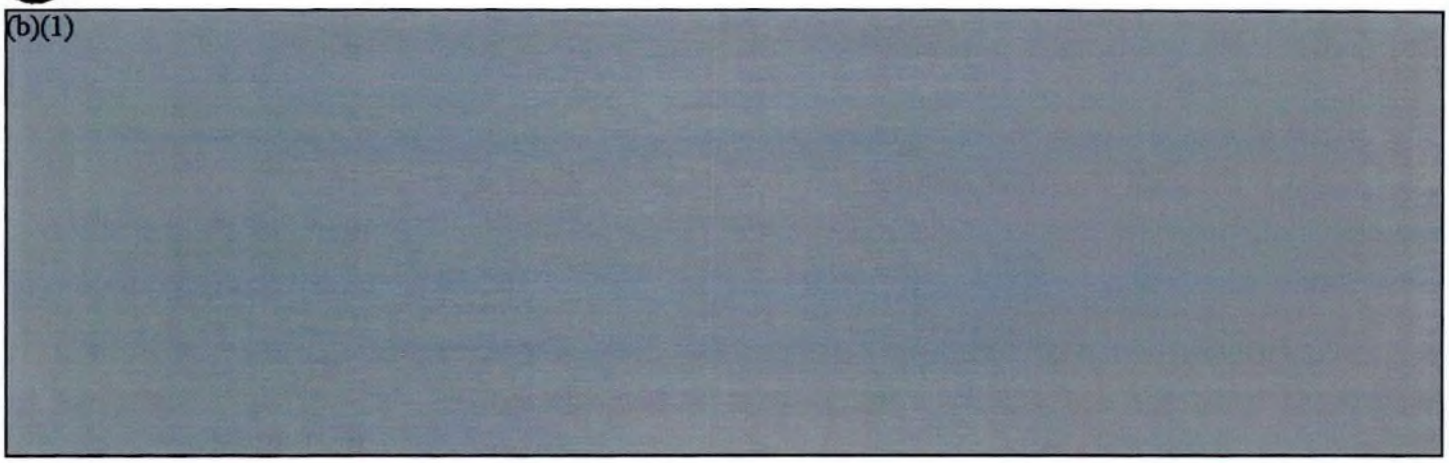

[U]7. Program Highlights:

a. Significant Historical Developments--The SSN 688 Class submarine construction program consists of 48 awarded ships from FY 70 to the present: 27 awarded to General Dynamics Corporation, Electric Boat Division, and 21 to Newport News Shipbuilding. Prior to the period covered by this SAR, 30 ships had been delivered to the Navy--18 by Electric Boat and 12 by Newport News.

b. Significant Developments Since Last Report--General Dynamics Corporation, Electric Boat Division, delivered two SSN 688 Class submarines to the Navy in 1985: the USS PROVIDENCE (SSN 719) on 26 June 1985, and the USS PITTSBURGH (SSN 720) on 14 November 1985; and Newport News Shipbuilding delivered one SSN 688 Class submarine to the Navy in 1985: the USS HONOLULU on 14 June 1985. The total number of ships delivered since program inception is 33. In addition, three SSN 688's were launched in 1985: KEY WEST (SSN 722) on 20 July and OKLAHOMA CITY (SSN 723) on 2 November at Newport News, and LOUISVILLE (SSN 724) on 14 December at Electric Boat. Four more ships were authorized for fiscal year 1986 new construction but have yet to be awarded. The current total of authorized ships for the program is 52, of which 48 have been awarded.

c. Changes Since "As Of Date"--A construction contract for four new SSN 688 Class submarines was awarded to Electric Boat Division on March 21, 1986, bringing the total of awarded ships to 52: 31 to Electric Boat, and 21 to Newport News.

[U]8 Decision Coordinating Paper (DCP) Threshold Breaches: DCP #27 was approved 19 March 1970. Notification of the schedule breach was forwarded via memo for DEPSECDEF on 13 August 1976. The DCP and thresholds were updated and approved 17 November 1982. The DCP is currently in revision to incorporate all program developments through 1985.

~~(CONFIDENTIAL)~~

9. Schedule:

a. Milestones--	Development Estimate/ Approved Program	Actual
Characteristics Approved	NOV 68/NOV 68	NOV 68
DSARC I	FEB 70/FEB 70	FEB 70
DCP #27 Approved	MAR 70/MAR 70	MAR 70
Production Contract	JAN 71/JAN 71	JAN 71
Production Started	JAN 71/JAN 71	JAN 71
Lead Ship Launch	4TH QTR FY73/4TH QTR FY 73	APR 74
Acceptance Trials Lead Ship	1ST QTR FY 75/1ST QTR FY 75	OCT 76
Delivery-Lead Ship	1ST QTR FY 75/1ST QTR FY 75	NOV 76
Initial Operating Capability	1ST QTR FY 75/1ST QTR FY 75	NOV 76

b. Previous Change Explanations

Early ships experienced schedule delays due primarily to late contractor-furnished equipment, shipbuilder's limitations in application of his work force, production/productivity problems and late and defective design agent furnished information. Follow ships were delayed to maintain intervals between ships. Additional delays resulted from a strike at Electric Boat.

c. Changes Since Previous Report

None

d. References

Development Estimate: Ship Construction Awards dated 8 January 1971 Approved Program: DCP #27 dated 19 March 1970.

10. Technical/Operational Characteristics:

A. Technical-	Dev Estimate Appr Program	Demonstrated Performance	Current Estimate
Submarine			
(a) Length	360 ft.	360 ft.	360 ft.
(b) Beam Max.	33 ft.	33 ft.	33 ft.
(c) Draft Dev.	32 ft.	32 ft.	32 ft.
(d) Displacement	6900 tons	6900 tons	6900 tons

(CONFIDENTIAL) SSN 688, *December 31, 1985

10. [U] Technical/Operational Characteristics:

		Dev Estimate Appr Program	Demonstrated Performance	Current Estimate
[U]	A. Technical-			
(b)(1)				
[U]	Type	S6G	S6G	S6G
(b)(1)				
[U]	(g) Crew	133	133	133
[U]	AN/BQQ-5B			
	(a) Maintainability (MTTR)	40	177	177
	(b) Hardware Reliability			
	Passive	1,400	599 [CH-1]	599 [CH-1]
	Active	480	N/A [CH-2]	N/A [CH-2]
[U]	B. Operational			
(b)(1)				
[U]	Fuel	Nuclear	Nuclear	Nuclear
(b)(1)				
[U]	(c) Armament	4 torpedo tubes 12 external VLS tubes	4 torpedo tubes 12 external VLS tubes	4 torpedo tubes 12 external VLS tubes

[U] C. Previous Change Explanations:
CH-1: AN/BQQ-5B are based on demonstrated performance during OPEVAL and FOT&E
CH-2: Deleted from DCP #104 on 9 September 1975.

[U] D. Current Change Explanations: None

[U] 11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost	(FY70-76)		(FY70-96)
Development (RDT&E)	$0.0	+31.1	$31.1
Procurement (SCN)	5,126.8	+7,595.1	12,721.9
Basic Ship Cost	2,484.6	(+4,685.5)	(7,170.1)
GFE	2,248.0	(+2,773.5)	(5,021.5)
Other	234.2	(-148.2)	(86.0)
OF/PD	160.0	(+282.6)	(442.6)
Contract Design	0	(+1.7)	(1.7)
Construction (MILCON)	0.0	+17.9	17.9
Total: FY 71 Base Year $	$5,126.8	$+7,644.1	$12,770.9

(CONFIDENTIAL)

11. Program Acqusition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
Escalation	620.7	+18,483.3	19,104.0
Development (RDT&E)	0	(+36.1)	(36.1)
Procurement(SCN)	620.7	(+18,434.6)	(19,055.3)
Construction (MILCON)	0	(+12.6)	(12.6)
Total Then-Year $	$5,747.5	$+26,127.4	$31,874.9
b. Quantities			
Development (RDT&E)	-	-	-
Procurement (SCN)	32	+35	67
Total	32	+35	67
c. Unit Cost			
Procurement:			
FY 71 Base-Year $	160.2	+29.7	189.9
Then-Year $	179.6	+294.7	474.3
Program			
FY 71 Base-Year $	160.2	+30.4	190.6
Then-Year $	179.6	+296.1	475.7

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

e. Foreign Military Sales -- None

[redacted]uclear Costs -- SSN 688 draws upon general reactor plant research and [redacted]lopment work performed by the Department of Energy, but this contribution cannot be quantified.

12. Program Acquisition/Current Procurement Unit Cost Summary:

(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition -			
(1) Cost	31,874.9	31,614.2	31,874.9
(2) Quantity	67	66	67
(3) Unit Cost	475.7	479.0	475.7
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	2,616.7	2,770.3	2,419.3
Less CY Adv Proc	(486.4)	(585.2)	(284.8)
Plus PY Adv Proc	561.8	561.8	506.0
Less OF/PD	(75.8)	(61.9)	(86.7)
Net Total	2,616.3	2,685.0	2,553.8
(2) Quantity	4	4	4
(3) Unit Cost	654.075	671.250	638.450

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate		5747.5		5747.5
Previous Changes:				
Economic	5.7	-2601.5	-5.0	-2600.8
Quantity		24971.6		24971.6
Schedule		87.3		87.3
Engineering	40.0	1999.4		2039.4
Estimating	26.7	-425.9	0.1	-399.1
Other		412.8		412.8
Support		1320.1	35.4	1355.5
Subtotal	72.4	25763.8	30.5	25866.7
Current Changes:				
Economic	0.1	-881.7	0	-881.6
Quantity		724.7		724.7
Engineering		33.6		33.6
Estimating	-5.3	267.9		262.6
Support		121.4		121.4
Subtotal	-5.2	265.9	0	260.7
Total Changes	67.2	26029.7	30.5	26127.4
Current Estimate	67.2	31777.2	30.5	31874.9

13. Cost Variance Analysis (Cont'd):

(FY 1971 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate		5126.8		5126.8
Previous Changes:				
Quantity		6412.0		6412.0
Schedule		14.6		14.6
Engineering	23.2	536.4		559.6
Estimating	9.7	-295.2		-285.5
Other		298.5		298.5
Support		253.7	17.9	271.6
Subtotal	32.9	7220.0	17.9	7270.8

1 Cost Variance Analysis (Cont'd):

(FY 1971 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Current Changes:				
Quantity		196.0		196.0
Engineering		9.0		9.0
Estimating	-1.8	138.2		136.4
Support		31.9		31.9
Subtotal	-1.8	375.1	0.0	373.3
Total Changes	31.1	7595.1	17.9	7644.1
Current Estimate	31.1	12721.9	17.9	12770.9

b. Previous Change Explanations --

RDT&E

Economic: revised escalation indices
Engineering: increase to fund costs directed related to the SSN 688 Class Program
Estimating: refinement of R&D estimate and addition of the SSN 688 Class Development Line

PROCUREMENT

Economic: revised escalation indices
Quantity: addition of 6 SSNs since the authorization of the DE and 28 SSNs at the established baseline value
Schedule: postponing the construction of 3 SSNs
Engineering: Changes to the proplusion plant associated with the long life core, cost reduction improvements and the addition of VLS
Estimating: refinement of estimate, changes in procurement plan, increased estimates for deferred work, and the Government's liability under P.L. 85-804
Other: fund REA settlements under P.L. 85-804
Support: increased outfitting and post delivery requirements

CONSTRUCTION

Economic: revised escalation indices
Estimating: fund Military construction projects at New London, Norfolk, San Diego, Portsmouth, and Pearl Harbor

1 Cost Variance Analysis (Cont'd):

Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Jan 86 economic escalation (Economic)		+.1
Revised program requirements (Estimating)	-1.8	-5.3
(2) Procurement		
Revised Jan 86 economic escalation (Economic)		-1981.5
Correction to 12/84 SAR due to use of wrong baseline (Economic)		+1099.8
Net addition of 1 submarine (Quantity)	+196.0	+724.7
o Additional Outfitting/Post Delivery for quantity add (Support)	+11.5	+46.1
Installation of VLS associated with the quantity change (Engineering)	+9.0	+33.6
Correction to 12/84 SAR due to use of wrong baseline (Estimating)	-266.7	-1099.8
Congressional Reduction (Estimating)	-5.3	-15.0
Addition of Contract Design (Estimating)	+1.7	+6.0
Refinement of estimates to reflect later contract/pricing data (Estimating)	+408.5	+1376.7
Refinement of Outfitting/Post Delivery Estimates (Support)	+20.4	+75.3

d. References --

Development Estimate: DCP #104 dated September 1970, revised and reapproved 13 April 1978. USDR&E letter 13 March 1979 cancelled DCP #104 and returned surveillance to the Navy. DCP #27, dated 19 March 1970.

1 [redacted]Program Acqusition Unit Cost (PAUC) History: (Million of then-year $)

a. Initial SAR Estimate to Current Baseline Estimate

PAUC (Init Est)	Changes								PAUC (Baseline Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
165.8	+18.3	-5.2					+ .6	+ 13.8	179.6

b. Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
179.6	-52.0	+289.7	+1.3	+30.9	-2.0	+6.2	+22.0	+296.1	475.7

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

a. RDT&E -- N/A

b. Procurement -- SCN

Construction of SSNs 753,756,758,759

	Initial Contract Price		
	Target	Ceiling	Qty
[redacted]rt News Shipbuilding and [redacted]ck Company	278.0	317.4	1

Newport News, VA 23607
NOOO24-84-C-2064, FPIF
Award: 29 Nov 1983
Definitized: (Award of Options) 26 Nov 1984

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
1062.7	1198.0	4	1082.7	1113.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-0.8	-0.9
Cumulative Variances to Date (11/18/85)	-5.7	-22.8
Net Change	-4.9	-21.9

Explanation of Change: The cost and schedule variances have increased as three ships not included in the CPR reported in the last SAR have since been added. The variances exist in part because of declining shipbuilder productivity. The schedule variance may be misleading in that three of the ships are less than 20 percent complete, rendering its significance questionable at this stage. The Program Manager's assessment of total program costs is currently within budget. Additional program growth, compounded with Gramm-Rudman-Hollings decreases, could change the PM's [redacted]ssment.

[redacted]

1 Contract Information: (Cont'd) (Then-Year Dollars in Millions)

Construction of SSNs 721-723, 750

	Initial Contract Price		
	Target	Ceiling	Qty
Newport News Shipbuilding and Drydock Company	675.0	746.6	3

Newport News, VA 23607
N0024-81-C-2075, FPIF
Award: 13 Aug 1981
Definitized: (Award of Option) 19 Apr 1982

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
968.3	1070.2	4	973.8	995.6
			Cost Variance	Schedule Variance
Previous Cumulative Variances			N/A	N/A
Cumulative Variances to Date (9/29/85)				
Net Change			(C/SCSC not invoked on this contract)	

Explanation of Change: N/A

Construction of SSNs 724-725

	Initial Contract Price		
	Target	Ceiling	Qty
Electric Boat Division	263.5	256.2	1

Groton, CT 06340
N0024-C-82-2055 FPIF
Award: 11 Feb 1982
Definitized: (Award of Option) 19 Apr 1982

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
505.6	555.6	2	519.4	519.4
			Cost Variance	Schedule Variance
Previous Cumulative Variances			-7.1	6.6
Cumulative Variances to Date (9/28/85)			-15.6	4.2
Net Change			-8.5	-2.4

Explanation of Change: The change in cost and schedule variance is insignifcant in percentage terms and will not impact the financial status of the contract. The Program Manager's assessment of total program costs is currently within budget. Additional program growth, compounded with Gramm-Rudman-Hollings decreases, could change this assessment.

Construction of SSNs 751-752

	Initial Contract Price		
	Target	Ceiling	Qty
Electric Boat Division	560.2	631.7	2

Groton, CT 06340
N0024-C-83-2039, FPIF

1 Contract Information: (Cont'd) (Then-Year Dollars in Millions)

A: April 1982
Definitized: 30 Nov 1982

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
566.5	638.8	2	575.6	575.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	4.5	0.9
Cumulative Variances to Date (9/29/85)	-9.1	-6.6
Net Change	-13.6	-7.5

Explanation of Change: The cost and schedule variances have worsened due to slower productivity than anticipated, due to configuration changes to ships included in this contract. Nonetheless, the variance percentages remain statistically insignificant, and should improve as management reserve is allocated. The Program Manager's assessment of total program costs is currently within budget. Additional program growth, compounded with G-R-H decreases, could change this assessment.

Construction of SSNs 754-755, 757

	Initial Contract Price		
	Target	Ceiling	Qty
Electric Boat Division Groton, CT 06340 N 4-84-C-2063, FPIF	520.0	589.4	2

A: 28 Nov 1984
Definitized: (Award of Option) 26 Nov 1984

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
809.2	915.5	3	844.9	844.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0.6	2.0
Cumulative Variances to Date (9/29/85)	0.4	4.5
Net Change	-0.2	2.5

Explanation of Change: The cost and schedule variance changes are insignificant in that they have no impact on the status of the contract. The variances are positive. The Program Manager's assessment of total program is currently within budget. Additional program growth, compounded with G-R-H decreases, could change this assessment.

SSN Propulsion Plant

	Initial Contract Price		
	Target	Ceiling	Qty
General Electric Co. Schenectady, NY N00024-85-C-4013, CPFF			
A: 3 Dec 1984 D itized: Dec 1985	180.2	N/A	-

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
336.9	N/A	-	336.9	336.9

Cost Variance	Schedule Variance

Previous Cumulative Variances
Cumulative Variances to Date (C/SCSC not required)
Net Change

Explanantion of Change:

c. MILCON -- N/A

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

a. Program Status --

(1) Precent Program Completed: 64.3% (18 yrs/28 yrs)

(2) Percent Program Cost Appropriated: 64.8% ($20,656.0/$31,874.9)

b. Appropriation Summary --

Appropriation	Current & Prior Yrs	Budget Year	Balance to Complete FYDP	Beyond FYDP	Total
	(FY82-86)	(FY87)	(FY88-91)	(FY92-96)	
RDT&E	43.9	3.9	19.4	-	67.2
Procurement (SCN)	20581.6	2419.3	8283.7	492.6	31777.2
MILCON	30.5				30.5
TOTAL	20656.0	2423.2	8303.1	492.6	31874.9

(BUSINESS SENSITIVE)

5. Program Funding Summary (Cont'd): (Current Estimate in Millions of $)

c. Annual Summary --

Fiscal Year	Qty	FY 71 Base-Year Dollars			Then-Year Dollars			Escal Rate %
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1970	0		0.5	0.5	0	0	0.5	5.51
1971	0		1.8	1.8	0	0	1.8	5.14
1972	0		1.1	1.1	0	0	1.2	4.61
1973	0		1.1	1.1	0	0	1.2	4.35
1974	0		0.4	0.4	0	0	0.5	7.97
1977	0		1.2	1.2	0	0	1.8	2.5
1978	0		1.1	1.1	0	0	1.7	6.8
1979	0		3.6	3.6	0	0	6.6	8.4
1980	0		1.4	1.4	0	0	2.7	10.59
1981	0		2.2	2.2	0	0	4.7	10.61
1982	0		2.2	2.2	0	0	5.0	7.6
1983	0		3.5	3.5	0	0	8.4	4.9
1984	0		1.9	1.9	0	0	4.7	3.8
1985	0		1.2	1.2	0	0	3.1	3.6
1986	0		0	0	0	0	0.0	3.2
1987	0		1.4	1.4	0	0	3.9	4.1
1988	0		1.4	1.4	0	0	3.9	3.9
1989	0		1.3	1.3	0	0	3.9	3.4
1990	0		1.9	1.9	0	0	5.8	2.9
1991	0		1.9	1.9	0	0	5.8	2.3
Subtotal	0	0	31.1	31.1	0	0	67.2	
Appropriation: SCN								
1969	0		23.1	23.1		26.5	26.5	
1970	3		512.0	512	-26.5	111.3	601.5	5.6
1971	4		499.3	499.3	-69.6	67.5	616.6	5.1
1972	5		665.5	665.5	-109.3	135.9	909.1	4.4
1973	6		615.3	617.1	-135.8	125.4	1041.9	5.3
1974	5		453.2	455.1	-125.4	130.0	932.9	9.0

5. Program Funding Summary (Cont'd): (Current Estimate in Millions of $)

c. Annual Summary --

Fiscal Year	Qty	FY 71 Base-Year Dollars			Then-Year Dollars			Escal Rate %
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: SCN (Cont'd)								
1975	3		243.8	246.6	-78.0	0.0	533.4	14.1
1976	2		295.2	299.9	-52.0	102.0	582.2	11.5
197T	0		88.5	88.6	0.0	188.9	189.0	2.0
1977	3		823.0	828.3	-179.9	212.8	1410.4	6.2
1978	1		206.0	212.8	-91.7	0.0	460.2	8.2
1979	1		512.4	524.1	-85.7	26.3	760.5	9.6
1980	2		362.1	378.8	-137.7	76.2	945.9	9.8
1981	2		417.2	434.6	-111.2	188.8	1130.8	9.6
1982	2		658.5	675.8	-150.4	397.9	1492.2	7.5
1983	2		665.7	684.3	-169.4	416.0	1640.2	3.8
1984	3		642.3	657.8	-278.6	391.0	1967.1	3.6
1985	4		858.5	877.7	-404.3	562.8	2724.5	2.1
1986	4		791.7	815.3	-561.8	486.4	2616.7	4.1
1987	4		705.2	731.4	-506.0	284.8	2419.3	4.1
1988	3		607.8	639.7	-366.2	434.1	2173.5	3.9
1989	3		647.5	677.9	-436.8	248.7	2360.6	3.4
1990	4		791.1	820.7	-427.3	52.9	2925.3	2.9
1991	1		192.7	226.2	-162.6	0.0	824.3	2.3
1992	0		0.0	59.9	0.0	0.0	223.5	2.3
1993	0		0.0	32.3	0.0	0.0	123.2	2.3
1994	0		0.0	24.9	0.0	0.0	97.0	2.3
1995	0		0.0	11.7	0.0	0.0	46.8	2.3
1996	0		0.0	0.5	0.0	0.0	2.1	2.3
Subtotal	67	0	12277.6	12721.9	-4666.2	4666.2	31777.2	

6. Program Funding Summary (Cont'd): (Current Estimate in Millions of $)

c. Annual Summary --

Fiscal Year	Qty	FY 71 Base-Year Dollars			Then-Year Dollars			Escal Rate %
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: MILCON								
1973	0			3.0	0.0	0.0	3.9	5.55
1974	0			1.5	0.0	0.0	2.3	11.76
1975	0			2.7	0.0	0.0	4.3	16.12
1976	0			4.2	0.0	0.0	7.0	3.02
1978	0			2.4	0.0	0.0	4.8	7.6
1979	0			3.8	0.0	0.0	7.6	9.31
1982	0			0.3	0.0	0.0	0.6	7.6
Subtotal	0	0	0.0	17.9	0.0	0.0	30.5	
Total	67	0	12308.7	12770.9	-4666.2	4666.2	31874.9	

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1970	0.5	0.5	0.5
1971	1.8	1.8	1.8
1972	1.2	1.2	1.2
1973	1.2	1.2	1.2
1974	0.5	0.5	0.5
1977	1.8	1.8	1.8
1978	1.7	1.7	1.7
1979	6.6	6.6	6.6
1980	2.7	2.7	2.7
1981	4.7	4.7	4.7
1982	5.0	5.0	4.9
1983	8.4	7.5	7.4
1984	4.7	4.3	4.0

6. Program Funding Summary (Cont'd):

d. Obligations and Expenditures -- (Cont'd)

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E (Cont'd)			
1985	3.1	3.1	2.1
1986	0.0	0.0	0.0
To Complete	23.3	0.0	0.0
Total	67.2	42.6	41.1
Appropriation: SCN			
1969	26.5	26.5	26.5
1970	601.5	601.3	600.6
1971	616.6	616.6	616.0
1972	909.1	909.1	905.0
1973	1041.9	1041.9	1024.0
1974	932.9	932.3	919.7
1975	533.4	532.1	525.1
1976	582.2	578.0	573.5
197T	189.0	188.9	188.6
1977	1410.4	1401.8	1376.4
1978	460.2	450.4	402.8
1979	760.5	752.7	731.4
1980	945.9	877.2	786.6
1981	1130.8	1068.5	945.0
1982	1492.2	1354.1	1128.3
1983	1640.2	1389.9	713.6
1984	1967.1	1661.1	725.1
1985	2724.5	1930.0	315.8
1986	2616.7	445.4	0.0
To Complete	11195.6	0.0	0.0
Total	31777.2	16757.8	12504.0

6. Program Funding Summary (Cont'd):

d. Obligations and Expenditures -- (Cont'd)

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: MILCON			
1973	3.9	3.9	3.9
1974	2.3	2.3	2.3
1975	4.3	4.3	4.3
1976	7.0	7.0	7.0
1978	4.8	4.8	4.8
1979	7.6	7.6	7.6
1982	0.6	0.6	0.6
To Complete	N/A	N/A	N/A
Total	30.5	30.5	30.5

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate*	Current Estimate	Maximum
1987	0	0	4	4
1988	0	0	3	4
1989	0	0	3	4
1990	0	0	4	4
1991	0	0	1	4

b. Cost Variance -- Dollars in Millions (Excludes Support Costs) (FYDP Only)

Item		Production Estimate*	Variance (CE less PdE)*	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY$)	0	0	2944.3	+1092.2	4036.5
	(TY$)	0	0	10174.3	+3861.9	14036.2
PAUC	(BY$)	0	0	196.9	+4.9	201.8
	(TY$)	0	0	678.3	+23.5	701.8

*Original production estimate did not involve production after 1976

c. Schedule Variance -- FYDP Only

	Production Estimate*	Variance (CE less PdE)*	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	0	0	3/87	N/A	3/87
Duration (in Months	0	0	98	7	105
End Date (Mo/Yr)	0	0	5/95	N/A	12/85

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	N/A
Procurement	33/33

18. Operating and Support Costs: N/A

Cost Element	Avg Annual Cost	Avg Annual Cost
Personnel		
O&S Consumables		
Direct Depot Maintenance		
Sustaining Investment		
Other Direct Costs		
Indirect Costs		
Total		

*Original production estimate did not involve production after 1976

A-21 STINGER

~~CONFIDENTIAL~~

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

PROGRAM: STINGER Weapon System FIM 92A/92B

As of Date: 31 December 1985

85-016

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1. (U) Designation and Nomenclature (Popular name): FIM 92A/92B
Man portable Air Defense Guided Missile System
STINGER/STINGER POST/STINGER Reprogrammable Microprocessor (RMP)

2. (U) DOD Component: Department of The Army

3. (U) Responsible office and telephone number:

STINGER Project Office
Redstone Arsenal, AL 35898-5000

COL ROBERT A. DROLET
Assigned: 6 Jan 86
AUTOVON: 746-6191
Commercial: 205-876-6191

CLEARED AS AMENDED
FOR OPEN PUBLICATION pp 2,4,5 para marking (backup pg)

MAR 21 1986 5

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

Concur in Classification as marked

18 MAR 1986

SECURITY REVIEW, DACS, HQDA

CASE # 86-0730

~~CLASSIFIED BY: STINGER Security~~
~~Classification Guide, dtd 26 Oct 84~~
~~DECLASSIFY ON: 31 Dec 92~~

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4. (U) **Program Elements/Procurement Line Items**
RDTE: PE 64306, PROJ D646
Procurement: C18500, APPN 2032

5. (U) **Related Programs:** None

6. (U) **Mission and Description:** The STINGER Weapon System is an advanced man-portable shoulder fired air defense system. It provides low altitude defense for ground forces against attack by low-flying aircraft. STINGER utilizes a passive infrared 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 STINGER is replacing the REDEYE Weapon System.

7. (U) **Program Highlights:**

a. (U) An integrated development/production program has been structured to deliver STINGER-RMP missiles with initial deliveries of the FY85 production contract. Modification of the FY85 STINGER-POST production contract was accomplished in Nov 85 which will allow for deliveries of STINGER-RMP missiles in Aug 87.

(b)(1)

AS AM

[redacted]

8. (U) **Decision Coordinating Paper (DCP) Threshold Breaches:** There are currently no DCP (dated June 1978) threshold breaches.

9. (U) **Schedule:**

a. (U) Milestones	Devel. Est./ Approv. Program	Current Estimate
(1) (U) BASIC STINGER		
(A) (U) DSARC II	May 72	May 72
(B) (U) Development Contract Awarded	Jun 72	Jun 72
(C) (U) ASARC/DSARC III	Aug 75	Oct/Nov 77
(D) (U) ASARC/DSARC III a	Aug 77	N/A
(E) (U) Initial Operational Capability (IOC)	Sep 77	Feb 81

			Devel. Est./ Approv. Program	Current Estimate
(2)	(U)	STINGER-POST		
(A)	(U)	Special ASARC (Development)	Apr 77	Apr 77
(B)	(U)	Development Contract Award	Jun 77	Jun 77
(C)	(U)	Completion of Design Evaluation Testing	Apr 79	Jan 81
(D)	(U)	Completion of Guided Test Vehicles	Apr 80	May 82
(E)	(U)	Completion of Prototype Qualification Test/OT	Jan 81	Oct 82
(F)	(U)	Completion of R&D Program	Feb 81	Nov 82
(G)	(U)	Special ASARC (POST Production)	Mar 81	Jan 83
(H)	(U)	First Unit Equipped	Sep 82	Aug 87
(3)	(U)	STINGER-RMP		
(A)	(U)	Special ASARC (Development)	Jun 83	Jun 83
(B)	(U)	Development Contract Award	Sep 84	Sep 84
(C)	(U)	Completion of Design Evaluation Testing	Jul 86	Jul 86
(D)	(U)	Production Baseline Established	Nov 86	Nov 86
(E)	(U)	Completion of Guided Test Vehicles/Testing	Jul 87	Jul 87
(F)	(U)	Completion of R&D Program	Dec 87	Dec 87
(G)	(U)	First Unit Equipped (FUE)	Nov 87	Nov 87 (CH-1)

b. (U) Previous Change Explanation —

Change in RMP milestone is based on the schedule contained in the contract.

c. (U) Current Change Explanation —

(CH-1) Change in RMP milestone is based on current schedule.

d. (U) References —

Development Estimate: DCP 114, dated Jul 72, for Basic/Revised DCP 114 dated 5 Jun 78 for STINGER-POST.
Approved Program: DDR&E Memorandum, Subject: MANPADS DCP 114, dated 5 Jun 78.

Development Estimate: ASARC III, Jun 83, for STINGER-RMP
Approved Program: Secretary of the Army Memo, Jul 83, Subj: System Acquisition Decision
Memo - STINGER-POST/RMP ASARC III Executive Council Session, 6 Jun 83.

10. (U) Technical/Operational Characteristics:

a. (U) Technical (BASIC/POST/RMP STINGER)

	Devel. Est./ Approv. Program	Demonstrated Performance	Current Estimate
Ready-to-Fire Weapon Weight Including Onboard IFF Antenna (lbs)	32	35	35/35.5/36

b. (U) Operational (BASIC/STINGER)

(1) (U) Basic STINGER

(b)(1)

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AS AMENDED

		Devel. Est./ Approv. Program	Demonstrated Performance	Current Estimate
(g) (U)	Weapon Reliability	.82 (CH-4)	.89	.89
(h) (U)	IFF Maximum Instantaneous Search Sector (Degrees)	+ 6	+5	+5

(2) ~~(U)~~ STINGER (POST/RMP)

(b)(1)

[redacted]

(AS AMENDED)

(2) (U) STINGER (POST/RMP) (Cont'd)

		Development Estimate/ Approved Program	Demonstrated Performance	Current Estimate
(g) (U)	Weapon Reliability	.82/.82 (CH-4)	.83	.89/.89 (CH-3)

c. (U) Previous Change Explanation --
System effectiveness was adjusted based on reliability change. Weapon reliability was changed from 0.86 to 0.89 to include test conducted in 1984.

d. (U) Current Change Explanations --
(CH-1) Item 1.f was adjusted based on change from percent degradation to lethality. (CH-2) Item 2.f was adjusted based on change from percent degradation to lethality. (CH-3) Item (2.g.) was changed from 0.90 to 0.89 to include tests conducted in 1985. (CH-4) Items 1.g and 2.g were in error in Dec 84 SAR.

e. (U) References —

Development Estimate: DCO 114, dated Jul 72 for Basic STINGER
Revised DCP 114 dated 5 Jun 78 for STINGER-POST
Approved Program: FY 1987 President's Budget

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. (U) COST	Development Estimate (FY 72-82)	Changes	Current Estimate (FY 72-93)
Development	76.6	+100.7	$177.3
Basic	(76.6)		(111.4)
POST-RMP	-		(65.9)
Procurement	334.3	+787.4	1121.7
Weapon (FLYAWAY)	(307.8)		(792.4)
IFF			
Belt Pack	(13.1)		(23.8)
Programmer	(1.0)		(2.8)
Other	(11.1)		(302.3) 1/
Initial Spares	(1.3)		(.4)
Total Constant FY72$	$410.9	+888.1	$1299.0
Escalation	62.9	+2722.1	+2785.0
Development	4.2	+ 90.6	94.8
Procurement	58.7	+2631.5	2690.2
Total Then-Year $	$473.8	+3610.2	$4084.0
b. (U) Quantities --			
Development (RDT&E)			
Weapon-Basic	222	-43	179 2/
-Post		+26	26
RMP		+ 9	9
IFF			
Belt Pack	32		32
Programmer	6		6
Procurement			
Weapon	22,980	+27,684	50,664
IFF			
Belt Pack	1,248	+ 2,459	3,707
Programmer	250	+ 392	642
Total Weapons	23,202	+27,676	50,878

Footnotes:

1/ Includes $198.7M for Pedestal Mounted STINGER.
2/ Complete weapons used for development testing.

11. (U) Program Acquisition Cost (Cont'd) (Current Estimate in Millions of Dollars)

COST	DEVELOPMENT ESTIMATE (FY 72-82)	CHANGES	CURRENT ESTIMATE (FY72-93)
c. (U) Unit Cost--			
Procurement:			
FY72 Base-Year$	.014	+.008	.022
Then-Year$	.017	+.058	.075
Program:			
FY72 Base-Year$	.018	+.008	.026
Then-Year$	.020	+.060	.080

d. (U) Approved Design to Cost Goal — No DTC goal was established with Secretary of Defense in DCP 114 dated 5 Jan 78.

e. (U) Foreign Military Sales: Sales to date total 2340 Basic STINGER Missiles and/or services. A breakdown of dollar value by country is as follows:

COUNTRY	TOTAL $
Pakistan	8.1
France	3.5
Germany	2.4
Italy	46.6
Japan	31.4
Netherlands	34.1
Saudi Arabia	38.9
Switzerland	.5
Turkey	22.5
United Kingdom	6.3
	194.3

f. (U) Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. (U)	Program Acquisition			
(1) (U)	Cost	4084.0	4121.9	4084.0
(2) (U)	Quantity	50878	54944	50878
(3) (U)	Unit Cost	.080	.075	.080
b. (U)	Current Procurement	(FY 1986)	(FY 1986)	(FY 1987)
(1) (U)	Cost	250.0	304.8	296.0
	Less CY Adv Proc	N/A	N/A	40.8
	Plus PY Adv Proc	N/A	N/A	0
	Net Total	250.0	304.8	255.2
(2) (U)	Quantity	3439	3439	4180
(3) (U)	Unit Cost	.073	.089	.061

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Development Estimate	80.8	393.0	473.8
Previous Changes:			
Economic	+5.4	+668.8	+674.2
Quantity	+11.0	+437.9	+448.9
Schedule	+27.4	+736.4	+763.8
Engineering	+113.5	+87.0	+200.5
Estimating	+16.2	+1469.5	+1485.7
Other	+7.3		+7.3
Support	+2.7	+65.0	+67.7
Subtotal	+183.5	+3464.6	+3648.1
Current Changes:			
Economic	-.3	-177.7	-178.0
Quantity		-95.4	-95.4
Schedule		+48.8	+48.8
Engineering	+8.1	-	+8.1
Estimating		+178.6	+178.6
Other		-	-
Support			
Subtotal	+7.8	-45.7	-37.9
Total Changes	+191.3	+3418.9	+3610.2
Current Estimate	272.1	3811.9	4084.0

13. (U) Cost Variance Analysis (Cont'd):
(FY 1972 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	TOTAL
Development Est	76.6	334.3	410.9
Previous Changes:			
Quantity	+6.6	+139.3	+145.9
Schedule	+13.7	+145.8	+159.5
Engineering	+63.8	+18.8	+82.6
Estimating	+5.8	+434.2	+440.0
Other	+6.0	-	+6.0
Support	+1.9	+23.6	+25.5
Subtotal	+97.8	+761.7	+859.5
Current Changes:			
Quantity		-35.2	-35.2
Schedule		+12.5	+12.5
Engineering	+3.1		+3.1
Estimating		+48.4	+48.4
Other			-
Support			
Subtotal	+3.1	+25.7	+28.8
Total Changes	+100.9	+787.4	+888.3
Current Estimate	177.3	1,121.7	1,299.0

b. (U) Previous Change Explanations —

RDT&E

Economic: Revised escalation indices

Quantity: Additional 6 POST and 3 RMP Missiles.

Schedule: Increase due to program stretchout.

Engineering: Development of RMP to counter future threat.

Estimating: Transfer of PEP effort from procurement; increased test costs.

Other: Technical problems and 6 week strike.

Support: Increase in flight tests and computer simulation, additional testing requirements in countermeasures and IFF testing, and WSMR flight support.

Procurement

Economic: Revised escalation indices

Quantity: Additional 8080 missiles for Sgt York and 444 additional peace-time losses due to stretchout of program; reduction of 4505 IFF Interrogators from requirements.

Schedule: Reduction of missiles in early years and rescheduling procurement in subsequent years as a result of budget cuts.

Engineering: Additional manufacturing and assembly cost for producing RMP added to the POST Seekers.

Estimating: Adding additional tooling costs and changing cost estimating methodology and cost savings from actual contracts. Unit cost reduction and revised ECO estimate addition of estimated warranty risk balance of cost of 8524 missiles added for Sgt York, additional peace-time losses, and the addition of Pedestal Mounted STINGER.

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

c. (U) Current Change Explanations —

	(Dollars in Millions) Base-Year	Then Year
(1) (U) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-.3
Additional effort, Pedestal Mounted STINGER (PMS). (Engineering)	+3.1	+8.1
(2) (U) Procurement		
Revised Feb 86 economic escalation	N/A	-177.7
Deletion of 7,066 msls for SGT YORK; additional 3,000 missiles for Army of Excellence (Quantity)	-35.2	-95.4
Rescheduled a net 8,471 missiles from FY 87-90 to FY 91-93 (Schedule)	+12.5	+48.8
1/ Addition of PMS; change to Msl Rnd and Mfg Spt cost estimating methodology; leadtime reductions. (Estimating)	+48.4	+178.6

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

a. (U) Initial SAR Estimate to Current Estimate

PAUC (Initial SAR Est)	Changes								PAUC (Dev Estimate
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
.020	+.010	-.004	+.016	+.004	+.033	-0-	+.001	+.060	.080

1/ PMS initially funded at $697.0M. Approximately $15M in FY85 and $100M in FY86 has been withdrawn from PMS. Total estimate for PMS Program: $808.2M.

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

a. (U) RDT&E —

RMP E.D.	Initial Contract Price Target	Ceiling	Qty
General Dynamics Corp, Pomona, Ca.	$35.4	$35.5	N/A
DAAH01-84-C-A225, FPIF			
Award: Sep 84			
Definitized: 22 Mar 85			

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$35.4	$35.5	N/A	$35.4	$35.4

	Cost Variance	Schedule Variance
Previous Cumulatiye Variances	$ -	$ -
Cumulative Variances To Date (Nov 85)	$ +.6	$ -.7
Net Change	$ +.6	$ -.7

Explanation of Change: This contract was not reported in the Dec 84 SAR.

b. (U) Initial Production

	Initial Contract Price Target	Ceiling	Qty
General Dynamics Corp., Pomona, CA,	$49.9	$56.6	44
DAAH01-83-C-A145, FFP/FPl			
Award: Apr 83			
Definitized: Sep 83			

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$132.6	$151.3	559	$132.6	$132.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -1.5	$ -1.2
Cumulative Variances To Date (Nov 85)	$ -1.4	$ -2.1
Net Change	$ + .1	$ -.9

Explanation of Change: Schedule variance change was in WBS8, Test Equipment and Tooling, and was caused primarily by delay in fabrication of Guidance Assembly test set and Hybrid Microelectronics Assembly (HMA) test set.

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

c. (U) Production
RMP
General Dynamics Corp., Pomona, CA
DAAH01-85-C-A073, FFP/FPl
Award: Aug 85
Definitized: Feb 86

Initial Contract Price		
Target	Ceiling	Qty
$231.6	$255.3	3218

Current Contract Price		
Target	Ceiling	Qty
$234.5	$258.2	3218

Estimated Price at Completion	
Contractor	Program Manager
$234.5	$234.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -	$ -
Cumulative Variances To Date (Nov 85)	$ -.004	$ +.04
Net Change:	$ -.004	$ +.04

Explanation of Change: This contract was not reported in Dec 84 SAR.

d. (U) Production
Missiles
General Dynamics Corp, Pomona, CA
DAAH01-84-C-A088, FFP
Award: 23 Mar 84
Definitized: 28 Sep 84

Initial Contract Price		
Target	Ceiling	Qty
$97.6	$97.8	2488

Current Contract Price		
Target	Ceiling	Qty
$106.1	$106.3	2808

Estimated Price at Completion	
Contractor	Program Manager
$106.1	$106.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ N/A	$N/A
Cumulative Variances To Date (Nov 85)		
Net Change:		

Explanation of Change: None

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

e. (U) Production
BCU's
Arral Industries, Inc, Ontario, CA
DAAH01-84-C-A233, FFP
Award 19 Sep 84
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$3.2	$3.2	5799

Current Contract Price		
Target	Ceiling	Qty
$7.9	$7.9	14829

Estimated Price at Completion	
Contractor	Program Manager
$7.9	$7.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ N/A	$ N/A
Cumulative Variances To Date (Nov 85)		
Net Change:		

Explanation of Change: None

f. (U) Production
STLS
ICSD Corp, Kissimmee, FL
DAAH01-85-C-0535, FFP
Award: 16 Apr 85
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$2.09	$2.09	239

Current Contract Price		
Target	Ceiling	Qty
$2.09	$2.09	239

Estimated Price at Completion	
Contractor	Program Manager
$2.09	$2.09

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ N/A	$ N/A
Cumulative Variances To Date (Nov 85)		
Net Change		

Explanation of Change: None

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

a. (U) Program Status --

(1) (U) Percent program completed: 68.2% (15 years/22 years)
(Year Funds Appropriated/Total Program Years)

(2) (U) Percent program cost appropriated: 34.8% ($1419.9/$4084.0)
(Funds Appropriated to Date in Millions/Total Program Funding in Millions)

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

b. (U) Appropriation Summary -

(Then Year Dollars in Millions)

APPROPRIATION	CURRENT & PRIOR YRS (FY 72-86)	BUDGET YEAR (FY 87)	BALANCE FYDP (FY 88-91)	TO COMPLETE BEYOND FYDP	TOTAL
RDT&E	265.8	6.3			272.1
PROCUREMENT	1,173.4	296.0	1,604.8	737.7	3,811.9
TOTAL	1,439.2	302.3	1,604.8	737.7	4,084.0

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

c. (U) Annual Summary -

FISCAL YEAR	QTY	FY 72 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE (%)
		FLYAWAY		TOTAL	ADVANCE PROC		TOTAL	
		NONREC	REC		DEBIT	CREDIT		
APPROPRIATION: RDT&E								
1971				4.7			4.5	4.4
1972	179			7.5			7.5	2.6
1973				18.1			19.8	7.4
1974				21.8			25.4	9.4
1975				24.9			32.1	11.2
1976				16.4			22.4	8.7
197T				1.1			1.7	1.9
1977	26			18.5			26.7	8.0
1978				7.7			11.9	8.6
1979				14.3			24.6	8.5
1980				9.9			18.7	9.4
1981				2.7			5.6	11.9
1982				7.6			16.6	7.6
1983	6			8.7			20.0	4.9
1984				-0-			-0-	3.8
1985				2.0			5.0	3.6
1986	3			9.1			23.3	3.2
1987				2.3			6.3	4.1
SUBTOTAL	214			177.3			272.1	
APPROPRIATION: PROCUREMENT								
1978	258		19.5	21.1			36.9	6.8
1979	1,651		34.4	51.5			100.8	8.7
1980	1,482		31.1	40.2			81.0	9.7
1981	1,144		23.3	31.5			70.2	11.9
1982	2,544		42.7	59.6			166.7	14.3
1983	1.006		34.1	40.8			122.7	9.0
1984	1,205		43.6	43.8			137.8	8.0
1985	2,360		59.6	63.3			207.3	4.1
1986	3,439	3.8	55.3	73.5			246.6	4.1
1987	4,180		63.6	84.2	40.8		293.0	4.1
1988	5,964		77.7	107.3	46.1	21.7	388.4	3.9
1989	6,000		68.0	113.8	44.6	34.4	422.7	3.4
1990	6,000		55.9	108.0	18.5	44.8	410.5	2.9
1991	6,000		53.1	98.5		49.3	383.2	2.3
1992	6,000		86.0	143.9			572.3	2.3
1993	1,431		40.7	40.7			171.8	2.3
SUBTOTAL	50,664	3.8	788.6	1,121.7			3,811.9	
TOTAL	50,878	3.8	788.6	1,299.0			4,084.0	

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

d. (U) Obligations and Expenditures —

FISCAL YEAR	THEN-YEAR DOLLARS (CURRENT ESTIMATE IN MILLIONS)		
	TOTAL	OBLIGATED	EXPENDED
APPROPRIATION: RDT&E			
1971	4.5	4.5	4.5
1972	7.5	7.5	7.5
1973	19.8	19.8	19.8
1974	25.4	25.4	25.4
1975	32.1	32.1	32.1
1976	22.4	22.4	22.4
197T	1.7	1.7	1.7
1977	26.7	26.7	25.3
1978	11.9	11.9	11.7
1979	24.6	24.6	24.2
1980	18.7	18.6	18.6
1981	5.6	5.6	5.6
1982	16.6	16.6	16.4
1983	20.0	20.0	9.5
1984	-0-	-0-	-0-
1985	5.0	5.0	.5
1986	23.3	16.1	-0-
To Complete	6.3	-0-	-0-
TOTAL	$272.1	$258.5	$225.2
APPROPRIATION: PROCUREMENT			
1978	36.9	36.9	36.2
1979	100.8	100.6	100.3
1980	81.0	80.2	78.6
1981	70.2	66.3	64.0
1982	166.7	163.5	162.8
1983	122.7	122.7	93.6
1984	137.8	116.5	39.8
1985	207.3	186.2	.2
1986	250.0	.1	-0-
To Complete	2,638.5	-0-	-0-
TOTAL	3,811.9	$873.0	$575.5

17. (U) Production Rate Data:

a. (U) Annual Production Rates --

Fiscal Year	Development Estimate	Prodution Estimate	Current Estimate	Maximum 1/ Economic
1976/Prior	772		179	179
1977	3050		26	26
1978	3850		258	258
1979	4800		1651	1651
1980	4800		1482	1482
1981	4800		1144	1144
1982	1130		2544	2544
1983			1012	1012
1984			1205	1205
1985			2360	2360
1986			3442	3442
1987			4180	4976
1988			5964	5300
1989			6000	5002
1990			6000	6081
1991			6000	7200
1992			6000	6213
1993			1431	

1/ The Maximum Economic Production Rate for a 1-8-5 is estimated to be 600 per month for all customers. The Army only portion is reflected above.

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

b. (U) Cost Variance -- Dollars in Millions (NOTE: Subject to limitations on production rates above.)

ITEM	DEVELOPMENT ESTIMATE	VARIANCE	CURRENT ESTIMATE	VARIANCE	MAXIMUM ECONOMIC
Prog Acq Cost (BY $)	410.7	+ 888.3	1,299.0	-206.3	1,092.7
(TY $)	473.8	+3610.2	4,084.0	-825.7	3,258.3
PAUC (BY $)	.0177	+ .0079	.0256	-.0038	.0218
(TY $)	.0204	+ .0599	.0803	-.0152	.0651

c. (U) Schedule Variance — (NOTE: Subject to the limitations on production rates above.)

	DEVELOPMENT ESTIMATE	VARIANCE	CURRENT ESTIMATE	VARIANCE	MAXIMUM ECONOMIC
Start Date (Mo/Yr)	06/72		06/72		06/72
Duration (in months)	123	+165	288	-4	284
End Date (Mo/Yr)	09/82		06/95		02/95

d. (U) Deliveries (Plan/Actual) —

	TO DATE
RDT&E	214/211
Procurement	5496/8091

18. (U) Operating and Support Costs: Not Applicable

N-38 TOMAHAWK

~~SECRET~~

SAR-85-054

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: TOMAHAWK SEA LAUNCHED CRUISE MISSILE, U/RGM-109 (U)

AS OF DATE: December 31, 1985

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1. (U) Designation/Nomenclature (Popular Name): RGM-109/Sea Launched Cruise Missile, Surface (TOMAHAWK); UGM-109/Sea Launched Cruise Missile, Submarine

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

3. (U) Responsible Office and Telephone Number:

Joint Cruise Missiles Project
Washington, DC 20363-5140

RADM Stephen J. Hostettler
Assigned: 27 August 1982
AV 222-7409; Comm (202)692-7409

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

RDT&E: PE 64367N, PE 63717N - Project K1784, PE 64707N - Project K1784
PROCUREMENT: PE 28009N, PE 24229N, PE 24660N - APPN 1507 and APPN 1810 (ICN 2101)

5. (U) Related Programs: Air-Launched and Ground-Launched Cruise Missiles (USAF); MK-41 Vertical Launching System; Harpoon Cruise Missile; OTH Targeting; SSN Combat Control System Improvement; BB-61; CG-47; DDG-51; DDG-963; SSN 688 and SSN 637 Class Ships.

CLASSIFIED BY: [redacted] Encl (71)

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CLEARED FOR OPEN PUBLICATION AS AMENDED

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

OASD(PA) DSOISR 86-S-0875

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6. (U) Mission and Description: The conventional land-attack variant counters threats against the U.S Navy by destroying naval targets ashore, fleet command, control and logistic systems; industrial or other high value targets and ground-based air defense systems aiding aircraft penetration. The anti-ship TOMAHAWK redresses the current Soviet anti-ship cruise missile stand-off advantage and complements aircraft strikes against combat ships with effective air defense systems. The nuclear land-attack variant provides a highly survivable, world-wide theater nuclear capability.

7. (U) Program Highlights:

a. (U) Development of this generation of U.S. cruise missiles began in 1972. Since then, the ground-launched and sea-launched land-attack nuclear variants and the sea-launched anti-ship and land-attack conventional variants have completed full scale engineering development and OPEVAL, entered rate production, and have been deployed: approximately 400 missiles in operational units in Western Europe and at sea. The remaining missiles will be procured before the mid-1990's. In total, ground-launched cruise missiles will be based in five western European countries including the United Kingdom, and sea-launched cruise missiles will be deployed in more than 190 surface ships and submarines.

b. (U) Significant Developments since Last Report

(U) Six Operational Test Launch flights of TLAM/N and TASM missiles from surface ships and submarines, including the first OTL TLAM/N Quality Assurance Service Test (QAST) were conducted -- In May, the USS LA JOLLA attempted the second TLAM/N OTL-QAST launch, but a missile anomaly prevented launch.

(U) OPEVAL of the terminal-dive land-attack conventional TOMAHAWK missile (BGM-109C Block IIA) was completed in April; DNSARC III was held in December 1985. Limited TLAM/C production was approved for 54 missiles in FY86 and 147 for FY87.

(U) Ship Vertical Launch System at-sea flight testing began in May with a successful launch of a TASM from the USS NORTON SOUND. subsequent USS NORTON SOUND launches of a TLAM/N and TLAM/C completed the VLS TECHEVAL testing. VLS OPEVAL began in November with the successful launch and flight of a TLAM/N missile making a total of five successful VLS firings.

(U) Major funding changes to the approved program since last report include the incorporation of the FY87 President's Budget which decreased the FY86 procurement funding by 6.1% to reflect anticipated contract savings/inflation. Additionally in late January 1986, OSD issued revised escalation rates which resulted in TOMAHAWK dropping below the FYDP in FY88 and outyears. This change alone removed $183.1M (1.4%) from our earlier FY87 President's Budget approved program of $13,216M. Thus total program costs decreased $758.5M (5.5%) as a net result of:

(1) Program year add-on in RDT&E and OPN (+$119.9); and

(2) anticipated contract savings/inflation (-$850.4M).

- (U) TOMAHAWK is expected to satisfy its current mission requirements.

c. (U) Changes Since December 31, 1985 -- Since 31 December 1985, there have been two OT-III VLS test flights one, TLAM/C and one TASM. OPTEVFOR is evaluating results.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no NDCP, approved 26 March 1985, threshold breaches.

9. (U) Schedule:

	Development Estimate/ Approved Program	Actual
a. (U) Milestones		
1. (U) DSARC I - Land Attack (SUBMARINE)	2/74	2/74
Anti-Ship	2/74	2/74
2. (U) First Flight	5/76	3/76
3. (U) First Guided Flight - Land Attack	10/76	12/76
Anti-Ship	12/76	12/76
4. (U) DSARC II - Land Attack	1/77	1/77
Anti-Ship	1/77	1/77
5. (U) First FSD Flight - Land Attack	3/77	1/77
Anti-Ship	2/77	2/77
Land Attack/ Conventional	N/A	7/81
Conventional (Blk IIA)	N/A	6/84

	Sub	Ship	Sub	Ship	
6. (U) Combined DTOT/OPEVAL Complete					
Conventional Land Attack (Block I)	N/A	N/A	N/A	N/A	
Conventional Land Attack (Block IIA)	N/A	N/A	4/85	4/85	
Conventional Land Attack (Block IIB)	N/A	N/A	6/87	6/87	
Anti-Ship	5/80	1/81	10/83	5/84	
Land Attack Nuclear	5/80	1/81	10/83	4/84	
7. (U) DNSARC III					
Conventional Land Attack (Block I)	N/A	N/A	N/A	N/A	
Conventional Land Attack (Block IIA)	N/A	N/A	12/85	12/85	(CH-1)
Conventional Land Attack (Block IIB)	N/A	N/A	11/87	11/87	
Anti-Ship	9/80	5/81	12/84	12/84	
Land Attack Nuclear	9/80	5/81	12/84	12/84	
8. (U) IOC					
Conventional Land Attack (Block I)	N/A	N/A	N/A	4/83	
Conventional Land Attack (Block IIA)	N/A	N/A	3/86	3/86	
Conventional Land Attack (Block IIB)	N/A	N/A	9/87	9/87	
Anti-Ship	6/81	6/82	11/83	6/84	
Land Attack Nuclear	1/82	6/82	6/84	6/84	

b. (U) Previous Change Explanation:

Combined DTOT/OPEVAL Complete -- Weapon Control System unavailability delayed the Ship-Launched Anti-Ship. The Conventional, Nuclear Land-Attack, and Anti-Ship delays are described below.

DNSARC III Anti-Ship and Land-Attack Nuclear were rescheduled based on several restructures of the program which alternated priorities of the two missile systems. These restructures alternately cancelled and resurected the nuclear program in the early 1980's. Dates were established for Land-Attack Conventional (Blocks IIA and IIB) in December 1984 after the original development estimate was established.

IOC Anti-Ship, and Conventional Land-Attack dates were delayed due to OPEVAL testing difficulties. The Theater Mission Planning System and BGM-109C missiles were decertified and later recertified when those problems were solved. Missile Quality Assurance corrections added further delay.

c. (U) Current Change Explanation: (CH-1) Conventional Land Attack (Block IIA) was completed in December, 1985 vice the earlier planning date of June, 1986 due to a very successful OPEVAL.

d. (U) References --

Development Estimate: Draft DCP 125 dated 22 December 1976 (Land-Attack), Program Memorandum No. 117, 22 December 1976 (Anti-Ship) SECNAV approved 5 January 1977; Draft DCP KO545 dated 27 December 1982 (TOMAHAWK Weapons System) submitted to SECNAV.

Approved Program: FY87 President's Budget

10. (U) Operational/Technical Characteristics:

	Development Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. (U) Operational (Land Attack):	(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)		

10. (U) Operational/Technical Characteristics (Cont'd):

	Development Estimate/ Approved Program	Demonstrated Performance	Current Estimate
(b)(1)			

b. (U) Technical (Land Attack):

(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)

c. (U) Operational (Anti-Ship)

(b)(1)

d. (U) Previous Change Explanations --

10.a.1 Range - Propulsion range performance betters DE.
10.a.2 Cruise Speed - Based on current flight data.
10.a.3 Penetration Altitude - Performance betters estimate.
10.a.4 Terminal Accuracy - Performance betters estimate.
10.a.3 Penetration Altitude - Demonstrated performance betters estimate.

e. (U) Current Change Explanations --

(b)(1)

f. (U) References --

Development Estimate: Draft DCP 125 dated 22 December 1976 (Land-Attack), Program Memorandum No. 117, 22 December 1976 (Anti-Ship) SECNAV approved 5 January 1977; Draft NDCP KO545 dated 27 December 1982 (TOMAHAWK Weapon System) submitted to SECNAV.

Approved Program: FY87 President's Budget

(U) PROGRAM ACQUISITION COSTS (Current Estimate in Millions of Dollars)

	Development Estimate (FY74-86)	Changes	Current Estimate (FY74-93)
a. (U) Program Acquisition Cost			
Development (RDT&E)	782.8	(+545.1)	1327.9
Procurement	1023.6	+3904.0	4927.6
Air Vehicle (Flyaway)	(786.0)	(+3141.5)	(3927.5)
Other Launch/Fire Control Costs	(90.2)	(+400.0)	(490.2)
Peculiar Support	(81.1)	(+196.3)	(277.4)
Initial Spares	(66.3)	(+166.2)	(232.5)
Construction (MILCON)	0	0.3	0.3
Total FY 77 Base-Year $	1806.4	+4449.4	6255.8
Escalation	616.5	+6160.6	6777.1
Development (RDT&E)	(83.3)	(+467.0)	(550.3)
Procurement	(533.2)	(+5693.2)	(6226.6)
Construction (MILCON)	(0.0)	(0.2)	(0.2)
Total Then-Year Prog Cost 1/	$2,422.9	+10610.0	13,032.9
b. (U) Quantities—			
Development (RDT&E)	81	-7	74
Procurement	1,082	+2,912	3,994
Total	1,163	+2,905	4,068
c. (U) Unit Cost —			
Procurement:			
FY 77 Base-Year $	0.946	+0.288	1.234
Then-Year $	1.439	+1.354	2.793
Program:			
FY 77 Base-Year $	1.553	-0.015	1.538
Then-Year $	2.083	+1.121	3.204

d. (U) Approved Design to Cost Goal — (Average Unit Flyaway Cost)	Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty: 3994			
@ Peak Rate: 50/mo			
FY 77 Base-Year $	.707/ .999	.989	1.225
Then-Year $	1.075/2.484	2.316	2.870

e. (U) Foreign Military Sales (FMS): N/A

(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)

1/ (U) Excludes SCN which is included in the respective Naval Sea Systems Command SAR's for new construction ships. Also excludes and O&M,N for shipboard installation and engineering support, and excludes shipboard Vertical Launching System cost managed by Naval Sea Systems Command.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.	(U) Program Acquisition —			
	(1) Cost	13,032.9	13,791.4	13,032.9
	(2) Quantity	4,068	4,068	4,068
	(3) Unit Cost	3.204	3.390	3.204
b.	(U) Current Procurement —	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	875.9	891.1	962.1
	Less CY Adv Proc	(54.6)	(64.6)	(68.8)
	Plus PY Adv Proc	28.0	28.0	54.6
	Net Total	849.3	854.5	947.9
	(2) Quantity	249	249	324
	(3) Unit Cost	3.411	3.432	2.926

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	866.1	1,556.8	-	2,422.9
Previous Changes:				
Economic	+13.7	-686.1	+0.1	-672.3
Quantity	-22.6	+7,649.2	-	+7,626.6
Schedule	+213.4	+605.5	-	+818.9
Engineering	+772.8	+999.6	-	+1,772.4
Estimating	+9.8	+95.6	-0.1	+105.3
Other	-	-	-	-
Support	+2.9	+1,714.2	+0.5	+1,717.6
Subtotal	+990.0	+10,378.0	+0.5	+11,368.5
Current Changes:				
Economic	-8.3	-847.5	-	-855.8
Quantity	-	-	-	-
Schedule	-	+32.8	-	+32.8
Engineering	+30.4	-	-	+30.4
Estimating	-	-122.6	-	-122.6
Other	-	-	-	-
Support	-	+156.7	-	+156.7
Subtotal	+22.1	-780.6	-	-758.5
Total Changes	+1,012.1	9,597.4	+0.5	+10,610.0
Current Estimate	1,878.2	11,154.2	0.5	13,032.9

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

(FY 1977 Constant (Base Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate(DE)	782.8	1,023.6	-	1,806.4
Previous Changes:				
Quantity	-17.5	+2,641.0	-	+2,623.5
Schedule	+148.5	+84.8	-	+233.3
Engineering	+407.4	+422.1	-	+829.5
Estimating	-7.7	+53.0	-0.1	+45.2
Other	-	-	-	-
Support	+2.1	+701.7	+0.4	+704.2
Subtotal	+532.8	+3,902.6	+0.3	+4,435.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+13.6	-	+13.6
Engineering	+12.3	-	-	+12.3
Estimating	-	-75.8	-	-75.8
Other	-	-	-	-
Support	-	+63.6	-	+63.6
Subtotal	+12.3	+1.4	-	+13.7
Total Changes	+545.1	+3,904.0	+0.3	+4,449.4
Current Estimate	$1,327.9	$4,927.6	0.3	$6,255.8

b. (U) Previous Change Explanations

RDT&E

Economic: Revised escalation rates.

Schedule: Program delay to make design improvements, increase commonality, accelerate development of conventional land attack missile variant, and realign development of nuclear land attack.

Quantity: Reduction of 7 missiles.

Engineering: Design changes for commonality with the Ground Launch Cruise Missile. Complete TOMAHAWK baseline program including BGM-109 IOC. Establishment of TOMAHAWK Improvement Program. Implementation of program restructuring including additions such as Submunition Dispenser, Terminal Maneuver, Improved Booster, Nuclear Safety and specific Weapon System block upgrades.

Estimating: Revised estimate to offset economic indices. Addition of Theater Mission Planning System development caused by program restructuring.

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

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

Procurement

Economic: Revised escalation rates.
Quantity: Reduction of fire control systems for 33 ships and 52 submarines. Establish Procurement Objective of 3994 missiles.
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.
Engineering: Requirement to use Armored Box Launcher vice cannister launchers and production of 1,157 BGM-109D variants, vice BGM-109C versions.
Estimating: Congressionally mandated amortization of tooling and test equipment. Reestimate of Quality Assurance requirements. Inclusion of both Systems Engineering/Integrating Agent and Principal Support Laboratory in FY85 and later years.
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.

MILCON

Estimating: Military construction requirement not estimated in DE.

c. (U) Current Change of Explanations

	(Dollars in Millions) Base Year $	Then Year $
RDT&E		
Revised January 86 escalation rates (Economic)	N/A	-8.3
Navy affordability Issues (Eng'rng.)	-24.9	-54.1
Theater Mission Planning (Eng'rg.)	+6.6	+13.1
Congressional Reduction (Eng'rg)	-4.5	-5.8
Addition of FY91 R&D requirements (Engr'g)	+35.6	+77.2
TOTAL Engineering Change	+12.3	+30.4
Procurement		
Revised January 86 escalation rates (Economic)	N/A	-847.5
Adjust production profile (Schedule)	+13.6	+32.8
Transfer of Theater Mission Planning Center (TMPC) support requirements from total missile flyaway to support category (Estimating)	-75.8	-122.6

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

Transfer of TMPC to support Net of reestimating OPN contract savings/addition of FY91 OPN requirements. (Support)	+63.6	+156.7

c. (U) References

- Development Estimate: RDT&E -- FY 1981 RDT&E Descriptive Summary Program Element 64367N
- Procurement -- January 1978 Five Year Defense Plan (FYDP)

14. (U) Program Acquisition Unit Cost (PAUC) History:

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

PAUC(DE) Baseline Estimate)	Changes (Then Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
2.083	-0.375	+0.387	+0.209	+0.443	-0.004	+0.461	0.0	+1.121	3.204

15. (U) Contract Information: (Dollars in Millions)

a. (U) RDT&E: Dollar Value of ongoing effort has dropped below reporting threshold.

b. (U) Procurement:

1. AUR Missile:
General Dynamics (FY83 AUR)
San Diego, CA
N00019-83-C-3329, FPI
Award: May 1983
Definitized: April 1984

Initial Contract Price		
Target	Ceiling	Qty
$115.4	$128.5	180

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$126.2	$140.5	108	$126.2	$126.2
Previous Cumulative Variances as of 30 June 1985 Unit Cost Report			-6.1	-4.4
Cumulative Variances To Date			-3.3	-3.5
Net Change			+2.8	+.9

Explanation of Change: Variances are improving. Cost Variance improved due to correction of accounting errors while SV improved as contract nears completion. Late material deliveries and PCM Encoder delays have caused SV.

2. AUR Missile:

General Dynamics (FY84 AUR)
San Diego, CA
N00019-83-C-3339, FFP
Award: November 1983
Definitized: March 1984

Initial Contract Price		
Target	Ceiling	Qty
$187.2	N/A	208

15. (U) Contract Information (Cont'd): (Dollars in Millions)

2. AUR Missile (Cont'd):

Current Contract Price			Estimate Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$188.3	N/A	208	$189.3	$189.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulatice Variances To Date		
Net Change		

Explanation of Change: Not reported for FFP contracts.

3. AUR Missile:

Initial Contract Price		
Target	Ceiling	Qty
$174.3	N/A	86

General Dynamics (FY85 AUR)
San Diego, CA
N00019-84-C-4484, FFP
Award: December 1984
Definitized: December 1984

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
198.5	N/A	180	$204.2	$210.5

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

Explanation of Change: Not reported for FFP contracts

4. FY84 Engine:

Initial Contract Price		
Target	Ceiling	Qty
$130.1	N/A	579

Williams International
Walled Lake, MI
N00019-84-C-4210, FFP
Award: January 1984
Definitized: September 1984

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$116.4	N/A	579	$116.4	$116.4

Previous Cumulative Variances
Cumulative Variances To Date
Net Change
Explanation of Change: Not reported for FFP contracts

15. (U) Contract Information: (Cont'd) (Dollars in Millions)

5. AUR Missile:

	Initial Contract Price		
	Target	Ceiling	Qty
McDonnell Douglas (FY86 AUR Option)	$192.0	N/A	139

San Diego, CA
N00019-84-C-4485, FFP
Award: December 1985
Definitized: December 1985

Current Contract Price			Estimate Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$192.0	N/A	139	$192.0	$192.0

6. AUR Missile:

	Initial Contract Price		
	Target Price	Ceiling	Qty
McDonnell Douglas (FY85 AUR)	$182.9	N/A	26

St. Louis, MO
N00019-84-C-4485, FFP
Award: December 1984
Definitized: December 1984

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$205.4	N/A	120	$209.2	$216.9

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

Explanation of Change: Not reported for FFP contracts.

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: 33.1% ($4,318.6/$13,032.9)

b. (U) Appropriation Summary —

Appropriation	Current & Prior Yrs (FY74-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92-93)	Total
RDT&E	1,451.9	86.1	340.2	--	1,878.2
Procurement	2,866.2	962.1	4,767.4	2,558.5	11,154.2
Weapon	(2,369.5)	(835.7)	(4,450.7)	(2,558.5)	(10,214.4)
Other	(496.7)	(126.4)	(316.7)	(—)	(939.8)
MILCON	0.5	--	--	--	0.5
Total	4,318.6	1,048.2	5,107.6	2,558.5	13,032.9

16. (U) PROGRAM FUNDING SUMMARY (Cont'd) (Current Estimate in Millions of Dollars)

c. (U) Annual Summary --

FISCAL YEAR	QUANTITY	FY 77 BASE-YEAR DOLLARS			THEN YEAR DOLLARS			ESCL
		FLYAWAY (NON-ADD)			Advance Procurement			
		NON-REC	REC	TOTAL	Debit	Credit	TOTAL	RATE (%)
APPROPRIATION, RDT&E,N								
1974				8.3			6.6	--
1975				42.9			37.3	--
1976				140.6			130.6	--
1977				116.5			119.2	--
1978				189.8			209.5	7.6
1979				127.3			154.1	8.4
1980				78.3			105.5	9.4
1981				89.8			133.9	11.9
1982				90.4			144.5	9.2
1983				71.1			118.5	4.9
1984				78.6			135.4	3.8
1985				44.7			79.9	3.6
1986				41.5			77.0	3.2
1987				44.5			86.1	4.1
1988				48.3			96.8	3.9
1989				41.2			85.2	3.4
1990				38.2			81.0	2.9
1991				35.6			77.2	2.3
SUBTOTAL				1,327.9			1,878.2	
APPROPRIATION: WPN								
1980	6	0.0	12.8	19.9	10.7	-	30.1	9.7
1981	50	4.9	91.9	117.1	14.0	-10.7	195.4	11.9
1982	61	10.9	99.4	129.2	14.0	-14.0	232.5	9.6
1983	51	23.9	73.3	117.3	6.7	-6.7	220.9	9.0
1984	124	21.5	131.7	175.4	15.3	-6.7	341.7	8.0
1985	180	31.5	207.2	287.0	28.0	-15.3	581.1	4.1
1986	249	43.3	243.7	362.8	54.6	-28.0	767.8	4.1
1987	324	23.0	300.1	374.1	68.8	-54.6	835.7	4.1
1988	410	16.2	334.0	411.8	90.2	-68.8	944.0	3.9
1989	470	31.0	383.2	459.2	101.2	-90.2	1,085.2	3.4
1990	510	34.5	404.6	487.5	111.1	-101.2	1,183.6	2.9
1991	520	23.4	424.2	496.4	121.8	-111.1	1,237.9	2.3
1992	520	8.4	475.5	527.2	126.1	-121.8	1,349.8	2.3
1993	519	6.1	466.8	467.1	0	-126.1	1,208.7	2.3
SUBTOTAL	3,994	278.8	3,648.4	4,431.8	762.5	-762.5	10,214.4	
APPROPRIATION: OPN								
1981				34.3			36.6	11.9
1982				44.7			75.1	9.2
1983				74.4			129.2	4.9
1984				36.3			64.9	3.8
1985				44.8			82.8	3.6
1986				55.9			108.1	3.2
1987				62.9			126.4	4.1
1988				48.3			99.9	3.9
1989				37.5			79.7	3.4
1990				43.4			94.4	2.9
1991				19.2			42.7	2.3
SUBTOTAL				501.7			939.8	
APPROPRIATION: MILCON								
1982	--	--	--	0.3			0.5	9.2
SUBTOTAL				0.3			0.5	
TOTAL				6,271.7			13,216.0	

16. (U) PROGRAM FUNDING SUMMARY (Cont'd)

d. (U) Obligations and Expenditures

FISCAL YEAR	THEN YEAR DOLLARS(Current Estimate in Millions) TOTAL	OBLIGATED	EXPENDED
APPROPRIATION: RDT&E,N			
1974	6.6	6.6	6.6
1975	37.3	37.3	37.3
1976	130.6	130.6	130.6
1977	119.2	119.0	119.0
1978	209.5	209.5	209.5
1979	154.1	154.1	154.1
1980	105.5	105.5	105.5
1981	133.9	133.9	132.8
1982	144.5	144.3	142.8
1983	118.5	118.8	115.3
1984	135.4	134.8	118.1
1985	79.9	79.9	45.9
1986	77.0	28.9	0.8
To Complete	426.3	N/A	N/A
TOTAL	1,878.2	1,403.2	1,318.3
APPROPRIATION: WPN			
1980	30.1	30.1	30.1
1981	195.4	195.4	165.6
1982	232.5	232.5	210.5
1983	220.9	220.8	174.0
1984	341.7	333.7	248.3
1985	581.1	483.1	140.4
1986	767.8	81.2	21.6
To Complete	7,844.9	N/A	N/A
TOTAL	10,214.4	1,576.8	990.5
APPROPRIATION: OPN			
1981	36.6	36.6	36.6
1982	75.0	75.0	59.3
1983	129.2	128.8	98.9
1984	64.9	64.1	22.7
1985	82.8	62.1	25.5
1986	108.1	2.0	0.3
To Complete	443.2	N/A	N/A
TOTAL	939.8	368.6	243.3
APPROPRIATION: MILCON			
1982	0.5	0.5	0.5
TOTAL	0.5	0.5	0.5

17. (U) Production Rate Data:

a. (U) Annual Production Rates -- (Note: The annual production rates shown differ from the annual funded quantities because the funded delivery period for prior Fiscal Year procurements was greater than 12 months. Starting with the FY 1984 funding delivery period we project a twelve month period to program completion. Also, the attainment of the Sea Launched Cruise Missile maximum production rate may be limited by Ground Launched Cruise Missile (GLCM) missile delivery requirements until the completion of the FY 1987 funding delivery period when the GLCM program is completed.

	Production Rates (Quantity/Year)			
Fiscal Year	Development Estimate	Production Estimate	Current Estimate	Maximum
1980	-	-	-	N/A
1981	30	-	-	N/A
1982	104	3	3	N/A
1983	149	22	22	135
1984	156	74	74	244
1985	161	123	96	300
1986	190	155	182	480
1987	198	201	206	540
1988	94	302	294	600
1989	-	371	353	600
1990	-	540	461	600
1991	-	647	486	600
1992	-	609	520	600*
1993	-	653	520	600
1994	-	249	519	600
1995	-	-0-	258	600
TOTAL	1082	3994	3994	N/A

* April 1992 would be the earliest theoretical date for total program (3994) completion at maximum production rates.

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

b. (U) Cost Variance -- Dollars in Millions (Note: Subject to limitations on production rates above.)

Item	Production Estimate	Variance (CE less PDE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	6,240.0	+15.9	6,255.9	+136.8	6,119.1
(TY $)	13,791.4	-758.5	13,032.9	+365.2	12,667.7
PAUC (BY $)	1.534	+0.004	1.538	+0.034	1.504
(TY $)	3.390	-0.186	3.204	+0.090	3.114

c. (U) Schedule Variance -- (Note Subject to the limitations on production rates above.)

	Production Estimate	Variance (CE less PdE	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	July 1982	N/A	July 1982	N/A	July 1982
Duration (in Months)	152	0	152	35	117
End Date (Mo/Yr)	May 1995	N/A	Mar 1995	N/A	Apr 1992

(U) DELIVERIES (Plan/Actual)

		R&D To Date			Procurement To Date
R&D:	Land Attack	47/37	Procurement:	Land Attack	44/39
	Anti-Ship	27/37		Anti-Ship	110/94
	Total	74/74		Land Attack/Nuclear	99/87
				Total	253/220

Variance Analysis: Deliveries are 33 missiles (six weeks) behind schedule due to material shortages and technical problems.

A-23 BLACKHAWK

UNCLASSIFIED

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

PROGRAM: UH-60A BLACK HAWK

AS OF DATE: December 31, 1985

85-018

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CLEARED
FOR OPEN PUBLICATION

MAR 21 1986

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

AS AMENDED
Apr 11, 12, 13

1. Designation and Nomenclature (Popular Name): UH-60A BLACK HAWK

2. DOD Component: Department of the Army

3. Responsible Office and Telephone Number:

BLACK HAWK Project Manager's Office
4300 Goodfellow Boulevard
St. Louis, Missouri 63120-1798

PM: COL R. H. Lauder
Assigned: November 9, 1983
AUTOVON: 693-1700

4. Program Elements/Procurement Line Items:

RDT&E: PE 64206A, Projects D378, D189, D069 (No shared funding)
Procurement: A05002; AA0952 APPN 2031

5. Related Programs: Army's EH-60A QUICK FIX and AH-64 APACHE programs; Navy's SH-60B SEAHAWK program; Global Positioning System (GPS); Air Force's HH-60A NIGHT HAWK program; and Army's UH-60A BLACK HAWK Flight Simulator.

6. Mission and Description: The BLACK HAWK is a new twin engine helicopter that is used in the performance of the air assault, air cavalry and aeromedical evacuation mission. This new aircraft is the Army's first true squad assault helicopter. 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-60A BLACK HAWK is replacing the UH-1H Iroquois in air assault, air cavalry, and aeromedical evacuation units.

No SECURITY Objection to PUBLIC RELEASE

18 MAR 1986

SECURITY REVIEW: OACSI, HQDA

86-0718 UNCLASSIFIED

7. Program Highlights:

a. Significant Historical Developments: June 22, 1971 the BLACK HAWK program was approved by the DEPSECDEF for full-scale development. 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 2990 flight test hours and 2676 ground vehicle test hours. The BLACK HAWK was approved for production as a result of DSARC III, held November 30, 1976. December 23, 1976 Sikorsky Aircraft and GE were awarded initial production contracts for airframes and engines, respectively. October 22, 1979 ASARC IIIA was held at which time permission was granted for follow-on BLACK HAWK production.

May 15, 1979 FY 80 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 concluded. 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 FY 84 Authorizations and Appropriations Act directed the Army to qualify the HELLFIRE missile on the BLACK HAWK and appropriated $15.0M to fund the program.

b. Significant Developments Since Last Report -- Contractor qualification firing of the HELLFIRE missile system on the UH-60A BLACK HAWK aircraft was completed December 21, 1985.

The BLACK HAWK system currently meets all essential mission requirements.

c. Changes since "As of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: The update to UH-60A BLACK HAWK DCP No. 13 was approved November 1, 1977. It is apparent that the total quantity of 1,107 UH-60A BLACK HAWK aircraft cannot be procured within the total cost threshold of $1,447 million (FY 71 C $). The current estimate in this SAR is $1,916.9 million (FY 71 C $).

9. Schedule:

a. Milestones --	Development Estimate/ Approved Program	Current Estimate
First Year of Funding	Jul 67/Jul 67	Jul 67
Engine Development Contract Award	Dec 71/Mar 82	Mar 72
Prototype Development Contracts Awarded	Sep 72/Aug 72	Aug 72
First Flight	Sep 74/Nov 74	Nov 74
Engine Military Qualification Test (150 Hrs)	Dec 75/Mar 76	Mar 76

a. Milestones -- (Cont'd)

	Development Estimate/ Approved Program	Current Estimate
Development Test II		
Started	Feb 76/Mar 76	Mar 76
Completed	Dec 77/Dec 76	Dec 76
Operational Test II		
Started	Not Shown/Jun 76	Jun 76
Completed	Not Shown/Sep 76	Sep 76
DSARC III	Sep 76/Nov 76	Nov 76
Type Classification (Standard)	Not Shown/Nov 76	Nov 76
Prototype Evaluation Completed	Not Shown/Dec 76	Dec 76
Initial Production Contract Award	N/A /Dec 76	Dec 76
1st Production Aircraft Delivery	N/A /Aug 78	Oct 78
FDTE		
Started	Not Shown/Jan 79	Jun 79
Completed	Not Shown/May 79	Oct 79
ASARC IIIA	Not Shown/Aug 79	Oct 79
Initial Operational Capability (IOC) 1/	Jun 79 /Aug 79	Nov 79
Department of the Army Program Review (DAPR)	N/A	Apr 86 (Ch-1)

b. Previous Change Explanations --

Changes in the current estimate of milestone accomplishments have been caused by (a) conformance with the new Army Acquisition Guidelines; (b) reduction in prototype aircraft from 6 to 3; (c) time required to repair the prototype which was damaged in November 1975; (d) scheduling problems and additional time required by other Government agencies for testing; (e) decision by DSARC III on initial production go ahead in December 1976; (f) the January 22, 1979 temporary grounding of the BLACK HAWK fleet because of the observance of a failure mode in a primary servo; (g) the June 11, 1979 official beginning of FDTE at Ft. Campbell, KY; and (h) the October 15, 1979 completion of FDTE at Ft. Campbell, KY.

c. Current Change Explanations --

(Ch-1) DA directed that a DAPR be held to consider the original procurement objective for UH-60A BLACK HAWK aircraft. This DAPR has been rescheduled to April 1986.

d. References --

DCP #13, June 13, 1971 and DCP #13 Update, November 1, 1977.

Footnote:

1/ IOC of the BLACK HAWK means that during 1st Quarter of FY 80, Company "D" Combat Support Aviation Company, 158th Army Battalion, 101st Airborne Division, Ft. Campbell, KY was equipped with BLACK HAWK aircraft and operationally ready.

10. Technical/Operational Characteristics:

a. Technical —	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Payload (Pounds)	2640/2640	2640	2640
Flight Performance with Payload 1/			
(1) Vertical Climb in Feet Per Minute (FPM) 2/	500/450-500	450	664 3/ (Ch-1)
(2) Cruise Speed in Knots 4/	150/145-175	145	145
(3) Endurance in Hours 5/	2.3/2.3	2.3	2.3
System Meantime Between Failure (MTBF) in Hours	4.0/4.0	6.6	6.6 (Ch-2)
Maintenance Man-hours Per Flight Hour (MMH/FH) 6/	3.8/3.8	3.1 (Ch-3)	3.1 (Ch-3)
b. Operational --			
Payload (Troop) 7/	11/11	11	11
Air Transportability			
(1) C-130 (Quantity) 8/	1/ N/A	N/A	N/A
(2) C-141 (Quantity)	2/2	2	2
(3) C-5 (Quantity)	6/6	6	6
Mission Reliability (Probability of Success)	.986/.987	.983	.987

c. Previous Change Explanations --

Variances in the demonstrated performance and current estimates of the operational/technical characteristics are due to: (1) bands of acceptable performance which were identified to allow for cost effective trade-offs in the BLACK HAWK MN, ED, October 1976; (2) an analysis of the data which were obtained from the previously conducted RAM/LOG sample data collection on 7 Lot IV (FY 80) production aircraft at Ft. Campbell; KY; (3) an adjustment to vertical climb to reflect the latest findings of the US Army Aviation Engineering Flight Activity (AEFA), and (4) the expected results from Lot IX (FY 85) production aircraft RAM/LOG sample data collection when the ESSS removable provisions kit is fielded.

d. Current Change Explanations —

(Ch-1) -24 (688 to 664). The current estimate in vertical climb in feet per minute was adjusted to reflect the actual weight of the 685th production aircraft.

(Ch-2) +1.8 (4.8 to 6.6). Corrects typographical error in last SAR.

(Ch-3) +0.1 (3.0 to 3.1). The Demonstrated Performance (DP) and current estimate of maintenance man-hours per flight hour increase was due to an update using 1985 fleet wide sample unscheduled maintenance data from January 1, 1985 to April 18, 1985.

10. Technical/Operational Characteristics (Cont'd):

e. References --

DCP #13, June 13, 1971 and DCP #13, November 1, 1977.

Footnotes:

1/ At 4,000 ft. altitude and 95°F.
2/ Using 95% Intermediate Rated Power (IRP).
3/ Current estimate is based on the actual weighing of a latest configuration UH-60A BLACK HAWK production aircraft.
4/ Using Maximum Continuous Power (MCP).
5/ Using a mission profile.
6/ Inspection and Servicing, total Corrective MMH/FH mission reconfiguration, preparation of aircraft for air transport and refueling through Aviation Intermediate Maintenance (AVIM) level.
7/ At 4,000 ft. altitude and 95°F, with a crew of 3 and mission fuel.
8/ TWX, DAMO-RQD, June 8, 1978, approved deletion of this requirement from the UH-60A BLACK HAWK program.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate	Changes	Current Estimate
Development (RDT&E)	$ 357.6	$ +24.0	$ 381.6
Procurement	1,584.4	+332.5	1,916.9
Airframe			(1,043.1)
Engine			(323.7)
Avionics			(62.0)
Other Flyaway			(304.3)
Total Flyaway			1,732.8
Other Weap. Sys. Cost			49.3
Initial Spares			134.5
Construction (MILCON)			0
Total FY 71 Base-Year	$1,942.0	+356.5	2,298.5
Escalation	365.6	+3,737.5	4,103.1
Development (RDT&E)	(52.6)	(+101.9)	(154.5)
Procurement	(313.0)	(+3,635.6)	(3,948.6)
Construction (MILCON)	(0)	(+0)	(0)
Total Then-Year$	$2,307.6	$+4,094.0	$6,401.6

11. Program Acquisiton Cost (Current Estimate in Millions of Dollars) (Cont'd)

b. Quantities --	Development Estimate	Changes	Current Estimate
Development (RDT&E)	16	-6	10
Procurement	1,107	0	1,107
Total	1,123	-6	1,117

c. Unit Cost --

Procurement:			
FY 71 Base-Year $	1.43	+.30	1.73
Then Year $	1.71	+3.59	5.30
Program:			
FY 71 Base-Year $	1.73	+.33	2.06
Then Year $	2.05	+3.68	5.73

d. Approved Design to Cost Goal --

	(Average Unit Flyaway Cost) 1/		
	Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
Constant FY 72 $	.951/ .951	1.539	N/A
Then-Year $	1.089/1.089	4.617	N/A

Peak Airframe Rate: 14 per month
Peak Engine Rate: 60-80 per month within 45 months, for a total of 4,700

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

Footnotes:

1/ System Project Management, System Test and Evaluation, and Warranty are excluded.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

a. Program Acquisition --	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
(1) Cost	6,401.6	6,625.2	6,401.6
(2) Quantity	1,117	1,117	1,117
(3) Unit Cost	5.731	5.931	5.731

12. Program Acquisition/Current Procurement Unit Cost Summary: (Cont'd)
(Current (Then-Year) Dollars in Millions)

b. Current Procurement --	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	435.7	486.2	358.1
Less CY Adv Proc	199.0	199.0	195.0
Plus PY Adv Proc	147.7	147.7	224.0
Net Total	384.4	434.9	387.1
(2) Quantity	78	78	78
(3) Unit Cost	4.928	5.576	4.963

13. Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Development Estimate	409.9	1,897.4	-	2,307.3
Previous Changes:				
Economic	+52.3	+1,476.6	-	+1,528.9
Quantity	-22.0	-	-	-22.0
Schedule	+3.0	-60.9	-	-57.9
Engineering	+23.5	+106.7	-	+130.2
Estimating	+25.9	+2,702.1	-	+2,728.0
Other	+18.5	+1.4	-	+19.9
Support	+8.2	-17.4	-	-9.2
Subtotal	+109.4	+4,208.5	-	+4,317.9
Current Changes:				
Economic	-	-187.3	-	-187.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+16.8	+4.8	-	+21.6
Estimating	-	-45.6	-	-45.6
Other	-	-	-	-
Support	-	-12.3	-	-12.3
Subtotal	+16.8	-240.4	-	-223.6
Total Changes	+126.2	+3,968.1	-	+4,094.3
Current Estimate	536.1	5,865.5	-	6,401.6

13. Cost Variance Analysis: (Cont'd)

a. Summary (Cont'd) -- (FY 1971 Constant (Base Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development	357.6	1,584.4	-	1,942.0
Previous Changes:				
Quantity	-20.2	-	-	-20.2
Schedule	+1.4	-106.1	-	-104.7
Engineering	+10.0	+12.4	-	+22.4
Estimating	+7.9	+545.1	-	+553.0
Other	+12.6	+.8	-	+13.4
Support	+6.2	-106.7	-	-100.5
Subtotal	+17.9	+345.5	-	+363.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+6.3	-0.1	-	+6.2
Estimating	-0.2	-9.3	-	-9.5
Other	-	-	-	-
Support	-	-3.6	-	-3.6
Subtotal	+6.1	-13.0	-	-6.9
Total Changes	+24.0	+332.5	-	+356.5
Current Estimate	381.6	1,916.9	-	2,298.5

b. Previous Change Explanations --

RDT&E

Economic: Due to the application of January 1985 and prior DA/OSD inflation guidance.

Quantity: Due to a reduction in the number of engines and number of flying prototypes from 12 to 6 to support the development program.

Schedule: Due to the net of decreases resulting from a Congressional reduction in FY 75 and an OSD reduction in FY 78 and increases resulting from rescheduling the program because of the November 19, 1975 Boeing-Vertol and May 19, 1978 Sikorsky Aircraft prototype accidents.

Engineering: Due to the net of a decrease resulting from deleting the vertical instrument requirement and increases resulting from developing a prototype auxiliary fuel cell system and addition of the ESSS program.

Estimating: Due to the net of decreases resulting from revised cost estimates based on current information following contract negotiations, providing funds to the DIVADS program, and application of OSD generic historical RDTE inflation factors; and increases for transferring APA funds to RDTE for CIP, extension of the airframe and engine maturity contracts, decrement to program, restoration of funds previously decremented for development of 230 gallon crashworthy external fuel tank, and addition of Congressional directed HELLFIRE qualification program.

13. Cost Variance Analysis: (Cont'd)

b. Previous Change Explanations -- (Cont'd)

Other: Due to increases to overhaul/repair the Boeing-Vertol prototype damaged in the November 19, 1975 accident and to sustain the development program as a consequence of the Sikorsky Aircraft prototype damaged in the May 19, 1978 accident.

Support: Due to the net of decreases resulting from favorable cost performance on the Maturity Test, reduction in the number of overhauls during the Government Competitive Tests, and reduction in support because of 6 vice 12 prototypes; and increases for providing engine and avionics representatives for support at the airframe contractor's site.

Procurement

Economic: Due to application of January 1985 and prior DA/OSD inflation guidance.

Quantity: None.

Schedule: Due to the net of decreases resulting from increasing the procurement quantity in FY 77-79 from 85 to 200, in FY 82-90 following cancellation of the SOTAS program, and in FY 85 from 78 to 86; and increases from stretching the program from FY 77-85 to FY 77-86 to FY 77-91.

Engineering: Due to initial funding of Special Operations Forces aircraft.

Estimating: Due to the net of decreases resulting from revising the parametric cost estimating methodology, transfer of PEP funding from procurement to RDTE, reductions in the FY 78 avionics initial spares requirement and FY 81 and FY 82 airframe costs because of contract negotiations and reprogramming actions; award of a FY 82-84 airframe multiyear contract , planned award of a FY 83-85 engine multiyear contract, production acceleration, lower airframe prices negotiated in the FY 85-87 airframe multiyear contract, and lower proposed engine prices in the contractor's FY 86-88 T700 series engine multiyear proposal; and increases resulting from revising the cost estimating methodology and estimates based on the March 1974 design-to-unit-cost review and independent parametric cost estimate, Source Selection Evaluation Board's review, FY 78 airframe Should Cost Team's results, addition of mission flexibility kits and aircraft survivability equipment, airframe production start-up problems, a change in procurement strategy from three airframe single year procurements to a FY 85-87 airframe multiyear procurement, increase in External Stores Support System (ESSS) requirements, and application of OSD approved BLACK HAWK system peculiar historical indices.

Other: Due to cost growth on the FY 77 airframe production contract.

Support: Due to the net of decreases resulting from transferring stock fund spares requirements from the project manager's budget to the respective major subordinate command's budget, revised initial spares requirements because of completion of initial spares in FY 82, peculiar ground support equipment, and production delivery acceleration; and increases resulting from increased quantity and unit price of

13. Cost Variance Analysis: (Cont'd)

b. Previous Change Explanations -- (Cont'd)

Support: engines for initial spares, increased funding requirements for initial spares in the subsequent years to accommodate an increased number of deployment sites and the carryover of funding shortfalls from earlier years, resumption of funding liability for peculiar ground support equipment (PGSE), increased technical data requirements and inclusion of funds to procure a Command Instrument System Trainer (CIST) and Cockpit Emergency Procedures Trainer (CEPT).

MILCON: None.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Addition of Congressional directed HELLFIRE production qualification program (Engineering)	+6.3	+16.8
Correction of roundoff error in previously reported application of OSD generic historical RDTE inflation factors. (Estimating)	-0.2	0.0
(2) Procurement		
Application of January 1986 DA/OSD inflation guidance (Economic)	0.0	-187.3
Deletion of Special Operations Forces requirement (Engineering)	-15.1	-50.5
Addition of Congressional directed HELLFIRE production program (Engineering)	+15.0	+55.3
Effect of Application of January 1986 DA/OSD Inflation Factors to Prior Year Costs (Estimating)	0.0	-14.9
Net of increased cost estimates for airframe and mission kits and decreased cost estimates for engine and avionics (Estimating)	-9.3	-30.7
Effect of Application of January 1986 DA/OSD Inflation Factors to Prior Year Costs (Support)	0.0	-1.0
Revised estimates for peculiar training aids/ devices (Support)	-3.6	-11.3
(3) MILCON None		

d. References --

FY 87 President's Budget submission and SARs prior to December 31, 1985.

14. Program Acquisition Unit Cost (PAUC) History:

Development Estimate to Current Estimate

PAUC (Dev Estimate)	Changes (Current (Then-Year) Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
2.055	+1.201	-.009	-.052	+.136	+2.401	-.019	+.018	+3.676	5.731

Footnote: Initial SAR dated December 31, 1971.

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

a. RDT&E: None.

b. Procurement

Airframe	Initial/ Current Contract Target	Qty	Contractor/ PM's Est Price At Completion
(b)(4)			

	Cost Variance	Schedule Variance
Previous Cumulative Variances	--	1/
Cumulative Variances to Date (12/31/85)	--	
Net Change	--	

Explanation of Change: None

1/ Contract is not under CSCSC reporting.

	Current Contract Target	Qty	PM's Est Price At Completion
(b)(4)			

	Cost Variance	Schedule Variance
Previous Cumulative Variances	--	1/
Cumulative Variances to Date	--	
Net Change	--	

Explanation of Change: The quantity of airframes on this contract was increased from 294 to 296

1/ Contract is not under CSCSC reporting.

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

b. Procurement (Cont'd)

	Initial/ Current Contract Target	Qty	Contractor/ PM's Est Price At Completion
(b)(4)			

	Cost Variance	Schedule Variance
Previous Cumulative Variances	--	1/
Cumulative Variances to Date	--	
Net Change	--	

Explanation of Change: The quantity of engines procured on this contract was increased by a net quantity of 65, resulting in an increase of 14 installed engines and an increase of 51 spare engines. The estimated price at completion was increased to reflect the increased quantity.

1/ Contract is not under CSCSC reporting.

Auxiliary Power Unit	Initial/ Current Contract Target	Qty	Contractor/ PM's Est Price At Completion
(b)(4)			

Previous Cumulative Variances	--	1/
Cumulative Variances to Date	--	
Net Change		

1/ Contract is not under CSCSC reporting.

	Initial/ Current Contract Target	Qty	Contractor/ PM's EST Price At Completion
(b)(4)			

	Cost Variance	Schedule Variance
Previous Cumulative Variances	--	1/
Cumulative Variances to Date	--	
Net Change	--	

1/ Contract is not under CSCSC reporting.

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

b. Procurement (Cont'd)

	Initial/ Current Contract Target	Qty	Contractor/ PM's Est Price At Completion
(b)(4)	[redacted]		

	Cost Variance	Schedule Variance
Previous Cumulative Variances	--	1/
Cumulative Variances to Date	--	
Net Change	--	

1/ Contract is not under CSCSC reporting.

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

a. Program Status --

(1) Percent Program Completed: 83.3% (20/24 yrs)

(2) Percent Program Cost Appropriated: 72.4% ($4,635.4/$6,401.6)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY68-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-90)	Beyond FYDP	Total
RDT&E	536.1	0	0	0	536.1
Procurement	4,099.3	358.1	1,408.1	0	5,865.5
MILCON	0	0	0	0	0
TOTAL	4,635.4	358.1	1,408.1	0	6,401.6

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

c. Annual Summary --

Fiscal Year	FY 71 Base-Year Dollars Flyaway Qty	Nonrec	Rec	Total	Then-Year Dollars Advance Proc Debit	Credit	Total	Escl Rate (%)
			Appropriation: RDT&E					
1968				0.6			0.5	4.2
1969				1.9			1.8	5.1
1970				1.2			1.2	5.3
1971				7.7			7.9	4.9
1972				21.1			22.7	4.7
1973				44.1			50.3	6.2
1974				83.4			102.7	8.0
1975				39.4			52.7	8.7
1976				65.8			93.6	6.3
7T				12.7			18.6	3.1
1977				49.9			76.0	3.9
1978				23.9			39.2	7.7
1979				6.3			11.4	9.7
1980				1.8			3.6	10.1
1981				3.2			7.0	9.0
1982				3.1			7.3	10.2
1983				3.2			7.8	0.9
1984				6.0			15.0	3.9
1985				0.0			0.0	3.4
1986				6.3			16.8	3.2
Subtotal	10			381.6			536.1	

Fiscal Year	FY 71 Base-Year Dollars Flyaway Qty	Nonrec	Rec	Total	Then-Year Dollars Advance Proc Debit	Credit	Total	Escl Rate (%)
			Appropriation: Procurement					
1977	15	19.4	40.8	74.1	7.1	0.0	139.9	1.7
1978	56	11.9	83.3	112.9	10.6	5.7	246.8	15.9
1979	92	5.5	132.2	158.3	13.1	11.2	395.6	14.3
1980	94	3.2	124.9	138.4	15.1	13.4	380.4	10.0
1981	80	2.3	122.1	163.8	24.4	15.4	474.8	5.5
1982	96	2.6	177.0	208.9	128.7	24.5	616.7	1.8
1983	96	10.7	158.4	180.2	145.9	101.4	545.3	2.5
1984	84	1.1	121.9	128.4	139.9	154.2	405.0	4.2
1985	86	2.2	130.9	140.6	171.8	151.1	459.1	3.6
1986	78	1.8	117.9	128.3	199.0	147.7	435.7	4.1
1987	78	.3	97.6	102.0	195.0	224.0	358.1	4.1
1988	85	.3	143.1	149.5	191.4	138.9	541.3	3.9
1989	96	2.7	158.4	166.1	201.8	194.1	617.8	3.4
1990	71	2.7	57.9	65.4	0.0	262.2	249.0	2.9
Subtotal	1,107	66.7	1,666.4	1,916.9	1,443.8	1,443.8	5,865.5	

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

c. Annual Summary --

		Appropriation: MILCON			
Subtotal	0	0			0
Total	1,117	2,298.5	1,443.8	1,443.8	6,401.6

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: RDT&E		
1968	0.5	0.5	0.5
1969	1.8	1.8	1.8
1970	1.2	1.2	1.2
1971	7.9	7.9	7.9
1972	22.7	22.7	22.7
1973	50.3	50.3	50.3
1974	102.7	102.6	102.6
1975	52.7	52.7	52.7
1976	93.6	93.6	93.6
7T	18.6	18.6	18.6
1977	76.0	76.0	76.0
1978	39.2	39.2	39.2
1979	11.4	11.4	11.4
1980	3.6	3.6	3.6
1981	7.0	7.0	7.0
1982	7.3	6.4	6.3
1983	7.8	7.8	6.5
1984	15.0	15.0	3.9
1985	0.0	0.0	0.0
1986	16.8	0.0	0.0
Subtotal	536.1	518.3	505.8

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

d. Obligations and Expenditures

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: Procurement		
1977	139.9	139.6	139.5
1978	246.8	246.1	245.2
1979	395.6	392.8	387.7
1980	380.4	378.7	376.8
1981	474.8	474.8	461.5
1982	616.7	616.7	612.7
1983	545.3	540.6	501.9
1984	405.0	389.0	360.5
1985	459.1	407.6	364.4
1986	435.7	287.4	17.4
To Complete	1,766.2	N/A	N/A
Subtotal	5,865.5	3,873.3	3,467.6
	Appropriation: MILCON		
Subtotal	0	0	0
Total	6,401.6	4,109.1	3,866.4

17. Production Rate Data:

a. Annual Production Rates --

(Note: The annual production rates shown differ from the annual funded quantities because the funded delivery period does not equal 12 months, except in FY 1987 and FY 1989).

Fiscal Year	Development Estimate	Production Estimate	Current Estimate	Maximum Economic
1977	15		16	N/A
1978	45		62	N/A
1979	66		102	N/A
1980	165		133	N/A
1981	165		116	N/A
1982	165		120	N/A
1983	165		136	N/A
1984	165		113	N/A
1985	161		112	N/A
1986			76	100
1987			78	126
1988			83	131
1989			96	144
1990			95	--

17. Production Rate Data:

b. Cost Variances — Dollars in Millions

Item	Production Estimate	Variance (CE Less Pde)	Current Estimate	Variance (CE vs Max)	Maximum Economic
Prog Acq Cost (BY$)			2,298.5	47.4	2,251.1
(TY$)			6,401.6	213.5	6,188.1
PAUC (BY$)			2.058	.043	2.015
(TY$)			5.731	.191	5.540

c. Schedule Variance --

Item	Production Estimate	Variance (CE Less Pde)	Current Estimate	Variance (CE vs Max)	Maximum Ecomomic
Start Date (Mo/Yr)			Oct 78	N/A	Oct 78
Duration (in months)			144	17	127
End Date (Mo/Yr)			Sep 90	N/A	Apr 89

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	10/10
Procurement	701/701

18. Operating and Support Costs: N/A

A-12 M1 TANK

~~CONFIDENTIAL~~

SELECTED ACQUISITION REPORT (RCS: DD-COMP (Q&A)823)
PROGRAM: TANK, COMBAT, FT. M1/M1A1

AS OF DATE: December 31, 1985

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CLEARED
FOR OPEN PUBLICATION
MAR 21 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

AS AMENDED pg 4 para markings pp 2-15

1. (U) Designation and Nomenclature(Popular Name):
M1/M1A1 (Abrams)/Tank, Combat, Full Tracked (General Abrams Tank)

2. (U) DOD COMPONENT: Department of the Army

3. (U) Responsible Office and Telephone Number:
Program Manager, Tank Systems
AMCPM-GCM
US Army Tank-Automotive Command
Warren, MI 48397-5000

PETER M. MCVEY, BG, USA
ASSIGNED: 6 January 1986
AV: 786-6662
COMM: (313)574-6662

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

RDT&E: PE 64620A Project DG20 (Sunk)
PE 64630A Project D287 (Sunk)
PE 23735A Project D330

PROCUREMENT: Appn 2033 GB 1300
Appn 2033 GB 2916
Appn 2033 GAO 167

MILCON: PE (FY80 NA) Project 704 (Sunk)
PE 85796A Project 295 (Sunk)
PE 84731A Project 333 (Sunk)
PE 72007A Project 096 (Sunk)

Concur in Classification as marked
18 MAR 1986
SECURITY REVIEW: OACS

5. (U) Related Programs:
Tank Main Armament Systems (TMAS); Combat Vehicle Improvement Program

6. (U) Mission and Description: The Abrams tank provides a significant improvement to the Army offensive and defensive ground combat power. The Abrams tank mounts a large caliber main gun and three complementary armament systems with improved day/night fire control and shoot-on-the-move capabilities, thus assuring increased first round kill

86-I-0725

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~~Classified by: OCC for M1/M1A1 Tank System, dtd 6 Aug 85~~
~~Declassify On: OADR~~

capability. The tank's significant improvement in survivability is achieved by incorporation of special armor, compartmentation, improved nuclear, biological, and chemical protection, and enhanced mobility. Higher cross country speeds and faster acceleration make the Abrams tank a more difficult target for opposing ground and air forces. The goal of reduced maintenance requirements over current tanks is being realized in the Abrams through increased emphasis on reliability, availability, maintainability, and durability (RAM-D) during engineering and test programs. The Abrams replaces M60 tanks in selected active Army units and reserve components.

7. (U) Program Highlights:

a. (U) Significant Historical Developments:--The M1 Abrams Tank program was approved on 8 Jan 73 by DCP #117. On 12 Nov 76, a Full Scale Engineering Development/Producibility Engineering and Planning (FSED/PEP) contract was awarded for the M1 Tank System. On 19 Nov 81, the SECDEF authorized production beyond 30 tanks per month. The M1A1 Tank Army Systems Acquisition Review Council (ASARC) approval was obtained on 28 Aug 84 and the Department of Defense Systems Acquisition Review Council (DSARC) was successsfully completed on 12 Dec 84.

b. (U) Significant Developments Since Last Report:--The last of 2347 M1 Abrams Tanks was delivered to the government in Jan 85. The Improved M1 (IPM1), an improved version of the M1, began delivery in Sep 84 and is scheduled to end production of 894 tanks in May 86. At that time the M1A1 Tank will be the sole version of the Abrams actually being produced. The M1A1 was approved for full production by Secretary of Defense Memorandum on 4 Jan 85, and began Production Deliveries with the initial roll off in Aug 85. M1A1 OT II was completed in Apr 84 and DT II was completed in Feb 85. The M1A1 Initial Production Test is scheduled for Mar - Dec 86 at Aberdeen Proving Grounds and the Follow-on Evaluation is scheduled for Sep 86 - Feb 87 at Fort Bliss. Seven hundred and three (703) M1 Series Tanks were delivered to the US Army in CY85 and successful fielding continued throughout the year; however, the United Auto workers going on strike in Sep 85 resulted in a loss of production. The impact of force modernization on units gaining the M1 Abrams was minimized through the initiation of Total Package/Unit Materiel Fielding (TP/UMF) in FY85. The Block II Improvement program for the Abrams Tank was initially approved by the Vice Chief of Staff of the Army (VCSA) on 8 Mar 85 and revised by VCSA on 19 Aug 85. M1/M1A1 is expected to satisfy current mission requirements.

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

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: None.

Tank, Combat, FT. M1/M1A1, December 31, 1985

9. (U) Schedule:

a. (U) Milestones - -	Development Estimate/ Approved Program	Current Estimate
DSARC I	Nov 72/Nov 72	Nov 72
Validation Contracts Awarded	Jun 73/Jun 73	Jun 73
Developmental/Operational Test I		
Started	Feb 76/Feb 76	Feb 76
Completed	May 76/May 76	May 76
DSARC II	Jul 76/Jul 76	Nov 76
Full Scale Development Contract Awarded	Jul 76/Jul 76	Nov 76
Development/Operational Test II		
Started	Mar 78/Mar 78	Feb 78
Started	May 78/May 78	May 78
Completed	Jul 79/Jul 79	Sep 79
Completed	Dec 78/Dec 78	Feb 79
DSARC III	Feb 79/Mar 79	Apr 79
Low Rate Initial Production Contract Awarded	May 79/May 79	May 79
Developmental/Operational Test III		
Started	May 80/May 80	Mar 80
Started	May 80/May 80	Sep 80
Completed	Nov 80/Nov 80	Nov 81
Initial Operational Capability (Tank Company)	CY 80/CY 80	Jan 81
DSARC IIIa (Full Production Decision)	Feb 81/Feb 81	Sep 81
Full Production Contract Awarded	Feb 81/Feb 81	Oct 81
European Operational Capability	NA/NA	CY 82

b. (U) References - -

Development Estimate: DCP #117A, May 24, 1978.

10. (U) Technical/Operational Characteristics:

(M1)	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a. (U) Technical - -			
Weight, Combat Loaded (Short Tons)	58.00/58.00	60.00	60.28
Width (Inches)	120-144/120-144	144.125	144.125
Height (Inches) (Top of Turret Roof)	90-95/90-95	93.125	93.125
Armament			
Main Armament (Cannon)	105-120mm/105mm	105mm	105mm
Coaxial MG	7.62mm/7.62mm	7.62mm	7.62mm
Commander's MG	Cal .50/Cal .50	Cal .50	Cal .50
Loader's MG	7.62mm/7.62mm	7.62mm	7.62mm
Engine Horsepower (HP)	1500HP/1500HP	1500HP	1500HP

b. (U) Operational - -	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(U) Acceleration (Seconds) Hard Surface 0% Slope 0-20 MPH (Tactical Idle)	6/6	5.8	6-7
(U) Speed:			
(U) Level X-Country (MPH) Sustained	30/30	31.6	25-32
(U) Cruising Range (Miles)	275-325/275-325	310	310 Ch-1
(b)(1) [redacted]			
(U) Mission Reliability (MMBF)	360/360	372	320-360
(U) System Maintainability	1.0/1.0	1.22	1.25
(U) System Availability	92.0/92.0	NA	NA
(U) System Durability Power Train (Miles)	6000/6000	6727	4000/6000

c. (U) Previous Change Explanations - - Delete per DA guidance.

d. (U) Current Change Explanations - -

(Ch-1) Cruising range estimate has been changed to 310 miles. This estimate being met during Comparison Production Testing (CPT).

e. (U) References - -
Development Estimate: DCP #117A, May 24, 1978.
Approved Program: SDDM Decision, 8 May 1979, and 12 March 1980.

11.(U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. (U) Cost - -	Development Estimate	Changes	Current Estimate
Development (RDTE)	422.6	208.2	630.8
Primary Veh/105mm Gun	(422.6)	(18.5)	(441.1)
Primary Veh/120mm Gun	(0.0)	(189.7)	(189.7)
Procurement	1970.2	3542.7	5512.9
Primary Veh/105mm Gun	(1900.4)	(2793.8)	(4694.2)
Primary Veh/120mm Gun	(0.0)	(491.9)	(491.9)
Initial Spares	(69.8)	(257.0)	(326.8)
Construction (MILCON)	0.0	8.5	8.5
Total FY 72 Base-Year $	2392.8	3759.4	6152.2

[redacted]

Tank, Combat, FT. M1/M1A1, December 31, 1985

	Development Estimate	Changes	Current Estimate
a. (U) Cost (Cont'd)			
Escalation	2386.6	10863.1	13250.4
Development (RDTE)	(162.0)	(354.4)	(516.4)
Procurement	(2224.6)	(10495.6)	(12720.2)
Construction (MILCON)	(0.0)	(13.8)	(13.8)
Total Then-Year $	4779.4	14623.2	19402.6
b. (U) Quantities - -			
Development (RDTE)			
105mm Gun	13	0	13
120mm Gun	0	0	0
Procurement			
105mm Gun	3312	-44	3268
120mm Gun	0	4199	4199
Total	3325	4155	7480
c. (U) Unit Cost			
Procurement:			
FY72 Base-Year $	0.6	0.1	0.7
Then-Year $	1.3	1.1	2.4
Program:			
FY72 Base-Year $	0.7	0.1	0.8
Then-Year $	1.4	1.2	2.6

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

(Average Unit Flyaway Cost)

	Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty 3312			
@ Prod Rate: 60/Month			
FY72 Base-Year $	.6/.6	.6	.6
Then-Year $	1.2/1.2	1.9	1.2

e. (U) Foreign Military Sales - - None

f. (U) Nuclear Costs - - None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. (U) Program Acquisition - -			
(1) Cost	19402.6	20125.8	19402.6
(2) Quantity	7480	7480	7480
(3) Unit Cost	2.6	2.7	2.6

Tank, Combat, FT. M1/M1A1, December 31, 1985

b. (U) Current Procurement - -	(FY 1986)	(FY1986)	(FY 1987)
(1) (U) Cost	2006.7	2269.9	2125.4
Less CY Adv Proc	316.8	359.2	321.9
Plus PY Adv Proc	242.1	313.6	270.1
Net Total	1932.0	2224.3	2073.6
(2) (U) Quantity	840	840	840
(3) (U) Unit Cost	2.3	2.7	2.5

13. (U) Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Development Estimate	584.6	4194.8		4779.4
Previous Changes:				
Economic	16.8	1029.4		1046.2
Quantity		5858.3		5858.3
Schedule		1175.8		1175.8
Engineering	303.5	1433.1		1736.6
Estimating	113.6	4590.0	22.3	4725.9
Other				
Support	98.5	705.1		803.6
Subtotal	532.4	14791.7	22.3	15346.4
Current Changes:				
Economic	-4.3	-598.3		-602.6
Quantity				
Schedule				
Engineering	34.5	84.1		118.6
Estimating		-308.8		-308.8
Other				
Support		69.6		69.6
Subtotal	30.2	-753.4		-723.2
Total Changes	562.6	14038.3	22.3	14623.2
Current Estimate	1147.2	18233.1	22.3	19402.6

(FY72 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	422.6	1970.2		2392.8
Previous Changes:				
Economic				
Quantity		1830.4		1830.4
Schedule		123.1		123.1
Engineering	133.0	346.3		479.3
Estimating	16.3	1165.5	8.5	1190.3
Other				
Support	46.2	127.2		173.4
Subtotal	195.5	3592.5	8.5	3796.5

Tank, Combat, FT. M1/M1A1, December 31, 1985

	RDTE	PROC	MILCON	TOTAL
Current Changes				
Economic				
Quantity				
Schedule				
Engineering	12.7	20.8		33.5
Estimating		- 85.6		- 85.6
Other				
Support		15.0		15.0
Subtotal	12.7	-49.8		-37.1
Total Changes	208.2	3542.7	8.5	3759.4
Current Estimate	630.8	5512.9	8.5	6152.2

b. (U) Previous Change Explanations - -

RDT&E

Economic: Revised escalation indices.
Engineering: Added 120 mm system integration and block improvement program directed toward new user requirements.
Estimating: Additional FY77 and FY78 funding for turbine engine improvements. Revised 120 mm system integration effort. Increased contractor cost to support DT/OT III and other M1 tests support. Extended FSED test support and increased funding for logistics associated with DT/OT III.

Procurement

Economic: Revised escalation indices
Quantity: Increase from 3312 to 7467 units.
Schedule: Lengthened build-up and procurement schedule.
Engineering: Added requirements for 120 mm gun and block improvements.
Estimating: Increased cost for initial production facilities and refined estimates for vehicle production.
Support: Increased estimates for initial spares, training devices, and peculiar support equipment.

MILCON

Revised estimate to include MILCON in SAR reporting as of 31 Dec 82.

c. (U) Current Change Explanations - -

	(Dollars in Millions) Base Year	Then-Year
(1) (U) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	NA	-4.3
Incorporation of revised Block II Improvements. (Engineering)	12.7	34.5

(2) (U) Procurement

Revised Jan 86 economic escalation rates. (Economic)	NA	-598.3
Incorporation of revised Block II Improvements, Chemical Agent Resistant Coating (CARC), (20.4), Reliability, Availability, Maintainability-Durability (RAM-D) investments (-58.3) and optical improvements (+12.6). (Engineering)	+20.8	+118.6
Revised estimates based on contract awards for transmission and final drive; negotiations resulting in revised proposals on multi-year procurements data for basic vehicle, engine, and fire control subsystems. (Estimating)	- 85.6	-308.8
Reduction in requirements for Peculiar Support (TMDE, Special Tools (-179.0); increased requirement for tng devices (+7.9); increase in initial spares, turbine engines (+240.7). (Support)	15.0	69.6

(3) (U) MILCON - No Change

d (U) References - -
Development Estimate: DCP #117A, May 24, 1978.
Approved Program: SDDM Decision, 8 May 1979, and 12 March 1980.

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

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

PAUC (Initial SAR EST)	Changes								PAUC (Dev Estimate)
	Econ.	Qty	Sch	Eng	Est	Other	Spt	Total	
.9	.58	-	-.03	-.09	-	.06	.02	.54	1.44

b (U) Current Baseline Estimate to Current Estimate

PAUC (Dev Estimate)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.44	.06	-.03	.16	.25	.59	-	.12	1.15	2.59

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

a (U) RDT&E - - NA
b (U) Procurement - -

	Initial Contract Price		
	Target	Ceiling	Quantity
Laser Range Finder/Thermal Imaging System 5, 6, 7th Year Production (MYP)	NA	365.0	2161.0

Tank, Combat, FT. M1/M1A1, December 31, 1985

Hughes Aircraft Co.
El Segundo, Calif
FFP
DAAA09-81-G-2010/1005
Award: 16 July 1982(Multi-year contract)
Definitized: May 5, 1984

Current Contract Price

Target	Ceiling	Quantity
NA	390	2520.0

Estimated Price at Completion

Contractor	Program Manager
390	390

Initial Contract Price

Target	Ceiling	Quantity
NA	107.0	840.0

Sixth Year Tank Production
General Dynamics Land Systems Division
Warren, Mich
DAAE07-83-C-A128
FFP
Award: 14 September 1984
Definitized: April 30, 1985

Current Contract Price

Target	Ceiling	Quantity
NA	657.8	840.0

Estimated Price at Completion

Contractor	Program Manager
657.8	657.8

Initial Contract Price

Target	Ceiling	Quantity
NA	12.1	840.0

Seventh Year Tank Production
General Dynamics Land Systems Division
Warren, Mich
DAAE07-83-C-A128 (7th)
FFP
Award: August 30, 1984
Definitized: April 30, 1985

Current Contract Price

Target	Ceiling	Quantity
NA	799.0	840.0

Estimated Price at Completion

Contractor	Program Manager
799.0	799.0

Initial Contract Price

Target	Ceiling	Quantity
NA	92.4	840.0

Seventh Year Engine Production
AVCO Lycoming Division
Stratford, Conn
DAAE07-84-C-A001
FFP
Award: December 2, 1983
Definitized: August 12, 1985

Current Contract Price

Target	Ceiling	Quantity
NA	280.7	840.0

Estimated Price at Completion

Contractor	Program Manager
280.7	280.7

Sixth Year Engine Production
AVCO Lycoming Division
Stratford, Conn
DAAE07-83-C-A185
FFP
Award: March 15, 1983
Definitized: August 31, 1984

Initial Contract Price		
Target	Ceiling	Quantity
NA	70.9	919.0

Current Contract Price		
Target	Ceiling	Quantity
NA	311.8	919.0

Estimated Price at Completion	
Contractor	Program Manager
311.8	311.8

Eighth Year Tank Production
General Dynamics Land Systems Division
Warren, Mich
DAAE07-85-C-A043
Cost Reim
Award: April 1, 1985
Definitized:

Initial Contract Price		
Target	Ceiling	Quantity
NA	2.5	840.0

Current Contract Price		
Target	Ceiling	Quantity
NA	97.8	840.0

Estimated Price at Completion	
Contractor	Program Manager
747.8	747.8

c.(U) MILCON - - NA

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

a.(U) Program Status - -
(1)(U) Percent Program Completed: 75.0% (15 yrs/20 yrs)

(2)(U) Percent Program Cost Appropriated: 66.8% (12965.6/19402.6).

b.(U) Appropriation Summary - -

		(Then-Year Dollars in Millions)			
Appropriation	Current and Prior Years (FY72-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92)	Total
RDT&E	1090.9	30.9	25.4	-	1147.2
Procurement	11852.4	2125.4	4255.3	-	18233.1
MILCON	22.3	-	-	-	22.3
Total	12965.6	2156.3	4280.7	-	19402.6

Tank, Combat, FT. M1/M1A1, December 31, 1985

c (U) Annual Summary - -

Fiscal Year	QTY	FY72 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
				Appropriation RDT&E				
1972	-			19.3			20.0	
1973	-			19.4			21.5	4.6
1974	-			46.1			53.8	7.6
1975	-			51.9			65.0	8.2
1976	-			38.8			52.8	7.5
1977	-			27.0			39.3	4.7
1977	-			63.8			98.6	9.8
1978	-			74.9			125.8	7.0
1979	-			50.2			92.3	8.4
1980	-			34.0			68.7	9.4
1981	-			43.4			96.4	11.9
1982	-			48.3			114.2	7.6
1983	-			28.1			69.3	4.9
1984	-			34.1			87.4	3.8
1985	-			24.2			64.1	3.6
1986	-			7.9			21.7	3.2
1987	-			10.8			30.9	4.1
1988	-			8.6			25.4	3.9
Subtotal	13			630.8			1147.2	
				Appropriation Procurement*				
1977		12.9		12.9			21.2	.57
1978		57.9		87.4	37.0		164.8	3.61
1979	90	69.2	81.6	190.8	67.5	37.0	402.7	10.67
1980	309	53.9	194.0	301.0	70.5	67.5	729.1	11.37
1981	569	62.5	351.1	511.2	133.9	70.5	1416.8	18.31
1982	665	17.3	374.1	521.6	212.0	133.9	1557.4	20.22
1983	855	32.8	427.8	620.8	368.4	212.0	1976.6	9.0
1984	840	16.9	416.0	507.3	290.8	368.4	1696.6	8.0
1985	840	13.5	471.7	541.7	301.3	290.8	1880.3	3.6
1986	840	9.6	444.2	556.4	316.8	242.1	2006.7	3.2
1987	840	1.2	468.5	569.6	321.9	270.1	2125.4	4.1
1988	840	0.3	505.8	570.1	282.5	348.4	2191.4	3.9
1989	779		486.5	478.3		361.9	1886.1	3.4
1990				26.0			104.7	2.9
1991				17.8			73.3	2.3
Subtotal	7467	348.0	4221.3	5512.9	2402.6	2402.6	18233.1	

*NOTE: FY86-89 Abrams Procurement Credit includes multi-year Long Lead Items (LLI)

Tank, Combat, FT. M1/M1A1, December 31, 1985

c (U) Annual Summary (Cont'd)

Fiscal Year	QTY	FY72 Base-Year Dollars			Then-Year Dollars		Total	Escl Rate (%)
		Flyaway		Total	Advance Proc			
		Nonrec	Rec		Debit	Credit		
Appropriation: MILCON								
1980				2.5			5.7	-
1981								11.9
1982								7.6
1983				3.5			9.4	4.9
1984				1.5			4.3	3.8
1985				1.0			2.9	3.6
1986								3.2
Subtotal				8.5			22.3	
Total	7480	348.0	4221.3	6152.2	2402.6	2402.6	19402.6	

d (U) Obligations and Expenditures - -

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1972	20.0	20.0	20.0
1973	21.5	21.5	21.5
1974	53.8	53.8	53.8
1975	65.0	65.0	65.0
1976	52.8	52.8	52.8
197T	39.3	39.3	39.3
1977	98.6	98.6	98.6
1978	125.8	125.8	125.8
1979	92.3	92.3	92.3
1980	68.7	68.7	68.7
1981	96.4	96.4	96.4
1982	114.2	114.2	114.2
1983	69.3	69.3	67.7
1984	87.4	87.4	78.7
1985	64.1	40.5	22.5
To Complete	78.0	1.1	.3
Total	1147.2	1046.7	1017.6
Appropriation: Procurement			
1977	21.2	21.2	21.2
1978	164.8	162.9	162.1
1979	402.7	402.6	396.8
1980	729.1	724.6	695.3
1981	1416.8	1350.0	1308.1
1982	1557.4	1495.5	1430.9
1983	1976.6	1913.3	1755.3
1984	1696.6	1541.8	1098.2
1985	1880.3	1580.6	342.5
To Complete	8387.6	203.8	-
Total	18233.1	9396.3	7210.4

d. (U) Obligations and Expenditures (Cont'd)

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
Appropriation: MILCON			
1980	5.7	5.7	5.7
1981			
1982			
1983	9.4	9.4	4.0
1984	4.3		
1985	2.9		
To Complete		NA	NA
Total	22.3	15.1	9.7

17. (U) Production Rate Data:

a. (U) Annual Production Rates

Fiscal Year	Production Rates (Quantity/Year) Development Estimate	Production Estimate	Current Estimate	Maximum Economic
1979	110		90	110
1980	352		309	352
1981	360		569	569
1982	360		665	720
1983	360		855	855
1984	360		840	1080
1985	360		840	1080
1986	360		840	1080
1987	360		840	1080
1988	330		840	541
1989			779	

b. (U) Cost Variance - - Dollars in Millions (NOTE: Subject to limitations on Production rates above).

Item	Estimate	Variance	Current Estimate	Variance	Maximum Economic
Prog Acq Cost (BY $)	5747.9	+404.3	6152.2		
(TY $)	19574.2	-171.6	19402.6		
PAUC (BY $)	0.7	+ 0.1	0.8		
(TY $)	2.6		2.6		

c. (U) Schedule Variance - - (NOTE: Subject to the limitations on production rates above).

Tank, Combat, FT. M1/M1A1, December 31, 1985

	Development Estimate	Variance	Current Estimate	Variance	Maximum Economic
Start Date (Mo/Yr)	2/80	NA	2/80	NA	2/80
Duration (in Months)	118	10	128	15	113
End Date (Mo/Yr)	12/89	NA	10/90	NA	7/90

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

	To Date
RDT&E	13/13
Procurement	3207/3056

18. (U) Operating and Support Costs: NA

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A-2 AH-64

SELECTED ACQUISITION REPORT (RCS: DD-COMP(QA)823)
PROGRAM: AH-64 (APACHE)

AS OF DATE: December 31, 1985

85-020

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1. (U) Designation and Nomenclature (Popular Name): AH-64/Advanced Attack Helicopter (APACHE)

2. (U) DoD Component: Department of the Army

3. (U) Responsible Office and Telephone Number:

Advanced Attack Helicopter
Program Manager
4300 Goodfellow Boulevard
St. Louis, MO 63120-1798

PM: MG Charles F. Drenz
Assigned: January 5, 1983
AV: 693-1911; COMM (314) 263-1911

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

RDT&E: PE 64207 (No shared funding)

PROCUREMENT: SSN A06605 APPN 2031

5. (U) Related Programs: HELLFIRE, 30MM Ammunition, AH-64 Combat Mission Simulator, 2.75" Rockets.

6. (U) Mission and Description: The AH-64 is a twin engine rotary wing aircraft, designed as a stable, manned aerial weapon system capable of defeating a wide range of targets, including armored vehicles. It provides responsive direct aerial fires as an integral element of the ground units and is capable of performing its mission at night and under adverse weather conditions. It contributes highly mobile and effective firepower to the anti-armor capability of the Army in the field. Aircraft armament

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

~~CLASSIFIED BY: [redacted] SCG~~
~~TADS/PNVS~~
~~DECLASSIFY: 31 [redacted] 91~~

OASD(PA) [redacted] 86-[redacted]-0712

includes the HELLFIRE anti-tank missile system, 30MM automatic gun and 2.75" [redacted]ckets. This aircraft is the platform for the Target Acquisition Designation [redacted]ght/Pilot Night Vision Sensor (TADS/PNVS) which will provide day and night [redacted]quisition and designation of targets and hand-off capabilities in support of HELLFIRE and other guided munitions. The AH-64 does not replace another defense system.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- In September 1972, the U.S. Army approved the Advanced Attack Helicopter System to provide greater agility, hover performance, and heavier aerial fire support capability than currently possessed by existing Army aerial weapons systems. On 22 June 1973, competitive Phase 1 Development Contracts were awarded to Hughes Helicopter (now McDonnell Douglas Helicopter Company (MDHC)) and Bell Helicopter Textron. Subsequently, on 7 December 1976, the AAH DSARC approved the AAH entry into full scale engineering development (Phase 2), and the Secretary of the Army selected MDHC (Model YAH-64) as the Phase 2 prime aircraft systems contractor. The Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS) subsystems were subsequently directed for development as a competitive program, with contracts awarded to Martin Marietta Orlando Aerospace (MMOA) and Northrop Corporation on 10 March 1977. On 9 April 1980, the Army announced the selection of MMOA as the winner in the TADS/PNVS competition. On 30 January 1981 the Army awarded a LLTI contract to MMOA (TADS/PNVS) and on 20 February 1981 to MDHC (LLTI for production AH-64s). In February 1981, the Army approved the incorporation of the T700-GE-701 engine for production AH-64s and the four appropriate Congressional committees were notified. OT II [redacted]Jun-Aug 81) was completed on time at Ft Hunter-Liggett. ASARC III was [redacted]mpleted on 18 November 1981, at which time the proposed procurement quantity was reduced from 536 to 446 aircraft, with buy-out in FY 87. The Defense Systems Acquisition Review Council (DSARC III), at which initial production of the APACHE was approved, was held on 26 March 1982. Production contracts for the first production quantity of 11 aircraft and associated equipment were awarded to MDHC, MMOA and General Electric in April 1982. The FY 84 President's Budget increased the procurement objective from 446 to 515 helicopters. MDHC rolled out the first production vehicle (PV01) on January 26, 1984. The first production lot of Air Vehicles (11 ea) was completed on October 20, 1984, three weeks behind contract schedule.

b. (U) Significant Developments Since Last Report -- A total of 67 production APACHEs were delivered through December 31, 1985. The second production lot of Air Vehicles (48 ea) was completed on 11 December 1985, two weeks behind contract schedule.

(U) First aircraft was delivered to Ft Eustis on 21 Jan 85 for a total of 13 to date. Ten are category "B" maintenance trainers and three are flyable [redacted] support the test flight training. First aircraft delivered to Ft Rucker, [redacted] 11 May 85, for a total of 28 used for Aircraft Qualification Course. The [redacted]rst of four Crew Weapons Emergency Procedure Trainers (CWEPT) was delivered to Ft Rucker in May 85, 2nd in Jun 85 and 3rd in Jul 85. The first of two Integrated Avionics Trainers (IAT) was delivered to Ft Gordon, for support of MOS 35K training in Apr 85. The 2nd was delivered in Sep 85. Three of four TADS Selected Task Trainers (TSTT) were delivered to Ft Rucker from May-Jun 85. Seven Classroom Systems Trainers (CST) for Ft Eustis' AH-64 maintenance training and three CSTs for Ft Rucker's aircraft qualification course were delivered in Apr 85. Set of eight system Panel Trainers, to support AH-64 maintenance training at Ft Eustis, and set of nine system Panel Trainers, to support Aircraft Qualification Course at Ft Rucker, were delivered in Apr 85. Training Devices A1 (Composite Trainer), A2 (Flt Control/Powertrain Trainer), A3 (Engine/APU Trainer), and A5 (Armament Fire Control and Visionics Trainer) were delivered to Ft Eustis to support AH-64A maintenance training in Apr 85. Instructor and Key Personnel Training (IKPT) for various maintenance MOSs (67R, 66R, 68B, 68D, 68F, 68J, 68M and 66J) was initiated at Ft Eustis in Apr 85. IKPT for MOS 35C and 35K was initiated at Ft Gordon on 15 Oct 85 and completed 1 Nov 85. First residence maintenance course for AH-64A maintenance training for MOS 67R, 66R, 68B, 68D, 68F, 68J, 68M, and 66J was initiated at Ft Eustis on 17 Sep 85. First Aircrew Qualification Course at Ft Rucker was initiated on 12 Jun 85 (Class 85-12).

(U) First article tests, both aircraft and systems, are complete. Results of these tests have supported a conditional release of equipment to [redacted]ORSCOM.

(U) The RAM-D/Logistical Evaluation of the APACHE is being conducted by ADTA at Ft Rucker. RAM/LOG data is being collected on one dedicated test aircraft (A/C#83-23788) to evaluate RAM parameters, and on four training aircraft for the purpose of determining FD/LS performance. Testing began March 1985 and will continue through September 1986.

(U) The Electronic Equipment Test Facility (EETF) completed all development requirements and fielding has been accomplished to the training base. IKPT training for the EETF operators and maintainers (MOS 35C) was completed along with the first MOS class. Test Program Set (TPS) development will be completed by 1st Qtr, FY 87. First FORSCOM EETF will be delivered 6 January 1986.

(U) There are no known areas where the AH-64A fails to satisfy current mission requirements.

c. (U) Changes Since "As Of" Date -- Aircraft deliveries were suspended due to grounding of aircraft for cracked main rotor blades on 25 January 1986. Cracks were determined to be non-structural and corrective actions implemented into maintenance manuals to prevent recurrence. Aircraft were released for flight on 17 February 1986 and deliveries were re-started. Total aircraft delivered are 68. Total TADS/PNVS systems are 110.

(U) Contractor multi-year proposals for the FY 86 to FY 88 procurement are in fact-[redacted]nding, Negotiable results will be reported as soon as they become available.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 1 March 1982), or SDDM (dated 15 April 1985) threshold breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Current Estimate	
DSARC I (Phase I Engineering Dev)	Sep 72	Sep 72	
Issue Request for Proposal (RFP)	Nov 72	Nov 72	
Contract Award (Phase I Engineering Dev)	Jun 73	Jun 73	
Mockup Review Completed	May 74	May 74	
Critical Design Review Completed	May 74	May 74	
First T700 Engine Delivery	Oct 74	Oct 74	
Initial Ground Test Vehicle Operation	Jun 75	Jun 75	
First Flight	Sep 75	Sep 75	
DT/OT I Completed	Sep 76	Sep 76	
DSARC II (Phase 2 Engineering Dev)	Dec 76	Dec 76	
Contract Award (Phase 2 Engineering Dev)	Dec 76	Dec 76	
Engineering Design Test 3 Completed	Jul 79	N/A	
Competitive TADS Fly-Off Completed	Dec 79	Mar 80	
Engineering Design Test 4 Completed	N/A	Nov 80	
OT IIa Completed	N/A	N/A	
DSARC III Prod Decision	May 80	Mar 82	
Contract Award (LLTI)	Jun 80	Feb 81	
Contract Award (Production)	Oct 80	Apr 82	
Engineering Design Test 5 Completed	N/A	Jan 81	
OT II Completed	Feb 81	Aug 81	
First Production Delivery (AC)	Jun 82	Jan 84	
Initial Operational Capability (IOC)	May 83	Aug 86	(Ch-1)

b. (U) Previous Change Explanations --

(U) The development estimate reflected a 50-month schedule with a LLTI award in June 1980. The current estimate reflects a 56-month schedule for completion of Operational Test II with a LLTI contract in February 1981 and a production decision in March 1982. Complete single rather than split operational testing permitted deletion of OT IIa and completion of EDT 5 in January 1981 rather than June 1981. DSARC III Prod Decision, LLTI Contract Award, First Production Delivery, and Initial Operational Capability delayed due to program restructuring. First Production Delivery reflects actual delivery. FUE adjusted to accommodate revised training and delivery dates in support of personnel and training requirements.

c. (U) Current Change Explanation --

(U) (Ch-1) Correction is made to reflect IOC date. Previous entry reflected First Unit Equipped date for Aug 86 IOC.

d. (U) References --

(U) Development Estimate: Dep Sec Def Memo, January 5, 1977, subject: "Advanced Attack Helicopter (AAH) DSARC II."

(U) Approved Program: Same as Development Estimate.

10. (U) Technical/Operational Characteristics

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a. (U) Technical --			
(b)(1)			
b. (U) Operational --			
(U) Primary Mission Gross Weight (PMGW) lbs.			
w/8 HF Msls, 320 Rds, 30MM	13,910	14,694	14,765 (Ch-1)
(U) Cruise Airspeed @ PMGW - KTAS	145-175	145	145
(U) Vertical Rate of Climb @ PMGW-FPM	450-500	900	800
(U) Mission Reliability (MTBF)	19.5	16.4 (Ch-2)	19.5 (Ch-2)
(U) AVUM/AVIM Direct Maintenance MMH per FH	8-13	8.2 (Ch-2)	13
(b)(1)			
(U) Endurance (hrs) - Primary mission	1.83	1.83	1.83
Alternate mission	2.5-2.8	2.5	2.5
(U) System Reliability (MTBF)	N/A	2.4 (Ch-2)	2.8
(U) Operational Availability	N/A	.71 (Ch-2)	.72
(U) TADS System Reliability (MTBF)	N/A	42 (Ch-3)	63
(U) PNVS System Reliability (MTBF)	N/A	221 (Ch-3)	160

c. (U) Previous Change Explanations --

(U) Technical characteristics portray current estimate for production aircraft. PMGW and VROC are due to decision to incorporate T700-GE-701 engine in production vehicles. Weapon Accuracy reflects demonstrated performance during Armament Fire Control Demonstration and Survey, and Airworthiness and Flight Characteristics Test.

d. (U) Current Change Explanations --

(U) (Ch-1) Reflects current production weight.

(U) (Ch-2) Demonstrated values for APACHE MTBF (Mission Reliability 21.1 to 16.4, System Reliability 2.58 to 2.4, Operational Availability .72 to .71 and MMH/FH 5.65 to 8.2) have changed based on performance during production testing through Dec 85. Current estimate of maturity values (Mission Reliability 21.1 to 19.5) has changed to match maturity requirement.

(U) (Ch-3) Additions to the data base from Nov 84 to Oct 85 (cumulative) caused TADS MTBF to change from 36 to 42 and PNVS MTBF from 268 to 221.

e. (U) References --

(U) Development Estimate: Dep Sec Def Memo, 5 January 1977, subject: "Advanced Attack Helicopter (AAH) DSARC II."

(U) Approved Program: Same as Development Estimate.

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(U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. (U) Cost --	Development Estimate	Changes	Current Estimate
Development	$ 609.4	$ +165.1	$ 774.5
Procurement	1283.0	+1137.2	2420.2
Acft Flyaway	(998.0)	(+831.1)	(1829.1)
HF Launcher (APA)	(-0-)	(+13.3)	(13.3)
HF Launcher (Other)	(15.4)	(-15.4)	(0.0)
Total Flyaway	(1013.4)	(+829.0)	(1842.4)
Initial Spares (Acft)	(136.0)	(+134.1)	(270.1)
Initial Spares (HF)	(1.3)	(+.6)	(1.9)
Other Wpn Sys Cost	(132.3)	(+173.5)	(305.8)
Construction	-0-	+30.4	30.4
Total FY 72 Base Year	1892.4	1332.7	3225.1
Escalation	1897.4	4083.9	5981.3
Development (RDT&E)	(326.3)	(+138.8)	(465.1)
Procurement	(1571.1)	(+3887.0)	(5458.1)
Acft	((1556.1))	((+3866.7))	((5422.8))
HF Launcher (APA)	((-0-))	((+135.3))	((35.3))
HF Launcher (Other)	((15.0))	((-15.0))	((0.0))
Construction (MILCON)	(-0-)	(+58.1)	(58.1)
Total Then-Year $	$ 3789.8	$ +5416.6	$ 9206.4
b. (U) Quantities --			
Development(RDT&E)	9	--	9
Procurement	536	+139	675
Total	545	+139	684
c. (U) Unit Cost --			
Procurement:			
FY 72 Base Year $	$2.4	$+1.2	$ 3.6
Then-Year $	5.3	+6.4	11.7
Program:			
FY 72 Base Year $	3.5	+1.2	4.7
Then-Year $	$7.0	$+6.5	$13.5

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

(Average Unit Flyaway Cost)

	Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty: 515		675	
Peak Rate: 12/mo		12/mo	
FY 72 Base Year $	1.804/1.804	2.73	3.013
Then-Year $	4.511/4.511	8.86	10.660

e. (U) Foreign Military Sales --

Country	Quantity	Estimated Cost
Federal Republic of Germany	1/	$25.3M

(U) 1/ One Mission Equipment Package for PAH-2 helicopter.

f. (U) Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current Then-Year) Dollars in Millions)

		Current Year SAR Current Estimate	Current Year UCR Baseline Estimate (Dec 84 SAR)	Budget Year UCR Baseline Estimate (Dec 85 SAR)
a.	(U) Program Acquisition --			
	(1) (U) Cost	9206.4	9102.7	9206.4
	(2) (U) Quantity	684	684	684
	(3) (U) Unit Cost	13.46	13.31	13.46
b.	(U) Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
	(1) (U) Cost	1291.9	1376.3	1360.2
	Less CY Adv Proc	56.1	55.3	39.6
	Plus PY Adv Proc	87.6	91.0	56.1
	Net Total	1323.4	1412.0	1376.7
	(2) (U) Quantity	144	144	144
	(3) (U) Unit Cost	9.19	9.81	9.56

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	935.7	2854.1	0	3789.8
Previous Changes:				
Economic	+26.1	+917.2	--	+943.3
Quantity	--	+622.9	--	+622.9
Schedule	+200.4	+338.5	--	+538.9
Engineering	+49.5	+107.2	--	+156.7
Estimating	-16.6	1926.6	+69.4	+1979.4
Other	--	--	--	--
Support	+32.4	+1039.3	--	+1071.7
Subtotal	+291.8	+4951.7	+69.4	+5312.9
Current Changes:				
Economic	-.3	-203.5	-9.5	-213.3
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	+12.4	--	--	+12.4
Estimating	--	+105.3	+28.6	+133.9
Other	--	--	--	--
Support	--	+170.7	--	+170.7
Subtotal	+12.1	+72.5	+19.1	+103.7
Total Changes	+303.9	+5024.2	+88.5	+5416.6
Current Estimate	1239.6	7878.3	88.5	9206.4

13. (U) Cost Variance Analysis (Cont'd):
(FY 1972 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	609.4	1283.0	0	1892.4
Previous Changes:				
Quantity	--	+206.9	--	+206.9
Schedule	+94.6	+11.2	--	+105.8
Engineering	+23.2	+34.8	--	+58.0
Estimating	+25.5	+535.4	+24.6	~~+595.5~~ 585.5
Other	--	--	--	--
Support	+17.4	+250.4	--	+267.8
Subtotal	+160.7	+1038.7	+24.6	+1224.0
Current Changes:				
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	+4.4	--	--	+4.4
Estimating	--	+54.0	+5.8	+59.8
Other	--	--	--	--
Support	--	+44.5	--	+44.5
Subtotal	+4.4	+98.5	+5.8	+108.7
Total Changes	+165.1	+1137.2	+30.4	+1332.7
Current Estimate	774.5	2420.2	30.4	3225.1

b. (U) Previous Change Explanations --

RDT&E

Economic: revised escalation indices.
Schedule: phase 2 sched adjustment (56 mos); 3 mos sustaining prog effort; accidental crash of prototype.
Engineering: correction of technical difficulties in tail section; addition of Optical Improvement Program.
Estimating: application of revised FY 80-72 deflators; approval of OSD historical indices through Jan 83; withdrawal of funds by AMC for development of TPS for depot support which will remain with the contractor.
Support: SPA, obscurant tests; increased log support for OT-II testing; FY 82-84 budget costs.

Procurement:

Economic: revised escalation indices.
Quantity: reduction of 90 aircraft (from 536 to 446); increase of 69 additional helicopters (446 to 515); increase of 160 aircraft (515 to 675).
Schedule: BLACKHAWK sched extension; AAH sched extension to accommodate LLTI; early year program slips; revision to max rate (12/mo); additional tooling for accelerated (515 A/C) schedule.
Engineering: incorp of T700-GE-701 engine; transfer of HELLFIRE Launcher costs from HELLFIRE SAR; addition of Optical Improvement Program.
Estimating: Nov 77 BCE; T700-GE-700 cost increases; DTC review impacts; revised prog estimates resulting from 1979 reviews; DTC/BCE/ final assembly and electrical work; application of reserve for additional quantity; use of OSD historical inflation indices on base year $; changes applicable to increase of 160 aircraft; changes applicable to HF missile launcher funds decrease due to competitive procurement.

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

b. (U) Previous Change Explanation (Cont'd) --

Support: reduction of initial spare rqmts; new rqmts (Alt Msn Eqp, GSE, Cmd Spt); installation of support eqpt and assoc data and training; sched revisions; cost of kits; FAT; PDSSF, bigger training base; increase to support additional (69) helicopters; addition of HELLFIRE support costs; support of 160 additional aircraft; HF missile launcher funds increase due to acft qty increase.

MILCON

Estimating: Addition of system peculiar construction projects into APACHE SAR.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) (U) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-.3
Additional effort, Optical Improvement Program. (Engineering)	+4.4	+12.4
(2) (U) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-203.5
Movement of 6 Acft from FY 85 to FY 88 (+68.7); increase in System Program Management (SPM) to support Buyout in FY 88 (+36.6) (Estimating)	+54.0	+105.3
Additional effort, Airborne Target Handoff System (+38.4); revised spares policy definition (+132.3). (Support)	+44.5	+170.7
(3) (U) MILCON		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-9.5
Increase due to accumulating all system specific construction projects into APACHE SAR. (Estimating)	+5.8	+28.6

d. (U) References --

(U) Development Estimate: Dep Sec Def Memo, January 5, 1977, subject: "Advanced Attack Helicopter (AAH) DSARC II."

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

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

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
3.743	1.520	.090	.742	.486	.237	.058	.078	3.211	6.954

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

PAUC (Dev Est)	Changes								PAUC (Cur Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
6.954	+1.067	-.503	+.788	+.247	+3.090	--	+1.816	+6.505	13.459

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

(U) Procurement --

Airframe
McDonnell Douglas Helicopter Co.
Culver City, CA
DAAK50-83-C-0007, FPI,
Award: October 28, 1982
Definitized: March 31, 1983

Initial Contract Price		
Target	Ceiling	Qty
$315.4	$370.0	48

Current Contract Price		
Target	Ceiling	Qty
$311.6	$364.8	48

Estimated Price at Completion	
Contractor	Program Manager
$340.8	$340.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-21.7	$-78.7
Cumulative Variances to Date (10/31/85)	$-44.2	$ -7.5
Net Change	$-22.5	$+71.2

Explanation of Change: Unfavorable cost variance is due to items received and issued to work in process but not identified in the original baseline, hardware offloaded to vendors to protect the schedule, retrofit changes, excessive costs of ITR/one-shot incorporation, and offsetting variances caused by improvements in tooling and shop practices. Favorable schedule variance can be attributed to the implementation of the schedule revision contract modification P00041. Data indicate that the contractor will complete this contract within the agreed to administrative cap. Funds are available to cover this contingency.

Airframe
McDonnell Douglas Helicopter Co.
Culver City, CA
DAAK50-84-C-0008, FFP,
Award: November 1, 1983
Definitized: February 29, 1984

Initial Contract Price		
Target	Ceiling	Qty
$615.0	N/A	112

Current Contract Price		
Target	Ceiling	Qty
$615.5	N/A	112

Estimated Price at Completion	
Contractor	Program Manager
$615.5	$615.5

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

Airframe	Initial Contract Price Target	Ceiling	Qty
McDonnell Douglas Helicopter Co.	$665.6	N/A	138
Culver City, CA			
DAAJ09-85-C-A002, FFP,			
Award: November 1, 1984			
Definitized: March 29, 1985			

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$666.4	N/A	138	$666.4	666.4

Engine	Initial Contract Price Target	Ceiling	Qty
General Electric Co., Lynn, MA	$356.7	N/A	730
DAAJ09-83-C-A395, FFP,			
Award: October 7, 1983			
Definitized: October 7, 1983			

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$350.5	N/A	714	$350.5	$350.5

TADS/PNVS	Initial Contract Price Target	Ceiling	Qty
Martin Marietta Orlando Aerospace	$245.9	$274.4	112
Orlando, FL			
DAAK50-83-C-0024, FPIF,			
Award: November 1, 1983			
Definitized: March 14, 1984			

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$252.5	$281.7	112	$278.6	$280.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ +3.2	$-17.8
Cumulative Variances to Date (10/31/85)	$-16.1	$-33.5
Net Change	$-19.3	$-15.7

Explanation of Change: Unfavorable cost variance is the result of support costs higher than planned due to quantity of changes, subcontractor delays and late issues from inventory. Unfavorable schedule variance is due to design change, vendor retooling delays, late issues from inventory based on design revisions, and manpower usage for Lots I and II deliveries. The program manager's assessment remains at the ceiling price and is within approved funding.

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

TADS/PNVS	Initial Contract Price Target	Ceiling	Qty
Martin Marietta Orlando Aerospace	$197.1	N/A	141

Orlando, FL
DAAJ09-85-C-0008, FFP,
Award: November 1, 1984
Definitized: April 2, 1985

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$197.1	N/A	141	$197.1	$197.1

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

a. (U) Program Status --

(1) (U) Percent Program Completed: 77.8% (14 yrs/18 yrs)

(2) (U) Percent Program Cost Appropriated: 74.0% (6814.9/9206.4)

b. (U) Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY73-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP	Total
RDT&E	1220.6	12.9	6.1	--	1239.6
Procurement	5557.6	1360.2	960.5	--	7878.3
MILCON	36.7	3.7	48.1	--	88.5
Total	6814.9	1376.8	1014.7	--	9206.4

c. (U) Annual Summary --

Fiscal Year	Qty	FY 72 Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl Rate (%)
Appropriation: RDT&E								
1973				19.5			20.0	4.4
1974	2			44.3			49.1	7.9
1975				49.5			60.7	10.9
1976				56.4			73.9	6.6
197T				13.3			17.8	2.9
1977	7			94.5			130.8	2.6
1978				112.5			166.4	6.8
1979				112.0			179.4	8.4
1980				99.3			176.0	10.6
1981				88.2			172.8	10.6
1982				43.6			91.7	7.6
1983				10.1			22.4	4.9
1984				9.2			22.0	3.8
1985				11.2			27.7	3.6
1986				3.8			9.9	3.2
1987				4.9			12.9	4.1
1988				2.2			6.1	3.9
Subtotal	9			774.5			1239.6	

(U) Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. (U) Annual Summary (Cont'd) --

Fiscal Year	Qty	FY 72 Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Flyaway Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl Rate (%)
Appropriation: Procurement (APA, APACHE)								
1981	LLT	13.2	6.1	22.6	53.2		58.8	11.6
1982	11	85.6	64.9	190.5	64.4	53.2	537.0	14.3
1983	48	65.0	144.7	293.4	113.7	64.4	900.4	9.0
1984	112	69.6	278.5	433.5	61.6	113.7	1352.7	8.0
1985	138	59.1	286.5	437.9	87.6	61.6	1416.8	4.1
1986	144	38.3	260.2	384.1	56.1	87.6	1291.9	4.1
1987	144	36.0	257.6	390.9	39.6	56.1	1360.2	4.1
1988	78	47.5	129.6	255.1		39.6	915.2	3.9
1989	0	0.0	0.0	8.8			32.4	3.4
1990	0	0.0	0.0	2.8			10.6	2.9
1991		0.0	0.0	0.6			2.3	2.3
Subtotal	675	414.3	1428.1	2420.2	476.2	476.2	7878.3	
Appropriation: Procurement (APA, HELLFIRE)								
1984			(4.2)	(4.2)			(13.0)	8.0
1985			(4.0)	(4.0)			(13.1)	4.1
1986			(4.5)	(4.5)			(15.2)	4.1
1987			(2.4)	(2.4)			(8.5)	4.1
1988			(0.2)	(0.2)			(0.7)	3.9
1989			(0.0)	(0.0)			(0.0)	3.4
1990			(0.0)	(0.0)			(0.0)	2.9
1991			(0.0)	(0.0)			(0.1)	2.3
Subtotal			(15.3)	(15.3)			(50.6)	
Appropriation: MILCON								
1983				3.4			8.7	4.9
1984				1.2			3.0	3.8
1985				5.6			15.2	3.6
1986				3.4			9.8	3.2
1987				1.3			3.7	4.1
1988				2.1			6.5	3.9
1989				13.4			41.6	3.4
Subtotal				30.4			88.5	
Total				3225.1			9206.4	

(U) Program Funding Summary (Cont'd):

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: RDTE		
1973	20.0	20.0	20.0
1974	49.1	49.1	49.1
1975	60.7	60.7	60.7
1976	73.9	73.9	73.9
197T	17.8	17.8	17.8
1977	130.8	130.8	130.8
1978	166.4	166.4	166.4
1979	179.4	179.4	179.4
1980	176.0	176.0	176.0
1981	172.8	172.8	172.8
1982	91.7	91.7	91.7
1983	22.4	22.2	16.0
1984	22.0	22.0	14.3
1985	27.7 1/	16.7	1.6
1986	9.9	0.0	0.0
To Complete	19.0	N/A	N/A
Total	1239.6	1199.5	1170.5

1/ Actual $ received $16.7M. $11.0M in DOD but has not been released to PM.

	Appropriation: Procurement (APA, APACHE)		
1981	58.8	58.2	58.2
1982	537.0	530.5	516.6
1983	900.4	891.0	812.9
1984	1352.7	1332.4	847.5
1985	1416.8	1361.0	295.1
1986	1291.9	131.2	-0-
To Complete	2320.7	N/A	N/A
Total	7878.3	4304.3	2530.3
	Appropriation: Procurement (APA, HELLFIRE)		
1984	(13.0)	(13.0)	(11.1)
1985	(13.1)	(11.2)	(.3)
1986	(15.2)	(0.0)	(0.0)
To Complete	(9.3)	(N/A)	(N/A)
Total	(50.6)	(36.7)	(11.4)

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

d. (U) Obligations and Expenditures (Cont'd) --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: MILCON		
1983	8.7	1/	1/
1984	3.0	1/	1/
1985	15.2	1/	1/
1986	9.8	1/	1/
To Complete	51.8	N/A	N/A
Total	88.5		

1/ Data Reported by another source.

17. (U) Production Rate Data:

a. (U) Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year) Development Estimate	Production Estimate	Current Estimate	Maximum*
1982	14	11	11	11
1983	78	48	48	48
1984	96	112	112	112
1985	96	144	138	138
1986	96	144	144	144
1987	96	56	144	144
1988	60	--	78	78

b. (U) Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	2712.2	+512.9	3225.1	-0-	3225.1
(TY $)	7402.4	+1804.0	9206.4	-0-	9206.4
PAUC (BY $)	5.18	-.46	4.72	-0-	4.72
(TY $)	14.13	-.67	13.46	-0-	13.46

c. (U) Schedule Variance --

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	1/84	-0-	1/84	-0-	1/84
Duration (in Months)	64	+12	76	-0-	76
End Date (Mo/Yr)	4/89	1 yr	4/90	-0-	4/90

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

	To Date
RDT&E	9/9
Procurement	59/59

18. (U) Operating and Support Costs: Not Applicable.

~~CONFIDENTIAL~~ (5)

N-6 CG-47

SAR-85-009

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

PROGRAM: CG 47 AEGIS Cruiser Class

AS OF DATE: December 31, 1985*

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1.N Designation and Nomenclature (Popular Name): CG 47 AEGIS Cruiser Class/Guided Missile Cruiser (AEGIS Cruiser)

2.N DoD Component: Department of the Navy

3.N Responsible Office and Telephone Number:

AEGIS Shipbuilding Program Manager, PMS 400
Naval Sea Systems Command

PM: RADM J.F.Shaw, USN
ASSIGNED: 3 September 1985
AUTOVON: 222-7395
COMMERCIAL: (202) 692-7395

4.N Program Elements/Procurement Line Items:

RDT&E: PE 64567N/1319N (shared funding)

PROCUREMENT (SCN): PE 24292N/APPN 1611N, ICN 2115

MILCON:

CLEARED
AS AMENDED
APR 1 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5.N Related Programs: DDG 51, SM-2 (MR), HARPOON, TOMAHAWK, TACTAS, PHALANX, MK-46, LAMPS MK-I/MK-III, VERTICAL LAUNCH, and VERTICAL LAUNCH ANTI-SUBMARINE ROCKET.

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6.4 Mission and Description: To destroy enemy aircraft, missiles, submarines, and surface ships in order to prohibit the employment of such forces against U.S. forces. CG 47 Class ships will normally be assigned to carrier battle groups or surface action groups.

The design of the TICONDEROGA (CG 47) Class is based on the Fleet demonstrated hull and gas turbine propulsion system of the SPRUANCE (DD-963) Class. The combat system is based on the Fleet demonstrated armaments of the VIRGINIA (CGN-38) Class and eleven years at sea operation in the AEGIS test ship, USS NORTON SOUND (AVM-1). With AEGIS, SM-2, HARPOON, TOMAHAWK, 5-inch guns, SEAHAWK helicopter, MK-46 torpedoes, anti-submarine rockets, Vertical Launch System, (MK-26 Guided Missile Launch System prior to FY 1982 ships), SQS-53 and SQR-19 sonars, and advanced electronic systems the CG 47 Class is the most heavily armed surface combatant constructed by the U.S. since World War II. Augmented by passive protection devices including fragmentation protection of launchers and magazines, she provides operational commanders great flexibility.

7.4 Program Highlights:

a. Significant Historical Developments -- The contract for the construction of the lead ship of the class, TICONDEROGA, was awarded to Litton Industries Ingalls Shipbuilding Division, Pascagoula, Mississippi in September 1978. Construction of the TICONDEROGA began in July 1979. She was launched in April 1981; began acceptance trials in November 1982, was commissioned in January 1983 and completed Post Shakedown Availability in September 1983. CG 47 has satisfied all mission requirements.

b. Significant Developments Since Last Report -- During 1985, the keel was laid on the CG 55 in March and the CG 56 in July at Ingalls Shipbuilding in Pascagoula, Mississippi. Another milestone was completed with the christening of three cruisers: USS BUNKER HILL (CG 52) in March; USS MOBILE BAY (CG 53) in October, and in December. USS THOMAS S. GATES (CG 51). The christening in December for the USS THOMAS S. GATES (CG 51) was the first AEGIS Cruiser launched at Bath Iron Works, Bath, Maine. One ship was commissioned in 1985 - USS VINCENNES (CG 49) in Pascagoula, Mississippi.

From July to October, 1985 Bath Iron Works Local 6 was on strike. The strike had the most dramatic effect on the CG 51, USS THOMAS S. GATES. CG 51 was scheduled to launch on August 17, 1985 but was delayed until December 14, 1985. This four month launch delay caused the ship custody transfer date to be moved from January 1987 to May 1987. The strike had little impact on the other ships currently under contract to Bath (CG 58, CG 60, and CG 61). To date, there has been no cost impact on the CG 51 reported in the monthly Cost Performance Report.

The Congressional cuts to the program were as follows:

1982:	125.0
1983:	163.2
1984:	94.6
1985:	157.5
1986:	113.7

7.4 Program Highlights (Cont'd):

c. Changes Since "As Of" Date -- The option to the FY 85 contract for the FY 86 ships was exercised on January 8, 1986. CG 63 and CG 64 will be constructed by Bath Iron Works. Ingalls Shipbuilding will build CG 65. Both contracts are fixed price incentive.

On January 18, 1986 CG 50, USS VALLEY FORGE, was commissioned in Pascagoula, Mississippi. With the commissioning of the CG 50 there are now four AEGIS Cruisers in active service.

8.4 Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP threshold breaches (AEGIS DCP #16 Revision #2 and CG 47 Class Guided Missile Cruiser #134 approved 2 March 1978).

9.4 Schedule:

a. Milestones --

Milestones	Production Estimate/ Approved Program	Current Estimate
DSARC III	Jan 78/Jan 78	Jan 78
Ship Construction Contract Award (CG 47)	Sep 78/Sep 78	Sep 78
Launch TICONDEROGA (CG 47)	Aug 81/Mar 81	Apr 81 1/
Ship Commissioning, TICONDEROGA (CG 47)	Apr 83/Jan 83	Jan 83 1/
Complete Post Shakedown Availability (CG 47)	Mar 84/Dec 83	Sep 83 1/
TICONDEROGA Deployed	N/A	Oct 83 (CH-1)
Launch VINCENNES (CG 49)	N/A	Jan 84 2/
Lay Keel, BUNKER HILL (CG 52)	N/A	Jan 84 2/
Ship Commissioning, VINCENNES (CG 49)	N/A	Jul 85 2/
Launch MOBILE BAY (CG 53)	N/A	Aug 85 (CH-1)
Ship Christening, THOMAS S. GATES (CG 51)	N/A	Dec 85 (CH-2)
Ship Commissioning, VALLEY FORGE (CG 50)	N/A	Jan 86 2/
Ship Commissioning, BUNKER HILL (CG 52)	N/A	Sep 86 (CH-1)

b. Previous Change Explanations --

1/ Milestone revised based on construction schedule.

2/ Milestones added.

9. Schedule (Cont'd):

c. Current Change Explanations --

(CH-1) These milestones are reported for the first time with this SAR.

(CH-2) The christening date for CG 51 changed from August 1985 to December 1985 because of the strike at Bath Iron Works, during 1985. The ship delivery date was moved from January 1987 to May 1987.

d. References --

Production Estimate: AEGIS DCP #16 Revision #2 and CG 47 Class Guided Missile Cruiser DCP #134 were approved 2 March 1978.

Approved Program: CG 47 Program Planning Schedule.

10. Technical/Operational Characteristics:

a. Technical --	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(1)(U) Ship:			
(a)(U) Length (overall, in feet)	563/563	567	567(CH-1)
(b)(U) Beam (feet)	55/55	55	55
(c)(U) Draft Navigational (feet)	31.7/31.7	31.7	31.7
(d)(U) Displacement (LT)	9100/10200	10200 1/	9600
(e)(U) Propulsion			
1. Type	Gas Turbine/ Gas Turbine		Gas Turbine
2. Horsepower (2 Shafts)	80000/80000		80000
(f)(U) Accommodations			
1. Officers	33/33		33
2. CPO's and Enlisted	327/327		342(CH-2)
b. Operational --			
(1)(U) Ship:			
(a)(U) Speed, sustained (@ 80% power, in knots)	30/30	30+	30+
(b)(1)			

CG 47 AEGIS Cruiser Class, December 31, 1985*

[redacted]echnical/Operational Characteristics (Cont'd):

b. Operational --	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(1)(U) Ship (Con't):			
(c)(U) Armament			
1(U) Anti-Submarine Warfare			
a Under Water Fire Control System	MK-116 Mod 4/ MK-116 Mod 4		MK-116 Mod 6 2/
b Sonar System	AN/SQS-53A/ AN/SQS-53A		AN/SQS-53B 2/
c Towed-Array Sonar System	AN/SQR-19/ AN/SQR-19		AN/SQR-19 3/
d Helo System	Seahawk/Seahawk		Sea Sprite 4/ Seahawk
e MK-46 Torpedoes	MK-46/ "-46		MK-46
f Anti-Submarine Rocket	ASROC/ASROC		VLA 5/
2(U) Anti-Air Warfare			
a AEGIS Weapon System	MK-7 Mod 3/ MK-7 Mod 3		MK-7 Mod 3
b Guided Missile Launching System	MK-26 Mod 1/ MK-26 Mod 1		MK-41 VLS 6/
c Long Range Air Search Radar System	AN/SPS-49/ AN/SPS-49		AN/SPS-49
d PHALANX	MK-15 Mod 0/ MK-15 Mod 0		MK-15 Mod 2 Block I (CH-3)
e Electronic Warfare	SLQ-32/SLQ-32		SLQ-32
f STANDARD Missile	SM-2/SM-2		SM-2
3(U) Anti-Surface Warfare			
a Surface Search Radar	AN/SPS-55/ AN/SPS-55		AN/SPS-55
b HARPOON Weapon System/Launchers	4 Pod/4 Pod		4 Pod
c 5"/54 Rapid Fire Guns	MK-45/MK-45		MK-45
d Cruise Missile Control System			TOMAHAWK 7/
(2)(U) AEGIS Weapon System	N/A		N/A

10. (U) Technical/Operational Characteristics (Cont'd):

c. Previous Change Explanations --

1/ 10,200 LT represents limiting displacement.

2/ The Underwater Fire Control System, starting with CG 56, changed MK-116 to Mod 6 and AN/SQS-53A to AN/SQS-53B.

3/ Incorporation of the AN/SQR-19 was in CG 54 and beyond during construction.

4/ Incorporation of Seahawk was in CG 49 and beyond during construction. CG 47 and CG 48 are armed with Sea Sprites.

5/ ASROC is on CG 47 through CG 51. VLA replaces ASROC beginning with CG 52.

6/ Vertical Launch System MK 41 replaces MK 26 Mod 1 starting with CG 52.

7/ TOMAHAWK begins on CG 52.

d. Current Change Explanations --

(CH-1) The overall length of the TICONDEROGA (CG 47) is 563 feet. Beginning with CG 52 the overall length is 567 feet. The additional four feet is for the bulwark on the bow.

(CH-2) Accommodations were increased beginning with CG 49 to support an increase in the Combat Systems.

(CH-3) Block I was approved for limited production in November 1985 with installation beginning on the FY 86 ships.

e. References --

Production Estimate: AEGIS DCP #16 Revision #2 and CG 47 Class Guided Missile Cruiser DCP #134 were approved 2 March 1978.

Approved Program: Same as Production Estimate.

Program Acquisition Cost (Current Estimate in Millions of Dollars)

		Production Estimate	Changes	Current Estimate
a.	Cost --			
	Development (RDT&E)	$ 55.5	+12.4	67.9
	Procurement (SCN)	8958.2	+5548.9	14507.1
	Basic Ship Costs	(3440.3)	(+1242.0)	(4682.3)
	AEGIS Weapon System	(2598.8)	(+546.2)	(3145.0)
	Other GFE	(1874.6)	(+3642.7)	(5517.3)
	Other Costs	(832.9)	(-102.9)	(730.0)
	OF/PD	(211.6)	(+219.6)	(431.2)
	Contract Design	(0.0)	(+1.3)	(1.3)
	Construction (MILCON)	0.0	+14.1	14.1
	Total FY 78 Base-Year $	$ 9013.7	+5575.4	14589.1
	Escalation	5069.8	+5982.1	11051.9
	Development (RDT&E)	(1.8)	(+6.0)	(7.8)
	Procurement (SCN)	(5068.0)	(+5966.6)	(11034.6)
	MILCON	(0.0)	(+9.5)	(9.5)
	Total Then-Year $	$ 14083.5	+11557.5	$ 25641.0
b.	Quantities --			
	Development (RDT&E)	0	-	0
	Procurement (SCN)	16	+11	27
	Total	16	+11	27
c.	Unit Cost --			
	Procurement (SCN):			
	FY 78 Base-Year $	$ 559.9	$ -22.6	$ 537.3
	Then-Year $	876.6	+69.4	946.0
	Program:			
	FY 78 Base-Year $	563.4	-23.1	540.3
	Then-Year $	$ 880.2	$ +69.5	$ 949.7

d. Approved Design to Cost Goal -- The CG 47 production estimate is based on average follow ship's unit procurement cost for 15 ships as approved by DCP #134, dated 2 March 1978. This goal is based upon the execution of the procurement plan shown in DCP #134 and does not include the cost of LAMPS aircraft, expendable shipfill ordnances, ship design, or outfitting and post delivery costs. The current estimate is the average unit procurement cost computed on the 15 following ships in the FYDP estimate.

	(Average Unit Sailaway Cost) Prod Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
FY 78 Base-Year $	540.0/540.0	538.3	N/A
Then-Year $	866.8/864.8	900.8	N/A

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate
a.	Program Acquisition --			
	(1) Cost	25641.0	27381.7	25641.0
	(2) Quantity	27	27	27
	(3) Unit Cost	949.7	1014.1	949.7
b.	Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	2682.1	2834.8	2018.6
	Less CY Adv Proc	-14.6	-14.6	-10.5
	Plus PY Adv Proc	+35.7	+35.7	+74.9
	Less OF/PD	-69.8	-68.6	-93.7
	Less Contract Design	-0.0	-0.0	-0.6
	Net Total	2633.4	2787.3	1988.7
	(2) Quantity	3	3	2
	(3) Unit Cost	877.8	929.1	994.4

13.U Cost Variance Analysis:

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

	RDT&E	SCN	MILCON	TOTAL
Production Estimate	57.3	14026.2	0.0	14083.5
Previous Changes:				
Economic	+4.9	+1660.9	-0.2	+1665.6
Quantity	-	+11955.3	-	+11955.3
Schedule	-	+510.2	-	+510.2
Engineering	+9.7	+849.4	-	+859.1
Estimating	+10.8	-2143.7	-	-2132.9
Other	-	-	-	-
Support	-	+417.4	+23.5	+440.9
Subtotal	+25.4	+13249.5	+23.3	+13298.2
Current Changes:				
Economic	-3.1	-1692.4	-0.3	-1695.8
Quantity	-	-216.3	-	-216.3
Schedule	-	+106.7	-	+106.7
Engineering	-	+204.0	-	+204.0
Estimating	-3.9	-188.5	-	-192.4
Other	-	-	-	-
Support	-	+52.5	+0.6	+53.1
Subtotal	-7.0	-1734.0	+0.3	-1740.7
Total Changes	+18.4	+11515.5	+23.6	+11557.5
Current Estimate	75.7	25541.7	23.6	25641.0

Cost Variance Analysis (Cont'd):

(FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	SCN	MILCON	TOTAL
Production Estimate	55.5	8958.2	0.0	9013.7
Previous Changes:				
Quantity	-	+5491.4	-	+5491.4
Schedule	-	-	-	-
Engineering	+7.6	+532.0	-	+539.6
Estimating	+8.6	-699.0	-	-690.4
Other	-	-	-	-
Support	-	+195.2	+13.8	+209.0
Subtotal	+16.2	+5519.6	+13.8	+5549.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-2.6	-	-2.6
Engineering	-	+99.6	-	+99.6
Estimating	-3.8	-93.5	-	-97.3
Other	-	-	-	-
Support	-	+25.8	+0.3	+26.1
Subtotal	-3.8	+29.3	+0.3	+25.8
Total Changes	+12.4	+5548.9	+14.1	+5575.4
Current Estimate	67.9	14507.1	14.1	14589.1

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.
Engineering: HDF and SDMS design changes.
Estimating: Refinement of RDT&E estimates.

SCN

Economic: Revised escalation indices.
Quantity: Addition of 11 cruisers.
Schedule: Stretchout of ship acquisition schedule.
Engineering: Engineering enhancements including introduction of the Vertical Launch System, the upgrade of the Underwater Fire Control System and the change in the AEGIS Weapon System from SPY-1A to SPY-1B.
Estimating: Refinement of procurement estimates.
Support: Adjustment of outfitting and post delivery costs corresponding to program changes.

MILCON

Economic: Revised escalation indices.
Support: Funds for training and support sites.

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

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Application of revised escalation and outlay rates (Economic)	N/A	+0.2
Adjustment based on OSD audit of 31 December 1984 SAR (Economic)	-	-3.3
Revised program funding requirements and transfer of Contract Design to SCN (Estimating)	-3.8	-7.2
Adjustment based on OSD audit of 31 December 1984 SAR (Estimating)	-	+3.3
(2) SCN		
Application of revised escalation and outlay rates (Economic)	N/A	-1677.7
Adjustment based on OSD audit of 31 December 1984 SAR (Economic)	-	-14.7
Adjustment based on OSD audit of 31 December 1984 SAR (Quantity)	-	-216.3
Procurement profile change from 3-3-2 (FY 87-89) to 2-2-2-2 (FY 87-90) (Schedule)	-	+117.0
Adjustment based on OSD audit of 31 December 1984 SAR (Schedule)	-	+54.1
Adjustment based on OSD audit of 31 December 1983 SAR (Schedule)	-2.6	-64.4
Addition of the Level IIA Collective Protection System (Engineering)	+43.7	+82.5
Adjustment based on OSD audit of 31 December 1984 SAR (Engineering)	+55.9	+121.5
Changes to the budget reflecting Congressional action on the FY 86 budget, revised profile, and revised estimates for Government Furnished Equipment (Estimating)	-198.7	-308.3
Impact to Base Year 78 End Costs due to adjustments of projected escalation requirements reflecting revised inflation indices. (Estimating)	+158.5	N/A
Adjustment based on OSD audit of 31 December 1984 SAR (Estimating)	-55.9	+55.4
Adjustment based on OSD audit of 31 December 1983 SAR (Estimating)	+2.6	+64.4
Outfitting and post delivery requirements for the revised procurement schedule and transfer of Contract Design to SCN (Support)	+25.8	+52.5

13. Cost Variance Analysis (Cont'd):

(3) MILCON

Application of revised escalation and outlay rates (Economic)	N/A	-0.3
Change in MILCON requirements (Support)	+0.3	+0.6

d. References --

Production Estimate: - AEGIS DCP #16, Revisions #1 and #2; CG 47 DCP #134

Current Estimate: - FY 1987 President's Budget Estimate, CG 47 Ship Data Sheet includes the following Program Elements:
RDT&E,N: 64567N
SCN: 24292N

14. Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate -- Not Applicable.

b. Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
880.2	-1.1	+76.2	+22.8	+39.4	-86.1	--	+18.3	+69.5	949.7

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

a. RDT&E -- N/A

b. SCN --

Ship Construction (CG 49, 50, 52, 53)	Initial Contract Price Target	Ceiling	Qty
Litton Industries Ingalls Shipbuilding Division Pascagoula, Mississippi			
N00024-81-C-2049, CPAF	$ 667.1	N/A	2
(Mod)	$1368.6	N/A	4

Awarded: August 28, 1981 for CG 49/50 and modified January 15, 1982 for CG 52/53

Definitized: August 28, 1981 for CG 49/50 and January 15, 1982 for CG 52/53

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1478.6	N/A	4	$1478.6	$1478.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ +39.3	$ + 3.4
Cumulative Variances To Date (12/31/85)	$ +26.0	$ -35.9
Net Change	$ -13.3	$ -39.3

Contract Information (Cont'd): (Then-Year Dollars in Millions)

Explanation of Change: Cost variance results from the contractor's favorable performance. The deterioration is due primarily to a one-time charge for Workmen's Compensation claims. The unfavorable schedule variance is in material which does not reflect material availability but rather a planned payment schedule versus actual payments. Ingalls has achieved all major milestones to date on or ahead of schedule. The program manager's assessment remains at the estimated contract price.

Ship Construction (CG 51)	Initial Contract Price Target	Ceiling	Qty
Bath Iron Works Bath, Maine N00024-82-C-2011, CPAF Awarded: May 20, 1982 Definitized: May 20, 1982	$ 305.2	N/A	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$ 324.1	N/A	1	$ 324.1	$ 324.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ - 1.6	$ - 3.1
Cumulative Variances To Date (12/31/85)	$ - 8.8	$ - 1.6
Net Change	$ - 7.2	$ + 1.5

Explanation of Change: The program office is reviewing the contractor's estimate to complete in order to determine the impact of the Bath strike.

Ship Construction (CG 54, 55, 56)	Initial Contract Price Target	Ceiling	Qty
Ingalls Shipbuilding Division Pascagoula, Mississippi N00024-83-C-2013, FPI Awarded: June 20, 1983 Definitized: June 20, 1983	$ 939.7	$1084.0	3

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$ 959.4	$1084.0	3	$ 959.4	$ 959.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ + 4.1	$ + 5.4
Cumulative Variances To Date (12/31/85)	$ +20.3	$ - 1.0
Net Change	$ +16.2	$ - 6.4

Contract Information (Cont'd): (Then-Year Dollars in Millions)

Explanation of Change: Cost variance results from the contractor's favorable performance. The unfavorable schedule performance reported is a result of a computer input systems error; actually the shipbuilder is ahead of schedule by approximately $12.0M. The program manager's assessment remains at the estimated contract price and is within approved funding.

Ship Construction (CG 57, 59)	Initial Contract Price Target	Ceiling	Qty
Ingalls Shipbuilding Division Pascagoula, Mississippi N00024-84-C-2004, FPI Awarded: December 16, 1983 Definitized: December 16, 1983	$ 325.5	$ 367.0	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$ 331.9	$ 367.0	2	$ 331.9	$ 331.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ + 1.4	$ + 5.3
Cumulative Variances To Date (12/31/85)	$ + 2.6	$ + 2.1
Net Change	$ + 1.2	$ - 3.2

Explanation of Change: Cost variance results from the contractor's favorable performance. The deterioration in schedule performance is not indicative of the shipbuilder's true performance as mentioned above on the 54/5/6 contract; the unfavorable schedule performance reported is a result of a computer input systems error. The program manager's assessment remains at the estimated contract price.

Ship Construction (CG 60, 61)	Initial Contract Price Target	Ceiling	Qty
Bath Iron Works Bath, Maine N00024-85-C-2036, FPI Awarded: November 26, 1984 Definitized: November 26, 1984	$ 383.6	$430.4	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$ 388.0	$430.4	2	$ 388.0	$ 388.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -	$ -
Cumulative Variances To Date (12/31/85)	$ -0.2	$ +15.0
Net Change	$ -0.2	$ +15.0

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

Explanation of Change: The program office is assessing the contractor's estimate to complete based on experience in CG 47 Class shipbuilding at Ingalls, learning curves and performance to date on two Bath Ships, CG 51 and CG 58. It appears that the current target price may be exceeded.

AEGIS Weapon System (CG 54, 55, 56)	Initial Contract Price Target	Ceiling	Qty
RCA Government Systems Moorestown, New Jersey N00024-83-C-5116, FPI/PP Awarded: April 12, 1983 Definitized: August 12, 1983	$ 303.8	$ 330.0	3

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$ 305.1	$ 332.5	3	$ 305.1	$ 305.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ + 7.2	$ - 1.1
Cumulative Variances To Date (12/31/85)	$ +14.5	$ - 2.0
Net Change	$ + 7.3	$ - 0.9

Explanation of Change: Cost variance results from the contractor's favorable performance and schedule variance is not significant and will not impact deliveries to the shipbuilders. The program manager's assessment remains at the target price and is within the approved funding.

AEGIS Weapon System (CG 60, 61, 62 and DDG 51) 1/	Initial Contract Price Target	Ceiling	Qty
RCA Government Systems Moorestown, New Jersey N00024-85-C-5100, FPI Awarded: December 23, 1985 Definitized: December 23, 1985	$ 372.4	$ 414.0	4

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$ 372.4	$ 414.0	4	$ 372.4	$ 372.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -	$ -
Cumulative Variances To Date (12/31/85)	$ -	$ -
Net Change	$ -	$ -

Explanation of Change: None.

c. MILCON -- N/A

1/ This is a combined procurement contract for the CG 60, 61, 62 and the DDG 51. It is reported in the SARs of each program.

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

a. Program Status --
(1) Percent Program Completed: 56.3% (9 yrs/16 yrs)

(2) Percent Program Cost Appropriated: 68.0% ($17437.3/$25641.0)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY78-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92-93)	Total
RDT&E	75.7	-	-	-	75.7
SCN	17344.7	2018.6	5967.0	211.4	25541.7
MILCON	16.9	6.7	-	-	23.6
Total	17437.3	2025.3	5967.0	211.4	25641.0

c. Annual Summary --

Fiscal Year	Qty	FY 78 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 1/
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1978				39.4			39.4	-
1979				10.0			10.8	8.4
1980				5.4			6.5	10.6
1981				3.4			4.5	10.6
1982				5.0			7.2	7.6
1983				2.1			3.1	4.9
1984				1.0			1.5	3.8
1985				1.0			1.6	3.6
1986				.6			1.1	3.2
Subtotal				67.9			75.7	

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

c. Annual Summary --

Fiscal Year	Qty	FY 78 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 1/
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: SCN								
1978	1		692.7	692.7	31.7		925.2	-
1979	-		0.0	0.0		1.7	1.7	9.6
1980	1		513.3	513.3			804.6	9.8
1981	2		1026.4	1027.3		156.5	1802.9	9.6
1982	3		1825.3	1827.8	154.9	24.6	2796.3	7.5
1983	3		1597.6	1609.0	20.7	46.0	2717.1	3.8
1984	3		1631.2	1647.9		29.0	2819.7	3.6
1985	3		1480.5	1507.6	1.2	144.2	2795.1	2.1
1986	3		1422.0	1465.1	35.7	84.4	2682.1	4.1
1987	2		1047.7	1103.7	74.9	104.8	2018.6	4.1
1988	2		985.6	1036.8	17.1	104.4	2009.1	3.9
1989	2		922.5	969.5	8.2	96.2	1938.1	3.4
1990	2		929.8	968.3	19.3	71.7	1960.7	2.9
1991				31.0		59.1	59.1	2.3
1992				54.0		105.4	105.4	2.3
1993				53.1		106.0	106.0	2.3
Subtotal	27		14074.6	14507.1	363.7	1134.0	25541.7	
Appropriation: MILCON								
1982				1.2			1.9	7.6
1983				6.8			10.8	4.9
1984				2.5			4.2	3.8
1987				3.6			6.7	4.1
Subtotal				14.1			23.6	
Total	27		14074.6	14589.1	363.7	1134.0	25641.0	

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1978	39.4	39.4	39.4
1979	10.8	10.8	10.8
1980	6.5	6.5	6.5
1981	4.5	4.5	4.5
1982	7.2	7.2	7.2
1983	3.1	3.1	3.1
1984	1.5	1.5	1.5
1985	1.6	1.6	1.6
1986	1.1	0.1	0.0
To Complete	-	-	-
Subtotal	75.7	74.7	74.6
Appropriation: SCN			
1978	925.2	925.4	917.1
1979	1.7	1.7	1.6
1980	804.6	798.8	762.4
1981	1802.9	1749.4	1616.6
1982	2796.3	2518.1	1799.8
1983	2717.1	2100.2	1235.8
1984	2819.7	2011.1	798.8
1985	2795.1	1767.0	218.6
1986	2682.1	263.2	55.1
To Complete	8197.0	-	-
Subtotal	25541.7	12134.9	7405.8
Appropriation: MILCON			
1982	1.9	1.9	1.9
1983	10.8	10.8	10.8
1984	4.2	4.2	4.2
To Complete	6.7	-	-
Subtotal	23.6	16.9	16.9
Total	25641.0	12226.5	7497.3

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1978	1	1	1	1
1979	0	0	0	0
1980	1	1	1	1
1981	2	2	2	2
1982	2	2	3	3
1983	2	2	3	3
1984	2	2	3	3
1985	2	2	3	3
1986	2	2	3	3
1987	2	2	2	2
1988			2	2
1989			2	2
1990			2	2

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	$ 9013.7	+5575.4	$14589.1	0	$14589.1
(TY $)	14083.5	+11557.5	25641.0	0	25641.0
PAUC (BY $)	$ 563.4	-23.1	$ 540.3	0	$ 540.3
(TY $)	880.2	+69.5	949.7	0	949.7

c. Schedule Variance -- Dollars in Millions

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	9/78	0	9/78	0	9/78
Duration (in Months)	157	+36	193	0	193
End Date (Mo/Yr)	10/91	+36	10/94	0	10/94

d. Deliverables (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement (SCN)	4/4

18. Operating and Support Costs: N/A

(U) N-86 TACTAS

SAR-85-114

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

PROGRAM: AN/SQR-19 TACTICAL TOWED ARRAY SONAR (TACTAS)

AS OF DATE: December 31, 1985

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1. (U) Designation/Nomenclature (Popular Name): AN/SQR-19 Tactical Towed Array Sonar (TACTAS)

AS AMENDED

2. (U) DoD Component: U.S. Department of the Navy

3. (U) Responsible Office and Telephone Number:

MAR 3 1 1986 9

Naval Sea Systems Command
Surface Ship ASW Combat System Project (PMS 411)

PM: CAPT W.C. Carlson
Assigned: November 1982
Phone: (202) 692-8019

4. (U) Program Elements:

RDT&E: 64713N
PROCUREMENT: 24228N APPN 1810; ICN 2236

5. (U) Related Programs: AN/SQS-53, LAMPS MK III, MK 116 FCS and AN/SQQ-28

CLASSIFIED BY: ~~NAVSEAINST 05511.5-68~~
DECLASSIFY ON: OADR

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OASD(PA) DPCISR 86-R-0860

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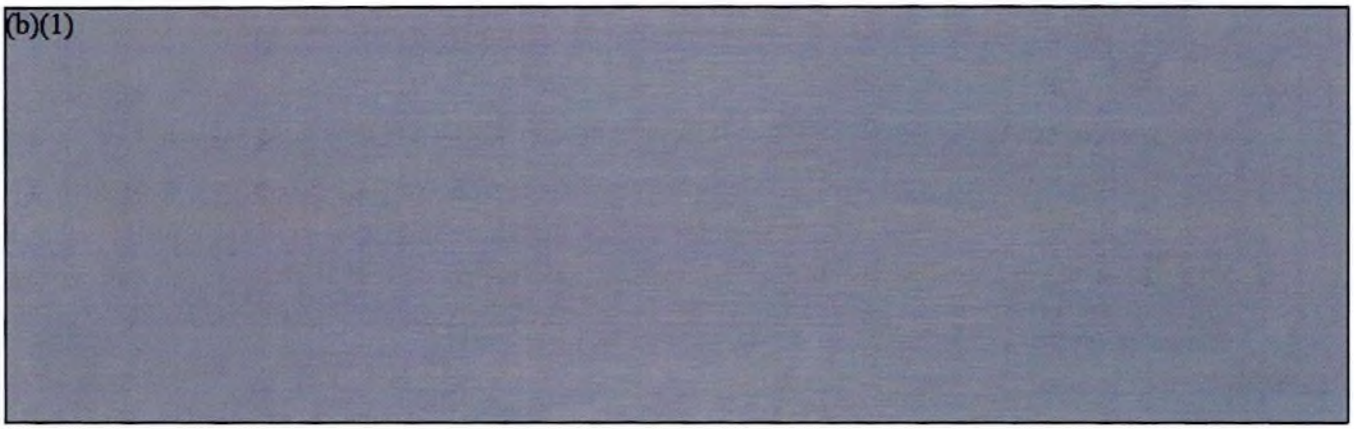
(b)(1)



7.(U) Program Highlights

(a)(U) Significant Historical Developments: As a result of DSARC II review, OSD approved Full-Scale Development (FSD) of the AN/SQR-19 August 16, 1976. The initial advanced development contract with General Electric Co. (GE) was converted to FSD by adding the necessary additional hardware for FSD testing, imposing the requirements for FSD data and integrated logistic support. The FSD contract with GE was terminated for convenience on May 8, 1978. A restructured program increasing reliance on Navy standard hardware was approved by the CNO executive board on August 29, 1978. A DNSARC review of the program was held March 30, 1979. Level of effort contracts were awarded to GE and Gould, Inc. allowing development to proceed. The GE FSD contract was awarded September 28, 1979. The Gould FSD contract was awarded in March 1980. This restructured program was reviewed by OSD in third quarter FY79.

(U) In March 1983, TACTAS was approved for limited production following DNSARC III review. Letter contracts for FY83 production were signed in June 1983. In December 1983, incorporation of an engineering change to improve TACTAS performance was approved by USDR&E.

(b)(U) Significant Developments Since Last Report: The first AN/SQR-19 equipment was delivered in March 1985; three months earlier than originally planned.

(U) The AN/SQR-19 program received Approval for Full Production (AFP) in December 1984. A Logistics Review Group (LRG) meeting was conducted in March 1985.

(U) A competitive source selection was completed for the Handling and Stowage Group (H&SG). Unidynamics, St. Louis, MO, was awarded the multi-year FY85-87 fixed price incentive fee contract. A multi-year (FY85-87) FPIF contract was also awarded to GE for the Shipbased Electronic Subsystem (SES). The multi-year letter contract to Gould for the Towed Array Group (TAG) was awarded in December 1985.

7.(U) Program Highlights (continued)

(U) Gould completed a Tri-Service Cost/Schedule Control System (C/SCS) Validation Review. Final approval is pending.

(U) Several major ECPs are in-process as part of the planned system upgrade to the AN/SQQ-89 baseline. These include: ECP-49, Addition of the AN/UYQ-25 Interface; ECP-50, AN/UYH-2 to AN/UYH-3 Conversion; and ECP-51, Processor Upgrade from AN/UYK-20 to AN/UYK-44. In addition, a new standard cabinet will be procured, beginning in FY87, to house portions of the improved system configuration.

(c)(U) Changes Since "As of" Date: none

8.(U) Decision Coordinating Paper (DCP) Threshold Breaches:

(a)(U) DCP-92 of August 16, 1976 is the baseline DCP. It was approved by CNO memo 090X/S581960 of September 11, 1978.

(b)(U) In August 1979, an updated DCP-92 reflecting program restructuring was submitted to OSD. DCP-92 was updated again prior to DNSARC III in March 1983. Received ALP March 1983 (IIIa); AFP delayed pending approval of AN/SQR-19 performance upgrade. AFP (IIIb) approved December 1984 (per Assistant Secretary of the Navy (Shipbuilding & Logistics) memo to Chief of Naval Operations, dated December 26, 1984; Subj: Approval for Full Production for the AN/SQR-19 Tactical Towed Array Sonar.)

(c)(U) Current performance estimates exceed March 1983 updated DCP thresholds.

9.(U) Schedule:

	Development Estimate/ Approved Program	Current Estimate
(a)(U) Milestones		
(U) DSARC I	May 73/May 73	May 73
(U) DSARC II	Jul 76/Jul 76	Jul 76
(U) FSD Contract Award(1)	Oct 76/Oct 76	Dec 77
(U) TRCR/EVAL (DT-III)	Aug 79/Aug 79	Sep 82
(b)(1)		
(U) Approval for Full Production	Mar 83/Mar 83	Dec 84
(b)(1)		

(1)(U) The FSD contract awarded to GE in December 1977 was terminated for convenience in May 1978 due to cost increases and schedule slips. A new FSD contract was awarded 28 September 1979. Program restructuring resulted in delays in meeting approved program milestones.

9.(U) Schedule (continued):

(b)(U) Previous Change Explanations: FSD contract award was delayed due to funding deficiencies in FY77 to meet the DSARC-approved program.

(U) The schedule for AN/SQR-19 prototype installation and DT/OT-III was definitized in early FY81 following the assignment of USS MOOSBRUGGER (DD-980) as the test ship in June 1980. The AN/SQR-19 schedule was also affected by the requirement to accommodate the installation and test of the AN/SQS-53B and the ASW control system concurrently in the DD-980.

(U) ASU was advanced from May to February 1983 and DNSARC III was advanced from August to March 1983 due to excellent development program progress. Approval for Full Production (AFP) was planned for March 1983 coinciding with DNSARC III.

(U) DNSARC III was conducted in March 1983 and resulted in TACTAS Approval For Limited Production (ALP). First production contracts were awarded in June 1983.

(c)(U) Current Change Explanations:

(Ch-1): The first production H&SG was delivered early to meet the installation requirements of FFG-38.

(d)(U) References:

Development Estimate: DCP-92, dated August 16, 1976
Approved Program: Same as Development Estimate

10.([redacted]) Technical/Operational Characteristics:

	Dev. Estimate/ Appr./Program	Demonstrated Performance	Current Estimate
(a)(U) Technical: none			
(b)([redacted]) Operational:			
(b)(1)	[redacted]		

10.(U) Technical/Operational Characteristics (continued):

	Dev. Estimate/ [illegible]	Demonstrated Performance	Current Estimate
(b)(1)	[redacted]		

(c)(U) Previous Changes: Changes in operational characteristics between the Development Estimate and the Current Estimate result from system improvements incorporated during program restucturing in 1978. Current estimate of Operational Availability, was revised from 0.95 to 0.82 in accordance with NAVMATINST 3000.2 of 21 January 1981 to account for Mean Logistics Delay Time (MLDT). Detection Figure of Merit (FOM) and Frequency Coverage are being improved by incorporation of an engineering change to improve TACTAS performance.

(d)(U) Current Changes: none

(e)(U) References:
Development Estimate: DCP-92, dated August 16, 1976
Approved Program: Same as Development Estimate

11.(U) Program Acquisition Costs (Current Estimate in Millions of Dollars)

	Development Estimate (FY75-88)	Changes	Current Estimate (FY75-92)
a. Cost			
Development (RDT&E)	58.0	+ 62.1	120.1
Procurement			
Array Subsystem	25.8	+ 20.2	46.0
Winch & Handling System	25.8	+ 7.2	33.0
Shipbased Electronics	243.3	- 38.0	205.3
Other Weapon System Costs	44.2	+ 34.7	78.9
Initial Spares	29.5	- 6.7	22.8
Subtotal Procurement	368.6	+ 17.4	386.0
TOTAL FY76 BASE YEAR $	426.6	+ 79.5	506.1

(b)(1) [redacted]

11.(U) Program Acquisition Costs (continued):

	Development Estimate (FY75-88)	Changes	Current Estimate (FY75-92)
Escalation	174.5	+277.2	455.6
Development	(4.4)	(+ 35.9)	(40.3)
Procurement	(170.1)	(+241.3)	(411.4)
TOTAL THEN-YEAR $	601.1	+356.7	957.8
b. Quantities			
Development (RDT&E)	3	-	3
Procurement	123	-45.0	78
TOTAL	126	-45.0	81
c. Unit Cost			
Procurement			
FY76 Base Year $	2.997	+1.951	4.948
Then-Year $	4.380	+5.842	10.222
Program			
FY76 Base Year $	3.386	+2.863	6.249
Then-Year $	4.771	+7.054	11.825

d. Approved Design to Cost Goal

(Average Unit Flyaway Cost, Then-Year $)

	Dev. Estimate Appr. Program	Current Estimate	Latest Approval Threshold
FY76 Base Year $	2.5	6.3	2.5
Then-Year $	3.4	11.9	3.4

e. Foreign Military Sales:
(1) Spanish: 3 systems in FY83 for $50.9M
(2) Canadian: 7 H&SG and 8 TAG equipments in FY85 for $47.1M

f. Nuclear Costs: none

NOTE: The TACTAS SAR is currently baselined to the Development Estimate (DE). Concurrent with the comprehensive annual December 31, 1985 SAR submission will be a request for approval to rebaseline to a Production Estimate (PdE). Approval for Full Production was granted as of December 1984; however, it was not received at the program level in time for inclusion into the December 31, 1984 SAR.

12.(U) Program Acquisition/Current Procurement Unit Cost Summary
(Then-Year Dollars in Millions)

	Current Year		Budget Year
a. Program Acquisition	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
(1) Cost	957.8	1,039.2	957.8
(2) Quantity	81	87	81
(3) Unit Cost	11.825	11.945	11.825

12.(U) Program Acqusition/Current Procurement Unit Cost Summary (continued)
(Then-Year Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
b. Current Procurement	(FY86)	(FY86)	(FY87)
(1) Cost	139.0	146.5	112.4
(-) CY Adv. Proc.	0	0	0
(+) PY Adv. Proc.	0	0	0
Net Total	139.0	146.5	112.4
(2) Quantity	17	17	10
(3) Unit Cost	8.176	8.618	11.241

13. (U) Cost Variance Analysis

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

	RDT&E	PROC	TOTAL
Baseline Estimate (D.E.)	62.4	538.7	601.1
Previous Changes:			
Economic	+ 2.6	+139.8	+142.4
Quantity	-	-228.2	-228.2
Schedule	+ 4.5	+ 98.9	+103.4
Engineering	+ 6.6	+276.2	+282.8
Estimating	+ 84.4	+ 61.9	+146.3
Support	-	- 8.6	- 8.6
SUBTOTAL	+ 98.1	+340.0	+438.1
Current Changes:			
Economic	-	- 12.5	- 12.5
Quantity	-	- 18.1	- 18.1
Schedule	-	+ 5.9	+ 5.9
Engineering	-	- 73.1	- 73.1
Estimating	-	+ 16.4	+ 16.4
SUBTOTAL	-	- 81.4	- 81.4
TOTAL CHANGES	+ 98.1	+258.6	+356.7
CURRENT ESTIMATE	160.5	797.3	957.8

(FY76 Base Year Dollars in Millions)

	RDT&E	PROC	TOTAL
Baseline Estimate (D.E.)	58.0	368.6	426.6
Previous Changes:			
Quantity	-	-145.5	-145.5
Schedule	+ 2.6	+ 0.5	+ 3.1
Engineering	+ 5.0	+131.5	+136.5
Estimating	+ 62.0	+ 72.6	+134.6
Support	-	- 8.2	- 8.2
SUBTOTAL	+ 69.6	+ 50.9	+120.5
Current Changes:			
Quantity	-	- 6.8	- 6.8
Schedule	-	-	-
Engineering	-	- 33.5	- 33.5
Estimating	-	+ 6.8	+ 6.8
SUBTOTAL	-	- 33.5	- 33.5
TOTAL CHANGES	+ 69.6	+ 17.4	+ 87.0
CURRENT ESTIMATE	127.6	386.0	513.6

13. (U) Cost Variance Analysis (continued)

b. Previous Change Explanations:

RDT&E

Economic:	Revised escalation rates.
Schedule:	Program restructure due to funding deficiencies.
Engineering:	System redesign to use Navy standard hardware.
Estimating:	Increase in contractor support costs and hardware development costs.

Procurement

Economic:	Revised escalation rates.
Quantity:	Decrease in ship market.
Schedule:	Program restructuring due to funding constraints.
Engineering:	System redesign to use standard hardware and for improvement program.
Estimating:	Changes in GFM and CFE costs.
Support:	Change in procurement requirements.

c. Current Change Explanations:

	(Dollars in Millions) Base Year	Then Year
(1) RDT&E - none		
(2) Procurement		
Revised January 1986 escalation rate (Economic)	N/A	-12.5
Deletion of FFG-24 and FFG-26 from market and transfer of four retrofit systems to AN/SQQ-89 budget for a net decrease of 6 (Quantity)	- 6.8	-18.1
Deceleration of schedule to meet budget constraints (Schedule)	-	+ 5.9
Engineering changes to upgrade AN/SQQ-89 baseline (Engineering)	-33.5	-73.1
Increased production services to support array competition, system improvements, and additional contractor (Estimating)	+ 6.8	+ 16.4

d. References:

Development Estimate: AN/SQR-19 DCP-92, dated August 16, 1982

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

a. Current Baseline Estimate (Initial SAR Est.) to Current Estimate

PAUC DE = Initial SAR Est.	CHANGES							PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Total	
4.771	+4.384	-3.041	+1.349	+2.589	+1.879	-.106	+7.154	11.825

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

a. RDT&E: R&D prime contracts are completed

b. Procurement

Signal, Conditioner & Receiver
FY83/84 Production
General Electric Co., Syracuse, NY
N00024-83-C-6292, CPAF
Awarded: June 7, 1983
Definitized: February 1, 1984

Initial Contract Price		
Target	Ceiling	Qty.
$109.5	$109.5	26

Current Contract Price		
Target	Ceiling	Qty.
$109.5	$109.5	26

Estimated Price at Completion	
Contractor	Program Manager
$108.8	$109.5

	Cost Variance	Schedule Variance
Previous Cum. Variances	$ +0.9	$ -5.1
Cum. Variances to Date (12/29/85)	$ +0.9	$ -5.1
Net Change	$ -	$ -

Explanation of Change: Schedule variance is the result of major engineering changes. System deliveries are being met and there will be no impact to program milestones.

Signal, Conditioner & Receiver
FY85 Production
General Electric Co., Syracuse, NY
N00024-85-C-6012, FPIF
Awarded: January 1, 1985
Definitized: August 6, 1985

Initial Contract Price		
Target	Ceiling	Qty.
$ 24.6	$ 26.3	13

Current Contract Price		
Target	Ceiling	Qty.
$ 24.6	$ 26.3	13

Estimated Price at Completion	
Contractor	Program Manager
$ 24.6	$ 24.6

	Cost Variance	Schedule Variance
Previous Cum. Variances	$ -0.2	$ -0.3
Cum. Variances to Date (12/31/85)	$ -0.2	$ -0.3
Net Change	$ -	$ -

Explanation of Change: N/A

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

Towed Array, Handling & Stowage Group
FY83-86 Production
Gould, Inc., Glen Burnie, MD
N00024-83-C-6294, FPIF
Awarded: June 16, 1983
Definitized: August 13, 1984

Initial Contract Price		
Target	Ceiling	Qty.
$102.5	$113.2	26

Current Contract Price		
Target	Ceiling	Qty.
$205.8	$226.1	62

Estimated Price at Completion	
Contractor	Program Manager
$205.8	$205.8
Cost Variance	Schedule Variance
Previous Cum. Variances $ -3.1	$ -4.2
Cum. Variances to Date (12/31/85) $ -3.1	$ -4.2
Net Change $ -	$ -

Explanation of Change: Schedule variance is the result of major engineering changes. System deliveries are being met and there will be no impact to program milestones. Current target price includes add-on of FY85/86 production effort; it is expected to be definitized by March 1, 1986.

Handling & Stowage Group
FY85 Production
Unidynamics, Inc., St. Louis, MO
N00024-85-C-6015, FPIF
Awarded: July 3, 1985
Definitized: July 3, 1985

Initial Contract Price		
Target	Ceiling	Qty.
$ 5.7	$ 5.7	7

Current Contract Price		
Target	Ceiling	Qty.
$5.7	$5.7	7

Estimated Price at Completion	
Contractor	Program Manager
$5.7	$5.7
Cost Variance	Schedule Variance
Previous Cum. Variances $ +0.1	$ -0.2
Cum. Variances to Date (12/31/85) $ +0.1	$ -0.2
Net Change $ -	$ -

Explanation of Change: N/A

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

a. Program Status:
(1) Percent program completed: 66.7% (12 yrs./18 yrs.)
(2) Percent program cost appropriated: 60.6% (580.2/957.8)

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

Appropriation	Current & Prior Yrs. (FY82-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	160.5	-	-	-	160.5
Procurement	419.7	112.4	250.6	14.6	797.3
TOTAL	580.2	112.4	250.6	14.6	957.8

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

c. Annual Summary

Fiscal Year	Qty	FY76 Base Year Dollars			Then-Year Dollars	Escl. Rate (%)
		Sailaway				
		Nonrec.	Rec.	Total	Total	
Appropriation: RDT&E						
1975		5.9	-	5.9	5.7	10.94
1976		6.0	-	6.0	6.1	6.61
197T		3.7	-	3.7	3.9	2.88
1977		16.8	-	16.8	18.3	2.58
1978		13.4	-	13.4	15.7	6.80
1979		19.4	-	19.4	25.2	8.40
1980		20.8	-	20.8	29.8	10.59
1981		15.7	-	15.7	24.6	10.61
1982		10.7	-	10.7	17.8	7.60
1983		5.7	-	5.7	9.8	4.90
1984		2.0	-	2.0	3.6	3.80
Subtotal	3	120.1	-	120.1	160.5	-
Appropriation: Procurement						
1982	-	-	5.1	5.1	9.0	7.6
1983	5	-	36.1	36.1	66.3	4.9
1984	12	1.7	53.0	54.7	104.4	3.8
1985	10	-	51.1	51.1	100.9	3.6
1986	17	2.8	65.1	67.9	139.0	3.2
1987	10	6.6	46.5	53.1	112.4	4.1
1988	10	2.7	43.2	45.9	100.2	3.9
1989	7	0.5	31.9	32.4	72.5	3.4
1990	3	-	16.5	16.5	37.8	2.9
1991	3	-	17.1	17.1	40.2	2.3
1992	1	-	6.1	6.1	14.6	2.3
Subtotal	78	14.3	371.7	386.0	797.3	2.3
TOTAL	81	134.4	371.7	506.1	957.8	-

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

d. Obligations and Expenditures

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
(1975-1984)	160.5	160.5	160.5
1986	8.1	1.2	0.8
Total	168.6	161.7	161.3
Appropriation: Procurement			
(1982-1983)	75.3	75.3	75.3
1984	104.4	104.4	103.5
1985	100.9	91.9	76.6
1986	139.0	103.9	3.6
To Complete	377.7	N/A	N/A
TOTAL	797.3	373.5	259.0

17.(U) Production Rate Data

a. Annual Production Rates: The TACTAS SAR is currently baselined to the DE (see Note, Section 11). The production rates include SCN ship systems and trainers.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1983	20	N/A	-	N/A
1984	20	N/A	-	N/A
1985	20	N/A	5	N/A
1986	20	N/A	15	N/A
1987	20	N/A	13	N/A
1988	20	N/A	18	N/A
1989	-	N/A	18	N/A
1990	-	N/A	17	N/A
1991	-	N/A	12	N/A
1992	-	N/A	5	N/A
To Complete	-	N/A	27	N/A

b. Cost Variance (dollars in millions): N/A (see Note, Section 11)

c. Schedule Variance: N/A (see Note, Section 11)

d. Deliveries (Plan/Actual):

	To Date
RDT&E	3/3
Procurement	3/3
New Construction	5/5

18.(U) Operating and Support Costs: N/A

(6) N-8 CVN-71/72/73

SAR-85-004

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

Program: CVN 68 CLASS (CVN 71, 72 & 73)

As Of Date: December 31,1985

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1.(U) Designation/Nomenclature: CVN 71, THEODORE ROOSEVELT; CVN 72, ABRAHAM LINCOLN; CVN 73, GEORGE WASHINGTON

(U) DoD Component: Department of the Navy

3.(U) Responsible Office and Telephone Number:
Aircraft Carrier Ship Acquisition Program
Naval Sea Systems Command (PMS 392)
Washington D.C.

PM: Capt F. C. Holmes, USN
Assigned: August 23, 1985
Phone number: (202) 692-728
Autovon number: 8-222-7280

4.(U) Program Elements:
RDT&E: 65567N
PROCUREMENT: 24112N APPN 1611; ICN 2001

5.(U) Related Programs: SSN new construction, submarine and carrier overhauls

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

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OASD(PA) DFOISR 86-T-0862

6. 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. The CVN 68 Class carriers have two nuclear reactors and nuclear fuel for 15 years of normal carrier operations, the equivalent of 11 million barrels of propulsion fuel oil. Speeds of (b)(1) 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 approximateley 96,000 tons. The flight deck area is about 4.5 acres. The ship has four propellers, four aircraft elevators and four catapults.

7. Program Highlights:

a. 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 three ships have been delivered. The Nimitz (CVN 68), Dwight D. Eisenhower (CVN 69) and Carl Vinson (CVN 70) were delivered in 1975, 1977, and 1982, respectively. Currently three ships are under construction at Newport News Shipbuilding, the Theodore Roosevelt (CVN 71), Abraham Lincoln (CVN 72), and George Washington (CVN 73). The Theodore Roosevelt began construction in October 1980, the Abraham Lincoln and George Washington in February 1982. Shipbuilder target delivery dates are September 1986, September 1989, and September 1991, respectively. The CVN 71 target delivery date of 29 September 1986 is very tight. This target delivery date is 3 months earlier than the contract incentive delivery date of December 1986 and 17 months earlier than the contract delivery date of February 1988. The CVN 72 and CVN 73 contract delivery dates are December 1989 and December 1991, respectively. It is too early to tell whether the earlier target delivery dates being worked by the shipbuilder will be achieved.

b. Significant Developments Since Last Report -- NONE

c. Changes Since "As Of" Date -- NONE

8. Decision Coordinating Paper (DCP) Threshold Breaches: NONE

Schedule:	Development Estimate Approved Program	Current Estimate
a. Milestones (CVN 71)		
(1) Establish final characteristics CVN 68 Class	10/66	10/66*
(2) Definitization of Contract	9/80	9/80*
(3) Start Production	10/80	10/80*
(4) Lay Keel	12/81	10/81*
(5) Launch	9/85	10/84*
(6) Complete Acceptance Trials	8/87	9/86(CH-1)
(7) Delivery	10/87	9/86
(8) Complete Final Contract Trials	3/88	3/87
(9) Initial Operating Capability	10/88	1/88
Milestones (CVN 72)		
(1) Establish Final Characteristics CVN 68 Class	10/66	10/66*
(2) Definitization of Contract	1/83	12/82*
(3) Start Production	2/83	2/83*
(4) Lay Keel	11/84	11/84*
(5) Launch	9/87	10/87
(6) Delivery	12/89	12/89
(7) Complete Final Contract Trials	6/90	6/90
(8) Initial Operating Capability	2/91	1/91
Milestones (CVN 73)		
(1) Definitization of Contract	1/83	12/82*
(2) Start Production	2/83	2/83*
(3) Lay Keel	8/86	8/86
(4) Launch	9/89	9/89
(5) Delivery	12/91	12/91
(6) Initial Operating Capability	2/93	2/93

b. Previous change explanations: Contractor's schedule for CVN 72 launch revised from 9/87 to 10/87 to obtain the best tides.

c. Current change explanations: (CH-1) Contractor's revised schedule based upon evaluation of performance to date on CVN 71.

d. References ---
Development Estimate: Defense Appropriations Act of 1979

Approved Program: DASD(MS) Memo of 21 May 1980
FY 1983 Continuing Resolution

* Actuals

10. Technical/Operational Characteristics:

a. Technical	Development Estimate	Demonstrated Performance	Current Estimate
(1) Length overall	1,092	1,092	1,092
(2) Beam	134	134	134
(3) Maximum width	252	252	252
(4) Draft (Combat load) (feet)	38.4	38.4	38.4
(5) Displacement (tons)	96,300	93,405 1/	96,300
(6) Propulsion	Nuclear	Nuclear	Nuclear
(b)(1)			
(8) Core life (yrs)	13	13	15
(9) Num of reactors	2	2	2
(10) Crew including air wing	6,280	6,280	6,280
(11) Troop	N/A	N/A	N/A
b. Operational			
(b)(1)			
(3) Stores (days)	75	75	75
(4) Close In Weapon Sys	4	*	4
(5) NATO Sea Sparrow Missile Systems	3	*	3
(6) Aviation Strike Ordnance (tons)	2400	3,000 1/	2,400
(b)(1)			
(8) Operational number of aircraft (deck multiple in A4 equivalents) 3/	151	151	151

c. Previous change explanations: NONE

d. Current change explanations: NONE

e. References ---
Development Estimate: Defense Appropriations Act of 1979

Approved Program: DASD(MS) Memo of 21 May 1980

1/ Actual based on CVN 68 and CVN 69 performance without MPEP (Magazine Protection Enhancement Program)
2/ Requires extensive operational data and is dependent on actual core life
3/ The operational number of aircraft (deck multiple) in A7 equivalents is 156
* These characteristics will be demonstrated at ship delivery

(CONFIDENTIAL)

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	--	--	--
Procurement	1808.3	53.4	1861.7
Basic Ship Costs	(1156.3)	(86.6)	(1242.9)
Government furn. equip costs	(614.6)	(-59)	(555.6)
Other Costs	(5.1)	(8.3)	(13.4)
Total production costs	(1776.0)	(35.9)	(1811.9)
Outfitting & Post Delivery	(32.3)	(17.5)	(49.8)
Construction(MILCON)	(--)	(--)	(--)
Total FY 79 Base-Year $	1808.3	53.4	1861.7
Escalation			
velopment	(--)	(--)	(--)
ocurement	(612.3)	(17.2)	(629.5)
nstruction	(--)	(--)	(--)
Total Then-Year $	2420.6	70.6	2491.2
b. Quantities			
Developement (RDT&E)	-	-	-
Procurement	1	-	1
Total	1	-	1
c. Unit Cost --			
Procurement:			
FY 79 Base Year $	1808.3	53.4	1861.7
Then-year $	2420.6	70.6	2491.2
Program:			
FY 79 Base Year $	1808.3	53.4	1861.7
Then-year $	2420.6	70.6	2491.2

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

e. Foreign Military Sales -- NONE

f. clear Costs -- CVN-68 Class ships draw upon general reactor plant search and developement work performed by the Department of ergy but this contribution cannot be quantified.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	--	1.5	1.5
Procurement	5265.5	-23	5242.5
Basic Ship Costs	(3261.4)	(43.8)	(3305.2)
Government furn. equip costs	(1900.7)	(-135.8)	(1764.9)
Other Costs	(14.3)	(20.5)	(34.8)
Total production costs	(5176.4)	(-71.5)	(5104.9)
Ship Design	(0.9)	(-0.9)	( )
Outfitting & Post Delivery	(88.2)	(49.4)	(137.6)
Construction(MILCON)	(--)	(--)	(--)
Total FY 82 Base-Year $	5265.5	-21.5	5244.0
Escalation			
velopment	(--)	(0.1)	(0.1)
ocurement	(2153.4)	(-1006.6)	(1146.8)
Construction	(--)	(--)	(--)
Total Then-Year $	7418.9	-1028.1	6390.9
b. Quantities			
Developement (RDT&E)	-	-	-
Procurement	2	-	2
Total	2	-	2
c. Unit Cost --			
Procurement:			
FY 82 Base Year $	2632.8	-11.5	2621.3
Then-year $	3709.5	-514.8	3194.7
Program:			
FY 82 Base Year $	2632.8	-10.7	2622.1
Then-year $	3709.5	-514.0	3195.5

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

e. Foreign Military Sales -- NONE

clear Costs -- CVN-68 Class ships draw upon general reactor plant search and developement work performed by the Department of ergy but this contribution cannot be quantified.

1. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	2491.2	2591.1	2491.2
(2) Quantity	1	1	1
(3) Unit Cost	2491.2	2591.1	2491.2
b. Current Procurement --	(1986)	(1986)	(1987)
(1) Cost			
Less PY Adv Proc			
Plus CY Adv Proc			
Plus OF/PD	11.2	8.7	39.1
Net Total	11.2	8.7	39.1
(2) Quantity	N/A	N/A	N/A
(3) Unit Cost	N/A	N/A	N/A

1. Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Development Estimate	-	2420.6	2420.6
Previous Changes	-		
Economic	-	104.4	104.4
Engineering	-	22.0	22.0
Estimating	-	40.7	40.7
Support	-	3.4	3.4
Subtotal	-	170.5	170.5
Current Changes	-	-	-
Economic	-	-89.1	-89.1
Estimating	-	-12.0	-12.0
Support	-	1.2	1.2
Subtotal	-	-99.9	-99.9
Total Changes	-	70.6	70.6
Current Estimate	-	2491.2	2491.2

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	6390.9	7131.8	6390.9
(2) Quantity	2	2	2
(3) Unit Cost	3195.5	3565.9	3195.5
b. Current Procurement --	(1986)	(1986)	(1987)
(1) Cost	N/A	N/A	N/A
Less PY Adv Proc	N/A	N/A	N/A
Plus CY Adv Proc	N/A	N/A	N/A
Plus OF/PD	0.3	N/A	17.1
Net Total	0.3	N/A	17.1
(2) Quantity	N/A	N/A	N/A
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Development Estimate	-	7418.9	7418.9
Previous Changes	-		
Economic	-	-368.4	-368.4
Estimating	1.6	-386.6	-385.0
Support	-	16.3	16.3
Subtotal	1.6	-738.7	-737.1
Current Changes	-	-	-
Economic	-	-268.6	-268.6
Estimating	-	-35.4	-35.4
Support	-	13.1	13.1
Subtotal	-	-290.9	-290.9
Total Changes	1.6	-1029.6	-1028.0
Current Estimate	1.6	6389.3	6390.9

6a

Cost Variance Analysis (Cont'd)

(FY 1979 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	TOTAL
Development Estimate	-	1808.3	1808.3
Previous Changes	-		
Engineering	-	28.3	28.3
Estimating	-	19.3	19.3
Support	-	5.1	5.1
Subtotal	-	52.7	52.7
Current Changes	-	-	-
Estimating	-	-0.1	-0.1
Support	-	0.8	0.8
Subtotal	-	0.7	0.7
Total Changes	-	53.4	53.4
Current Estimate	-	1861.7	1861.7

b. Previous Change Explanations --

(1) Procurement

Economic: Revised economic rates.
Engineering: Upgrading Naval Tactical Data System. Funds future characteristic changes were added and then deleted due to congressional action.
Estimating: Refinement of estimates and increase to cover shock test requirements.
Support: Revised estimates for outfitting.

13. Cost Variance Analysis (Cont'd):

(FY 1982 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	TOTAL
Development Estimate	-	5265.5	5265.5
Previous Changes	-		
Estimating	1.5	-169.2	-167.7
Support	-	16.5	16.5
Subtotal	1.5	-152.7	-151.2
Current Changes	-	-	-
Estimating	-	118.2	118.2
Support	-	11.5	11.5
Subtotal	-	129.7	129.7
Total Changes	1.5	-23.0	-21.5
Current Estimate	1.5	5242.5	5244.0

b. Previous Change Explanations --

RDT&E

Estimating: Revised Requirement.

Procurement

Economic: Revised economic rates.
Estimating: Congressional reduction of funds for management reserves, contractor support services, and Independent Research and Developement/Bid and Proposal (IR&D/B&D). Reduced equipment costs were transferred to FY 1985 Peacekeeper program. Adjustments were made for revised economic indicies.
Support: Revised estimates for outfitting.

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanation --

	(Dollars in Millions) Base-Year	Then-Year
(1) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-89.1
Post shock test repair funding reduced. (Estimating)	-0.1	-12.0
Revised estimates for Outfitting . (Support)	0.8	1.2

d. References -- Defense Appropriation Act of 1980

14. Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate

(Same as Current Baseline)

b. Current Baseline Estimate to Current Estimate

PAUC									PAUC
(DE)	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	(Current Estimate)
2420.6	15.3	-	-	22.0	28.7	4.6	-	70.6	2491.2

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanation --

(1) Procurement	(Dollars in Millions) Base-Year	Then-Year
Revised Jan 86 economic escalation rates. (Economic)	N/A	-268.6
Reduction in program managers reserve.	-29.8	-35.4
An increase to offset new economic indicies. (Estimating)	148.0	0
Revised estimates for Outfitting and Post Delivery.(Support)	11.5	13.1

d. References -- FY 1983 Continuing Resolution (Defense Appropriation Act)

14. Program Acquisition Unit Cost (PAUC) Histo: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate

(Same as Current Baseline)

b. Current Baseline Estimate to Current Estimate

PAUC									PAUC
(DE)	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	(Current Estimate)
3709.5	-318.5	-	-	-	-210.2	14.8	-	-513.9	3195.5

1 Contract Information: (Then-Year Dollars in Millions)

a. RDT&E -- N/A

b. Procurement

Shipbuilding Contract	Initial Contract Price Target	Ceiling	Qty
Newport News Shipbuilding and Dry Dock Co. Newport News,Va. N00024-80-C-2023,FPIF Award: September 30,1980	1155.4	1292.0	1

Current Target Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
1233.4	1371.0	1	1239.5	1233.4

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

Explanation of Change: Variances are not provided for this contract because reporting under DOD Instruction 7000.2 is not required.

Nuclear Components Contracts	Initial Contract Price Target	Ceiling	Qty
General Electric Co. Schenectady, New York N00024-74-C-5182, CPFF Award: October 6, 1976	--	9.5	--

Current Target Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
--- Not Applicable---			9.5	9.5

	Initial Contract Price Target	Ceiling	Qty
Department of Energy N00024-67-F-5110 Economy Act Order Award: October 6,1976	--	118.3	--

Current Target Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
--- Not Applicable---			118.3	118.3

1 Contract Information: (Then-Year Dollars in Millions)

a. RDT&E -- N/A

b. Procurement

Shipbuilding Contract	Initial Contract Price Target	Ceiling	Qty
Newport News Shipbuilding and Dry Dock Co. Newport News,Va. N00024-83-C-2033,FPIF Award: December 27.1982	3143.0	3454.4	2

Current Target Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
3208.9	3523.7	2	3256.4	3208.9

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

Explanation of Change: Variances are not provided for this contract because under DOD Instruction 7000.2 is not required.

Nuclear Components Contracts	Initial Contract Price Target	Ceiling	Qty
General Electric Co. Schenectady, New York N00024-82-C-4004, CPFF Award: December 29, 1982	--	399.8	--

Current Target Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
--- Not Applicable---			399.8	399.8

Department of Energy N00024-67-F-5110 Economy Act Order Award: December 30,1982	Initial Contract Price Target	Ceiling	Qty
	--	460.1	--

Current Target Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
--- Not Applicable---			365.1	365.1

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

	Initial Target	Contract Ceiling	Price Qty
Westinghouse Electric Corp. Pittsburgh,Pa N00024-73-5002, CPFF Award: October 6, 1976	--	279.1	--

Current Target Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
--- Not Applicable---			278.0	278.0

c. MILCON -- N/A

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

a. Program Status

(1) Percent Program Completed: 85.7% (6 yrs/7 yrs)

(2) Percent Program Cost Appropriated: 98.4% ($2452.1\$2491.2)

b. Appropriation Summary --

(Then-year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY82-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP (FY92)	TOTAL
RDT&E	-	-	-	-	-
Procurement	2452.1	39.1	-	-	2491.2
MILCON	-	-	-	-	-
Total	2452.1	39.1			2491.2

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

	Initial Contract Price Target	Ceiling	Qty
Westinghouse Electric Corp. Pittsburgh,Pa N00024-82-C-5002, CPFF Award: December 29,1982	--	540.1	--

Current Target Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
--- Not Applicable---			540.1	540.1

c. MILCON -- N/A

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

a. Program Status

(1) Percent Program Completed: 33.3% (3 yrs/9 yrs)

(2) Percent Program Cost Appropriated: 97.2% ($6214.2\$6390.9)

b. Appropriation Summary --

(Then-year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY82-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP (FY92)	TOTAL
RDT&E	1.6	-	-	-	1.6
Procurement	6212.6	17.1	101.5	58.1	6389.3
MILCON	-	-	-	-	-
Total	6214.2	17.1	101.5	58.1	6390.9

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

c. Annual Summary --

FISCAL YEAR	QTY	BASE-YEAR DOLLARS			Then-Year Dollars			ESCALATION RATE(%)
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
APPROPRIATION: SCN								
1977	-	-	241.7	241.7	268.4	-	268.4	6.20
1980	1	-	1551.9	1551.9	-	268.4	2126.5	9.80
1981	-	-	-	-	-	-		9.60
1982	-	-	18.3	18.3	22.0	-	22.0	7.50
1983	-	-	-	-	-	-		3.80
1984	-	-	-	7.9	11.7	-	11.7	3.60
1985	-	-	-	8.2	12.3	-	12.3	2.10
1986	-	-	-	7.2	11.2	-	11.2	4.10
1987	-	-	-	26.5	39.1	-	39.1	4.10
Total	1	-	1811.9	1861.7	364.7	268.4	2491.2	

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
APPROPRIATION: SCN			
1977	268.4	268.4	268.4
1980	2126.5	2030.6	1816.8
1982	22.0	1.9	0.2
1984	11.7	10.7	9.3
1985	12.3	9.7	4.7
1986	11.2	0.0	0.0
To complete	39.1	0.0	0.0
Total	2491.2	2321.3	2099.4

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

c. Annual Summary --

FISCAL YEAR	QTY	BASE-YEAR DOLLARS Sailaway Nonrec	BASE-YEAR DOLLARS Sailaway Rec	BASE-YEAR DOLLARS Total	Then-Year Dollars Advance Proc Debit	Then-Year Dollars Advance Proc Credit	Then-Year Dollars Total	ESCALATION RATE(%)
APPROPRIATION: RDT&E								
1983	-	1.5	-	1.5	-	-	1.6	4.9
Subtotal	-	1.5	-	1.5	-	-	1.6	
APPROPRIATION: SCN								
1982	-	-	426.6	426.6	475.0	-	475.0	7.50
1983	2	-	4678.3	4678.3	-	475.0	5737.3	3.80
1986	-	-	-	0.3	0.3	-	0.3	2.10
1987	-	-	-	14.4	17.1	-	17.1	4.10
1988	-	-	-	13.9	17.1	-	17.1	4.10
1989	-	-	-	20.9	26.7	-	26.7	3.90
1990	-	-	-	38.8	47.9	-	47.9	3.40
1991	-	-	-	7.3	9.9	-	9.9	2.90
1992	-	-	-	42.0	58.1	-	58.1	2.30
Total	2	-	5104.9	5242.5	652.0	475.0	6389.3	

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
APPROPRIATION: RDT&E			
1983	1.6	1.6	1.5
Subtotal	1.6	1.6	1.5
APPROPRIATION: SCN			
1982	475.0	475.0	285.5
1983	5737.3	4568.3	1640.2
1986	0.3	0.0	0.0
Complete	176.8	0.0	0.0
Total	6389.3	5043.3	1925.7

11a

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development	Production	Current Estimate	Maximum
1986	N/A	0	0	0
1987	N/A	0	0	0
1988	N/A	0	0	0
1989	N/A	0	0	0
1990	N/A	0	0	0
1991	N/A	0	0	0
1992	N/A	0	0	0

b. Cost Variance -- Dollars in Millions

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY$)	N/A	N/A	1861.7	0	1861.7
	(TY$)	N/A	N/A	2491.2	0	2491.2
PAUC	(BY$)	N/A	N/A	1861.7	0	1861.7
	(TY$)	N/A	N/A	2491.2	0	2491.2

c. Schedule Variance --

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	10/80	N/A	10/80
Duration(in Months)	N/A	N/A	71	19	90
End Date (Mo\Yr)	N/A	N/A	9/86	N/A	2/88

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development	Production	Current Estimate	Maximum
1986	N/A	0	0	0
1987	N/A	0	0	0
1988	N/A	0	0	0
1989	N/A	0	0	0
1990	N/A	0	0	0
1991	N/A	0	0	0
1992	N/A	0	0	0

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY$)	N/A	N/A	5244.0	0.0	5244.0
(TY$)	N/A	N/A	6390.9	0.0	6390.9
PAUC (BY$)	N/A	N/A	2622.0	0.0	2622.0
(TY$)	N/A	N/A	3195.5	0.0	3195.5

c. Schedule Variance --

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	2/83 1)	N/A	2/83
Duration(in Months)	N/A	N/A	82		82
End Date (Mo\Yr)	N/A	N/A	12/89	N/A	12/89

1) Dates are for CVN-72. CVN-73 will deliver approximately two years after CVN-72.

17. Production Rate Data (Cont"d):

d. Deliveries (PLan/Actual) --

	To Date
RDT&E	0/0
Procurement	3/0

18. Operating and Support Costs: N/A

AF-34 SPARROW

SELECTED ACQUISITION REPORT (RCS: DD-COMP(O&A)823)
PROGRAM: AIM-7M, SPARROW Missile System

AS OF DATE: December 31, 1985

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1. Designation and Nomenclature (Popular Name): AIM-7M, Air-to-Air Guided Missile (SPARROW III).

2. DoD Component: U.S. Air Force; Executive Service is U.S. Navy.

3. Responsible Office and Telephone Number:

Air-to-Air Missile Systems Manager
NAVAIRSYSCOM PMA-259
Washington, DC 20361-1259

PM: CAPT Larry E. Blose, USN
Assigned: October 1, 1982
AUTOVON 222-8228
COMMERCIAL (202) 692-0921

AF Air-to-Air Missile Systems Manager
NAVAIRSYSCOM PMA-259B
Washington, DC 20361-1259

PM: LTCOL Raymond P. Hudkins, USAF
Assigned: August 1, 1983
AUTOVON 222-8222
COMMERCIAL (202) 692-8224

4. Program Elements:

RDT&E: 27161F (Shared Funding)
PROCUREMENT: PE 27161F (Shared Funding) APPN: 3020 ICN: M07FA1
MILCON: NA

5. Related Programs: AMRAAM and AIM-9

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SAF/PAS

86-180-T

OASD(PA) DFOASR 86-T-0572

7. Program Highlights:

a. Significant Historical Development: DSARC II for the advanced monopulse seeker (designated AIM-7M) took place in April 1978. DCP 89B of 19 April 1979 approved the AIM-7M Program. UNDERSECDEF Memorandum of 22 September 1980 approved the AIM-7M Guidance and Control Section (G&CS) production; the second OSD Program Review of 01 March 1981 authorized continuance of the FY81 procurement program. USAF's first year buy was FY80. The USAF procurement has been continued through FY88 due to delay in production of the AMRAAM. Continued AIM-7M missile buys will maintain medium range, air-to-air missile inventories for USAF tactical forces flying F-15s.

b. Significant Development Since Last Report: In August 1985, the AIM-7M successfully completed FOT&E.

c. Changes since As-of Date: None

The AIM-7 Missile System satisfies USAF mission requirements.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars):

a. Cost --	Development Estimate	Changes	Current Estimate
Development (RDT&E)	2.9	0.4	3.3
Procurement	277.4	414.0	691.4
Airframe	(275.1)	(349.8)	(624.9)
Total Flyaway	(275.1)	(349.8)	(624.9)
Peculiar Support	(1.6)	(44.9)	(46.5)
Initial Spares	(0.7)	(19.3)	(20.0)
Construction (MILCON)	0.0	0.0	0.0
Total FY78 Base Year $	280.3	414.4	694.7
Escalation	82.9	419.3	502.2
Development (RDT&E)	(0.4)	(0.8)	(1.2)
Procurement	(82.5)	(418.5)	(501.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Total Then-Year $	363.2	833.7	1196.9
b. Quantities --			
Development (RDT&E)	0	0	0
Procurement	3790	2514	6304
Total	3790	2514	6304
c. Unit Cost --			
Procurement:			
FY78 Base-Year $	0.073	0.037	0.110
Then-Year $	0.095	0.094	0.189
Program:			
FY78 Base-Year $	0.074	0.036	0.110
Then-Year $	0.096	0.094	0.190

d. Approved Design to Cost Total -- No AF Goal.

e. Foreign Military Sales -- See Navy SAR (current FMS quantities are FY85 - 907; FY86 - 650; FY87 - 350).

f. Nuclear Costs -- None.

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
a. Program Acquisition --	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
(1) Cost	1196.9	1114.9	1196.9
(2) Quantity	6304	5551	6304
(3) Unit Cost	0.190	0.201	0.190
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	77.9	82.3	64.9
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	77.9	82.3	64.9
(2) Quantity	497	425	379
(3) Unit Cost	0.157	0.194	0.171

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	3.3	359.9	--	363.2
Previous Changes:				
Economic	+0.2	- 43.5	--	- 43.3
Quantity	--	+199.0	--	+199.0
Schedule	+0.1	+ 1.7	--	+ 1.8
Engineering	--	--	--	--
Estimating	+0.9	+603.1	--	+604.0
Other	--	--	--	--
Support	--	- 9.8	--	- 9.8
Subtotal	+1.2	+750.5	-0-	+751.7
Current Changes:				
Economic	--	- 17.9	--	- 17.9
Quantity	--	+102.5	--	+102.5
Schedule	--	- 1.1	--	- 1.1
Engineering	--	--	--	--
Estimating	--	-143.6	--	-143.6
Other	--	--	--	--
Support	--	+142.1	--	+142.1
Subtotal	-0-	+ 82.0	-0-	+ 82.0
Total Changes	+1.2	+832.5	-0-	+833.7
Current Estimate	4.5	1192.4	-0-	1196.9

(FY 1978 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2.9	277.4	--	280.3
Previous Changes:				
Quantity	--	+114.7	--	+114.7
Schedule	+0.1	- 12.5	--	- 12.4
Engineering	--	--	--	--
Estimating	+0.3	+270.6	--	+270.9
Other	--	--	--	--
Support	--	- 4.8	--	- 4.8
Subtotal	+0.4	+368.0	-0-	+368.4
Current Changes:				
Quantity	--	+ 46.8	--	+ 46.8
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	- 69.8	--	- 69.8
Other	--	--	--	--
Support	--	+ 69.0	--	+ 69.0
Subtotal	-0-	+ 46.0	-0-	+ 46.0
Total Changes	+0.4	+414.0	-0-	+414.4
Current Estimate	3.3	691.4	-0-	694.7

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations --

RDT&E

Economic:	Revised escalation indices
Schedule:	Delay of R&D development
Estimating:	Revised R&D effort cost

Procurement

Economic:	Revised escalation indices
Quantity:	Addition of 1,761 SPARROW missiles
Schedule:	Spread-out procurement of FY83/84 approved missiles
Estimating:	Revised procurement cost estimates due to increased quantities
Support:	Reduction in peculiar support cost

MILCON N/A

c. Current Change Explanations --

	(Dollars in Millions) Base-Year $	Then-Year $
PROCUREMENT		
Revised Jan 86 Economic Escalation Rates (Economic)	--	- 17.9
Procurement of 753 additional Missiles	+49.4	+105.7
o Flyaway cost associated with buy of 753 missiles since last baseline (Quantity)	(+46.8)	(+102.5)
o Schedule changes applicable to increased missile buys since last baseline (Schedule)	--	(-1.1)
o Estimating changes applicable to increased quantity (Estimating)	(+2.6)	(+4.3)
Adjustment for current and prior year escalation (Estimating)	+7.9	+14.4
Cost savings associated with optimum production rates which lowered hardware cost estimates (Estimating)	-11.1	-19.7
Elimination of initial spares requirement in FY87 (Support)	-0.2	-0.5

13. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year $	Then-Year $
Adjustment to refine the mix of previous support and estimating category changes	0.0	0.0
o Decrease to estimating category (Estimating)	(-69.2)	(-142.6)
o Increase to Support category (Support)	(+69.2)	(+142.6)

d. References --

Development Estimate: DCP #89, Revision B, approved 19 April 1979.

14. Program Acquisition Unit Cost (PAUC) History : (Millions of then-year dollars)

Initial SAR/Development Estimate (DE) to Current Estimate (CE)

PAUC (Initial SAR/ Development Estimate)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
0.096	-.010	+.010	--	--	+.073	+.021	--	+0.094	0.190

15. Contract Information: See Navy SAR (No separate AF contracts)

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

a. Program Status --

(1) Percent Program Completed: 78% (7/9)

(2) Percent Program Cost Appropriated: 86% (1027.9/1196.9)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY80 - 86)	Budget Year (FY87)	Balance to Complete FYDP (FY88)	Beyond FYDP (FY -)	Total
RDT&E	4.5	-0-	-0-	-0-	4.5
Procurement	1023.4	64.9	104.1	-0-	1192.4
MILCON	-0-	-0-	-0-	-0-	-0-
Total	1027.9	64.9	104.1	-0-	1196.9

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

c. Annual Summary --

Fiscal Year	Qty	FY84 Base-Year Dollars			Then-Year Dollars			Escl Rate %
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1980	0	--	--	1.1	--	--	1.4	9.4
1981	0	--	--	2.2	--	--	3.1	11.9
Subtotal	-0-	--	--	3.3	--	--	4.5	
Appropriation: Procurement								
1980	330	2.9	57.3	60.3	N/A	N/A	83.8	9.7
1981	865	9.9	93.4	121.9			185.2**	11.9
1982	957	5.7	106.3	134.8			221.3	9.6
1983	1300	--	110.3	124.1			216.1	9.0
1984	1005	1.2	88.2	96.0			174.3**	8.0
1985	448 *	--	33.8	34.4			64.8	4.1
1986	497	--	38.8	39.6			77.9	4.1
1987	379	--	30.8	31.6			64.9	4.1
1988	523	--	46.3	48.7			104.1	3.9
Subtotal	6304	19.7	605.2	691.4	-0-	-0-	1192.4 **	
Appropriation: MILCON								
None	--	--	--	--	--	--	--	--
Subtotal	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Total	6304	19.7	605.2	694.7	-0-	-0-	1196.9	

* Differs from PB as a result of being able to buy more missiles for the same funding because of lower unit cost.

** FY 1981 and FY 1984 differ from PB as a result of funds in excess to program needs being released.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1980	1.4	1.4	1.4
1981	3.1	3.1	3.1
Total	4.5	4.5	4.5
Appropriation: Procurement *			
1980	83.8	83.8	83.7
1981	185.2	177.0	176.9
1982	221.3	208.2	206.3
1983	216.1	205.7	180.7
1984	174.3	162.0	91.5
1985	64.8	56.3	15.4
To Complete	246.9	N/A	N/A
Total	1192.4	893.0	754.5
Appropriation: Construction			
N/A	N/A	N/A	N/A

* The Program Office is not the procuring agent for initial spares; therefore, funds shown below cannot be tracked by Program Office:

	FY80	FY81	FY82	FY83	FY84	Total
Initial Spares	-0-	8.2	11.6	9.7	3.5	33.0

17. Production Rate Data: See Navy SAR

18. Operating and Support Costs: N/A

AF-28 NAVSTAR GPS

SAR-85-078

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

AS OF DATE: December 31, 1985

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DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Popular Name): NAVSTAR GPS/NAVSTAR Global Positioning System (NAVSTAR)

2. DoD Component: U.S. Air Force

SAF/PAS

86-157 -T

3. Responsible Office and Telephone Number:

Navstar GPS Joint Program Office
Space Division
P.O. Box 92960
Los Angeles AFS, CA 90009-2960

PM: Colonel Gaylord Green
Assigned: October 22, 1985
AV 833-1526; COMM (213) 643-1526

4. Program Elements/Procurement Line Items:

RDT&E: PEs 63421F, 64478F, 64778F, 35164F, 35165F (No Shared Funding)
PROCUREMENT: APPN 3020 ICN MGPS 00
MILCON: PE 35165F (No Shared Funding)

5. Related Programs: Nudet Detection System (NDS); Space Launch Support (PAM-D)

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OASD(PA) EDITOR 86-0610

6. Mission and Description: The NAVSTAR Global Positioning System (GPS) is a space-based radio positioning, navigation and time distribution system. The GPS will ultimately provide precise, continuous, all-weather, common grid worldwide positioning, navigation and time reference capability to a multiplicity of users. Mission areas supported include navigation and position fixing, air interdiction, close air support, special operations, strategic attack, counter-air and aerospace defense, theater and tactical command, control communications and intelligence, and ground and sea warfare. While NAVSTAR GPS does not replace any existing USAF weapon system, it provides the capability to replace the following support systems: VHF Omnidirectional Range (VOR), Long Range Aid to Navigation (LORAN), OMEGA, Tactical Air Navigation (TACAN), and Distance Measurement Equipment (DME).

7. Program Highlights:

a. Significant Historical Developments — Since the early 1960s, the Navy and the Air Force have actively pursued, through an extensive technology program of studies, experiments and tests, the idea that very accurate and highly reliable worldwide positioning and navigation information could be provided using radio signals transmitted from a space-based navigation system. The integration of this program and the designation of the Air Force as the Executive Agent for its development were authorized under Deputy Secretary of Defense Memorandum dated 17 April 1973. Subsequent to the decision, Navstar Global Positioning System (GPS) emerged as a joint-service program.

During Phase I, satellites were launched to support tests at various sites. Highly accurate bombing and navigation resulted in all test objectives from the Decision Coordinating Paper (DCP) being met or exceeded. On 24 August 1979, the Secretary of Defense approved entry into Full Scale Development. Later in 1979, OSD directed a $500 million funding cut spread over FY81-FY86 (a one third program reduction). This necessitated a restructuring of the program. The satellite constellation was reduced from 24 to 18 satellites. User Equipment production was delayed and will start at lower production rates. The development effort was modified by reducing redundancy and reliability in the Control Segment. A planned complete redesign of the Block I satellite was eliminated. HQ AFSC approved the twenty-eight (28) satellite block buy multi-year firm fixed price contract on 20 May 1983. The Control Segment initiated construction at Ascension and Kwajalein Islands for their ground antennae system. The User Segment began testing on the F-16, tank/manpack, aircraft carrier and helicopter.

As of Dec 1984 Navstar 3,4,6,8 continued to provide outstanding performance. Navstar 9 launched Jun 84 and Navstar 10 on Sep 1984 augmented the constellation. The Block II Qualification program continued to make progress with completion of system level thermal cycle testing and anechoic testing on GPS-0012. The ground monitor stations for the control segment were installed at Hawaii, Kwajalein Island and Diego Garcia. The second 3033 computer processor was moved to Vandenberg AFB and the Control Segment software was transferred to the field for testing. User Equipment contractors began DT&E on all Phase IIB platforms. The User Equipment Request for Proposal was released in Aug 1984.

7. Program Highlights (Cont'd):

As of Jun 1985 Navstar 3,4,6,8,9 and 10 continued to perform well. The Block II qualification program continues to progress with GPS-0012 shipped to Arnold Engineering Development Center (AEDC) for thermal vacuum testing. The Control Segment has completed the network of three ground antennas and five monitor stations. Source selection for user equipment procurement was completed in April 85 with Rockwell Collins, Cedar Rapids, Iowa being the successful bidder.

b. Significant Developments Since Last Report -- As of 31 Dec 1985 Navstar 3,4,6,8,9,10 and 11, which was launched 9 Oct 1985, continue to perform well. The Block II qualification program for thermal vacuum testing was completed at Arnold Engineering Development Center on 19 Aug 1985. Development effort for the survivability modifications continued with the final change orders being placed on contract. Operational Control Segment operations were transferred from Vandenberg AFB to Falcon AFS. The master control station CPU was upgraded from 3033's to 3083 computers. The User Equipment segment presented a status briefing to ASD C^3I (Mr. Latham) which resulted in Tri-Service agreement to share non-recurring production start-up costs (FY86-89). Work was continued on user equipment independent cost analysis (ICA) with reconciliation of ICA to project office estimates completed. Hardware and software fixes to deficiencies identified in a Nov 1985 report are being worked upon with a Test Analyze Fix (TAF) and an improved reliability program being instituted with initial contractor proposals for these efforts being received. DT&E and IOT&E are required on the User Equipment from Jul 85 to DSARC Milestone IIIB to demonstrate hardware and software fixes to deficiencies identified in Phase II.

The Navstar GPS system is expected to satisfy the mission requirement.

c. Changes Since "As of Date" -- None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 1 Feb 1980) threshold breaches.

9. Schedule:

	Development Estimate/ Approved Program	Current Estimate
a. Milestones:		
DSARC I	Dec 73/Dec 73	Dec 73
DSARC II	Jun 79/Jun 79	Jun 79
Space Segment		
System Design Review	Jan 80/Jan 80	Jan 80
Preliminary Design Review	Mar 80/Mar 80	Mar 80
Replenishment Satellite Contract Award	Oct 79/Oct 79	Oct 79

9. Schedule (Cont'd):

Block II Satellite Contract Award	Dec 80/Dec 80	Dec 80
Satellite Production Contract	Jan 82/Jan 82	Sep 82
First Launch Ready Satellite	Apr 85/Aug 86	Aug 86
Control Segment		
Development Contract Award	Sep 80/Sep 80	Sep 80
Operational Control Segment (FOC)	Nov 87/Nov 87	Nov 87
User Segment		
Phase IIB FSED Contract Awards	Jul 79/Jul 79	Jul 79
Begin DT&E/IOT&E	Jan 83/Aug 84	Aug 84
Complete DT&E/IOT&E	Aug 83/May 86	May 86 (Ch-1)
Source Selection	Apr 85/Apr 85	Apr 85
Phase III PDR	Dec 85/Dec 85	Dec 85 (Ch-3)
Production Contract Award	Jan 84/May 86	May 86 (Ch-2)
Phase III CDR	Jun 86/Jun 86	Jun 86 (Ch-3)
Program		
DSARC Milestone IIIA	Sep 83/May 86	May 86 (Ch-2)
Three Dimensional Capability (24 hrs/ day)	Dec 87/Dec 88	Dec 88
DSARC Milestone IIIB	Mar 89/Mar 89	Mar 89 (Ch-3)

b. Previous Change Explanations --

Satellite contract award date changed based upon 28 satellite block buy contract strategy vice annual buy contract strategy, with reprogramming approval also contributing to the delay. Delay of first launch ready satellite due to slip in schedule of contract award date. Slip of 3-D capability due to OSD reallocation of procurement satellite funding. Delay of IOT&E start for 3 months and then an additional 6 month delay due to user equipment contractor schedule slip, a result of receiver processor hardware/software problems. The final integration of Phase II R&D sets into the host vehicles and maturing the integrated system into a reliable system was underestimated in the development estimate. Source Selection was added to the schedule milestones in Dec 84. DSARC Milestone III was delayed 8 months from Sep 83 to May 84 due to user equipment contractor schedule slip. The UE Production Contract Award was delayed 3 months and then an addtional 6 month delay due to user equipment contractor schedule slip and further delayed to comply with Public Law 9894, which transformed DSARC Milestone III to DSARC Milestone IIIA, low rate initial production (LRIP), and for the technical reasons listed above. Field testing

9. Schedule (Cont'd):

difficulties further slipped that milestone completion into late 1985 in June 85. Army retesting did not provide sufficient data to support the Tri-Service DSARC Milestone IIIA, which caused a slip to Feb 86 in June 85.

c. Current Change Explanations --

(Ch-1) Reliability and maintainability problems identified during Phase II dictated additional testing. DT&E and IOT&E is required on the user equipment from Jul 85 to May 86 to demonstrate hardware and software fixes to deficiencies identified in Phase II. This was previously scheduled to end Dec 85.

(Ch-2) DSARC Milestone IIIA has changed from Feb 86 to May 86 due to the problems with reliability/maintainability of the user equipment and to allow the completion of Tri-Service IOT&E and preparation of required documentation. The Production Contract Award was subsequently slipped from Mar 86 to May 86.

(Ch-3) These milestones have been added since the last SAR. Milestone IIIB, user equipment full rate production, is required to comply with Public Law 9894.

d. References --

Development Estimate: Decision Coordinating Paper (DCP) #133, Revision B, 1 Feb 1980.

Approved Program: FY 1987 President's Budget.

10. Technical/Operational Characteristics:

	Dev Estimate/ Appr Program	Demonstrated Performance A/	Current Estimate
a. Technical --			
Expected Ground Power (End of Life) (dBW)			
a. L1 (C/A) D/	-160/-160		-160
b. L1 (Precision Code) D/	-163/-163		-163
c. L2 (Precision Code)	-166/-166		-166
Cesium Clock Stability (f/f) D/	$2X10^{-13}/2X10^{-13}$	$1.3X10^{-13}$	$2X10^{-13}$
Time Transfer (Universal Coordinated Time) (nsec)	$\pm100/\pm100$	±25	±100

10. (U) Technical/Operational Characteristics (Cont'd):

	Dev Estimate/ Appr Program	Demonstrated Performance A/	Current Estimate
(U) User Equipment Reliability Mean Time Between Maintenance (hrs) D/			
a. Airborne	550/550		550
b. Ground	850/850		850
c. Sea	900/900		900
(U) User Equipment Maintainability Manhours to Repair (hrs) D/			
a. Airborne	1.3/1.3		1.3
b. Ground	1.2/1.2		1.2
c. Sea	1.3/1.3		1.3
b. (U) Operational —			
(U) 3-D Position Accuracy of User Equipment D/ Spherical Error Probable (SEP)(m)	16/16	10 E/	16
(U) Block II Satellite Mean Mission Duration (yrs) D/	6/6	5 F/	6
(U) System Availability (%) B/ D/	98/98		98
(U) Anti-Jam Margins User Equipment While Signal Tracking (db J/S)			
(b)(1) [redacted]			
(U) Time Required to Change Degradation Level Of Clear			
(b)(1) [redacted]			

10. Technical/Operational Characteristics (Cont'd):

A/ The test results under demonstrated performance represent Phase I testing using prototype equipment that is representative of Phase II. Where no values appear, data is not yet available since either the characteristics have not been demonstrated or the Phase I prototye equipment does not reflect the Phase II operational design.
B/ Probability that a minimum of 18 satellites are operational at any time.
C/ Time required to change the degradation level of the selective availability.
D/ DCP Threshold.
E/ The 16 meter objective (18 satellite constellation) corresponds to 10 meters (24 satellite constellation, the current DT&E satellite spacing).
F/ Phase I spacecraft have a design mean mission duration of 4.6 year. The spacecraft in orbit are supporting testing in spite of several clock failures. Fixes implemented on NAVSTAR 3-6 and installed on the remaining Phase I spacecraft are expected to permit achieving the 6 year production mean mission duration.

c. Previous Change Explanations -- None. No previous changes.

d. Current Change Explanations -- None. No change in current estimates or demonstrated performance.

e. References:

Development Estimate: Decision Coordinating Paper (DCP) #133, Revision B, dated 1 Feb 80.

Approved Program: FY 1987 President's Budget.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Change	Current Estimate
a. Cost —			
Development (RDT&E)	$ 967.6	$+177.0	$1144.6
Procurement	623.4	+30.9	654.3
Space Segment	—	—	—
Spacecraft Flyaway	(583.6)	(+25.6)	(609.2)
Other Weapon System Cost	(39.8)	(+ 5.3)	(45.1)
Construction (MILCON)	8.4	-3.7	4.7
Total FY 79 Base-Year $	1599.4	+204.2	1803.6
Escalation	707.3	+100.7	808.0
Development (RDT&E)	(204.9)	(+103.5)	(308.4)
Procurement	(496.1)	(+.9)	(497.0)
Construction (MILCON)	(6.3)	(-3.7)	(2.6)
Total Then-Year $	$2306.7	$ 304.9	$2611.6
b. Quantities			
Development (RDT&E)	12	—	12
Procurement	28	—	28
Total	40	—	40
c. Unit Cost —			
Procurement:			
FY 79 Base-Year $	22.264	+1.104	23.368
Then-Year $	$ 39.982	$ +1.136	$ 41.118
Program:			
FY 79 Base-Year $	38.953	+6.137	45.090
Then-Year $	$ 57.668	$+7.622	$ 65.290

d. Approved Design to Cost Goal —

	(Average Unit Flyaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty: 28			
@ Peak Rate: 7/year			
FY 79 Base-Year $	20.336/20.336	21.141	25.000(+10%)
Then-Year $	54.812/54.812	56.334	N/A

e. Foreign Military Sales — None.

f. Nuclear Costs — None.

11. Program Acquisition Cost (Cont'd) (Current Estimate in Millions of Dollars)

g. User Equipment Cost Track (Escalated Dollars, $ Millions)

Development Estimate*

	RDT&E	Air Proc	Other Proc	Total	Qty
Army	142.3	232.6	64.5	439.4	6311
Navy	688.5	831.0	154.1	1,673.6	8012
AF	521.3*	2547.3	78.5	3147.1	12527**
TOTAL	1352.1	3610.9	297.1	5260.1	26850

Current Estimate

	RDT&E	Air Proc	Other Proc	Total	Qty
Army	142.3	232.6	64.5	439.4	6311
Navy	688.5	831.0	154.1	1673.6	8012
AF	521.3*	2547.3	78.5	3147.1	12527**
TOTAL	1352.1	3610.9	297.1	5260.1	26850

Changes

	RDT&E	Air Proc	Other Proc	Total	Qty
Army	--	--	--	--	--
Navy	--	--	--	--	--
AF	--	--	--	--	--
TOTAL	--	--	--	--	--

Program Acquisition Cost $5260.1
Total Quantity Sets 26850
Program Acq. Unit Cost (PAUC) $.196

*Includes Air Force RDT&E (FY89 and Prior) that is already included in existing SAR's funding profile.

**RDT&E (54 sets), Aircraft Procurement (11,363), Other Procurement (1110).

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition --			
(1) Cost	2611.6	2524.6	2611.6
(2) Quantity	40	40	40
(3) Unit Cost	65.290	63.115	65.290
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	197.4	197.4	129.7
Less CY Adv Proc	—	—	—
Plus PY Adv Proc	154.6	154.6	180.7
Net Total	352.0	352.0	310.4
(2) Quantity	9	9	8
(3) Unit Cost	39.111	39.111	38.800

13. Cost Variance Analysis:

a. 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	-31.0	-15.4	-1.5	-47.9
Quantity	—	—	—	—
Schedule	+6.8	+67.1	—	+73.9
Engineering	+106.4	+36.7	—	+143.1
Estimating	+95.8	-81.4	+0.6	+15.0
Other	—	—	—	—
Support	+6.0	+31.4	-6.5	+30.9
Subtotal	+184.0	+38.4	-7.4	+215.0
Current Changes:				
Economic	-3.8	-32.4	+.1	-36.1
Quantity	—	—	—	—
Schedule	—	—	—	—
Engineering	—	—	—	—
Estimating	+93.3	+39.5	-.1	+132.7
Other	—	—	—	—
Support	+7.0	-13.7	—	-6.7
Subtotal	+96.5	-6.6	0.0	+89.9
Total Changes	+280.5	+31.8	-7.4	+304.9
Current Estimate	1453.0	1151.3	7.3	2611.6

13. Cost Variance Analysis (Cont'd):

(FY 1979 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	967.6	623.4	8.4	1599.4
Previous Changes:				
Quantity	—	—	—	—
Schedule	+4.5	—	—	+4.5
Engineering	+64.6	+25.3	—	+89.9
Estimating	+45.6	-23.2	+0.4	+22.8
Other	—	—	—	—
Support	+3.8	+14.5	-4.1	+14.2
Subtotal	+118.5	+16.6	-3.7	+131.4
Current Changes:				
Quantity	—	—	—	—
Schedule	—	—	—	—
Engineering	—	—	—	—
Estimating	+54.5	+23.5	—	+78.0
Other	—	—	—	—
Support	+4.0	-9.2	—	-5.2
Subtotal	+58.5	+14.3	—	+72.8
Total Changes	+177.0	+30.9	-3.7	+204.2
Current Estimate	1144.6	654.3	4.7	1803.6

b. Previous Change Explanations --

RDT&E:

Economic: Revised economic escalation indices.

Schedule: One year acceleration in design/development of Flexible Modular Interface for tailoring user equipment to host vehicles.

Engineering: Support requirement to develop and to integrate product improvement on the Block II space vehicle. Funds were deleted for GPS User Charges with the GPS Survivability Program also being redefined.

Estimating: Funding for additional year in support of Control and User Segments partially offset by funds reprogrammed for NUDET-Detection System (NDS) Ground Command terminal for Space Command. Transfer of funds from aircraft procurement appropriation to RDT&E for integration studies on User Equipment host vehicle platforms.

Support: Funding for delay in Beneficial Occupancy Date for Master Control Segment move into Consolidated Space Operations Center.

13. Cost Variance Analysis (Cont'd):

Procurement:

Economic: Revised economic escalation indices.
Schedule: One year delay in satellite production start.
Engineering: Preplanning product improvements including improved crosslink ranging, additional hardening and autonomous housekeeping. This survivability effort was later redefined with funding reduced.
Estimating: Change in satellite procurement approach from an annual buy to a block buy. Savings partially offset by need to fully fund satellites by congressional direction. Adjustments for prior year escalation changes reduced then-year funding. Intra-appropriation reprogramming to realign the funding levels between GPS, PAM-D and NDS to buy schedules within the approved multi-year funding. Realignment of costs between support equipment and satellite hardware to correctly reflect actual breakout.
Support: Flight operations associated with the one year extension in the satellite program and realignment of costs between support equipment and satellite hardware to reflect actual breakout.

Construction:

Economic: Revised economic escalation indices.
Estimating: Adjustment for difference between President's Budget and required funding.
Support: Deletion of Consolidated Space Operation Center (CSOC) contingency funding.

c. Current Change Explanations --

(Dollars in Millions)

	Base-Year $	Then-Year $
(1) RDT&E:		
Revised economic escalation indices. (Economic)	N/A	-3.8
Reduced testing of Phase IIB User Equipment by AFOTEC. (Estimating)	-0.8	-1.2
FY84 contingent liabilities of contractual award fees withdrawn. (Estimating)	-0.9	-1.3
Adjustments for prior year escalation changes. (Estimating)	+0.8	+1.3

13. Cost Variance Analysis (Cont'd):

Engineering Change Order funding reduced at increased risk to absorb Congressional/HQ USAF directed unspecified funding cuts for FY86-91. (Estimating)	-4.2	-7.3
Increase of RDT&E funding to allow more Phase III host vehicle integration studies in FY87. (Estimating)	+13.0	+21.6
Funds provided in FY86-88 for necessary Control Segment modifications for interface with Block II satellites, extending navigation message service and to investigate and implement measures to extend the satellite life. (Estimating)	+46.6	+80.2
Funds provided for essential level of technical staff support. (Support)	+4.0	+7.0
(2) Procurement:		
Revised economic escalation indices. (Economic)	N/A	-32.4
Adjustments for prior year escalation changes. (Estimating)	+12.2	+21.2
Engineering Change Order funding at increased risk to absorb Congressional/HQ USAF directed unspecified funding cuts for FY86 (Estimating)	-3.6	-6.6
Additional funds provided for Orbital Insertion Motor and Data Transfer System for GPS Satellites (Estimating)	+5.7	+11.2
Adjustment for prior SAR categorization	—	—
Adjust Estimating category (Estimating)	+ 9.2	+13.7
Adjust Support category (Support)	- 9.2	-13.7
(3) MILCON:		
Revised economic escalation indices (Economic)	N/A	+.1

13. Cost Variance Analysis (Cont'd):

Adjustments for prior year escalation changes (Estimating)	0	-.1

d. References —

Development Estimate: Decision Coordinating Paper (DC) #133, Revision B, 1 Feb 1980.

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

Initial SAR/Development Estimate to Current Estimate

PAUC (Initial SAR/ Development Estimate)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
57.668	-2.100	—	+1.847	+3.577	+3.693	--	+.605	+7.622	65.290

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

a. RDT&E —

Satellite	Initial Contract Price Target	Ceiling	Qty
Rockwell International Seal Beach, CA, F04701-78-C-0153, FPIF/AF Award: November 16, 1980 Definitized: November 16, 1980	$14.1	$15.5	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$168.6(Ch-1)	$210.3(Ch-1)	1	$208.8 (Ch-1)	$209.3 (Ch-1)

Changes Since Previous Report: (Ch-1) Survivability modifications were made to the Qualification Test Vehicle (QTV). This included radiation hardening and extended navigation message service to the following boxes: Radio Frequency Digital Unit (RFDU), Digital Control Electronics Assembly (DCEA) and the Navigation Data Unit (NDU).

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$-37.0	$-7.1
Cumulative Variances to Date (11/30/85)	-35.0	-2.2
Net Change	+2.0	+4.9

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

Explanation of Change: The cumulative cost variance of ($35.0M) is primarily due to returned hardware (black box units) requiring additional rework retest and functional test support associated with anomaly trouble shooting. In addition, thermal vacuum testing at Arnold Engineering Development Center (AEDC) and functional baseline testing was greater than orginally planned.

The cumulative schedule variance for the GPS 12 Qualification contract is ($2.2M). The major cause for the schedule variance is the delay in delivery of black boxes from Strategic Defense and Electro-Optical System Division (SD & EOSD). This delayed the space vehicle shipment to AEDC for Thermal Vacuum Testing until 27 Mar 85. The space vehicle testing was completed on 19 Aug 85. The schedule variance has no impact on the contracts. The program manager's assessment is $1.0M below the ceiling price and is within approved funding.

\+ = Favorable - = Unfavorable

User Equipment	Initial Contract Price Target	Ceiling	Qty
Rockwell International Collins Cedar Rapids, Iowa F04701-85-C-0038, FPIF, Award: April 1, 1985 Definitized: April 1, 1985	$61.9	$66.3	51

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$61.9	$66.3	51	$62.1	$62.1

Changes Since Previous Report: None. This is the first time this contract appears in the SAR.

	Cost Variance	Schedule Variance
Previous Cumulative Variance	.0	—
Cumulative Variances to Date (11/30/85)	$-.1	$-3.9
Net Change	$-.1	$-3.9

Explanation of Change: The cumulative cost variance is insignificant.

The major reason for schedule delays is that the contractor did not anticipate the volume of CLIN 0013 tasks and Phase IIB tasks. The large volume has forced the contractor to divert more senior personnel to these areas leaving less senior personnel to perform other contract work. The shortage of manpower has caused delays in the design of Prime Mission Equipment and the replanning of some tasks. The schedule variance has no impact on the contract. The program manager's assessment remains at the ceiling price and is within approved funding.

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

Control	Initial Contract Price Target	Ceiling	Qty
IBM Gaithersburg, MD F4701-80-0011, FFP/AF Award: September 12, 1980 Definitized: September 12, 1980	$152.0	N/A	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
217.1(Ch-2)	N/A	1	220.4(Ch-2)	220.4(Ch-2)

Changes Since Previous Report: (Ch-2) The Master Control Station CPU was upgraded from 3033's to 3083 computers. The estimated price at completion increased due to the anticipation of placing software upgrades related to the 3083 hardware upgrade on contracts. The program manager's assessment is within approved funding. This contract is greater than 90% complete and will not be reported in the future.

b. Procurement --

Satellite	Initial Contract Price Target	Ceiling	Qty
Rockwell International Seal Beach, CA F04701-83-C-0031, FFP Award: May 20, 1983 Definitized: May 20, 1983	$1,171.0	N/A	28

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
1208.5(Ch-3)	N/A	28	1208.5(Ch-3)	1208.5(Ch-3)

Changes Since Previous Report:
(Ch-3) The current contract price changed due to the placing on contract of a supplemental agreement that covered global burst detection software, safe and arm modification, payload test variable and the orbital insertion motor.

c. MILCON -- No MILCON contracts.

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

a. Program Status --

(1) Percent Program Completed: 81.3% (13 yrs/16 yrs)

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

(2) Percent Program Cost Appropriated: 80.0% ($2089.7/$2611.6)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY74-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-89)	Balance To Complete Beyond FYDP N/A	Total
RDT&E	1165.0	89.4	198.6	—	1453.0
Procurement	917.4	129.7	104.2	—	1151.3
MILCON	7.3	—	—	—	7.3
Total	2089.7	219.1	302.8	—	2611.6

c. Annual Summary -

Fiscal Year	Qty	FY79 Base-Year Dollars			Then-Year Dollars			Escl Rate % 1/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1974	—	—	—	10.9	—	—	7.4	N/A
1975	—	—	—	32.0	—	—	23.9	9.8
1976	—	—	—	91.7	—	—	74.8	9.4
197T	—	—	—	15.1	—	—	13.3	4.9
1977	—	—	—	71.8	—	—	64.0	4.6
1978	—	—	—	70.2	—	—	67.0	7.1
1979	—	—	—	72.8	—	—	75.6	7.1
1980	—	—	—	118.1	—	—	136.3	9.4
1981	—	—	—	98.0	—	—	125.2	11.9
1982	—	—	—	121.1	—	—	165.4	9.2
1983	—	—	—	85.4	—	—	122.1	4.9
1984	—	—	—	81.0	—	—	120.5	3.9
1985	—	—	—	63.1	—	—	97.1	3.6
1986	—	—	—	45.4	—	—	72.4	3.2
1987	—	—	—	54.0	—	—	89.4	4.1
1988	—	—	—	57.2	—	—	98.2	3.9
1989	—	—	—	56.8	—	—	100.4	3.4
Subtotal	12	—	—	1144.6	—	—	1453.0	—

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

c. Annual Summary -

Fiscal Year	Qty	FY79 Base-Year Dollars			Then-Year Dollars			Escl Rate % 1/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1982	--	0.7	--	13.3	19.0	--	20.1	9.6
1983	--	21.9	--	69.3	111.5	--	111.5	9.0
1984	1	--	25.7	152.2	217.6	4.7	256.1	8.0
1985	6	--	128.7	190.6	183.0	76.3	332.3	4.1
1986	9	--	188.9	108.5	--	154.6	197.4	4.1
1987	8	--	158.6	68.2	--	180.7	129.7	4.1
1988	4	--	74.2	36.1	--	114.8	71.3	3.9
1989	--	--	10.5	16.1	--	--	32.9	3.4
Subtotal	28	22.6	586.6	654.3	531.1	531.1	1151.3	--
Appropriation: MILCON								
1984	--	--	--	4.7	--	--	7.3	3.8
Subtotal	--	--	--	4.7	--	--	7.3	--
Total	40	22.6	586.6	1803.6	531.1	531.1	2611.6	--

1/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures —

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated 1/	Expended 1/
Appropriation: RDT&E			
1974	7.4	7.4	7.4
1975	23.9	23.9	23.9
1976	74.8	74.8	74.8
197T	13.3	13.3	13.3
1977	64.0	64.0	64.0
1978	67.0	67.0	67.0
1979	75.6	75.6	75.6
1980	136.3	136.3	136.3
1981	125.2	125.2	125.2
1982	165.4	165.4	165.4
1983	122.1	122.1	122.1
1984	120.5	120.2	109.9
1985	97.1	94.1	55.8
1986	72.4	27.1	4.1
To Complete	288.0	N/A	N/A
Total	1453.0	1116.4	1044.8
Appropriation: Procurement			
1982	20.1	20.1	20.1
1983	111.5	111.5	111.5
1984	256.1	255.6	128.4
1985	332.3	314.8	138.6
1986	197.4	190.7	0
To Complete	233.9	N/A	N/A
Total	1151.3	892.7	398.6
Appropriation: MILCON			
1984	7.3	7.3	7.3
Total	7.3	7.3	7.3

1/ Reflects Program Office records as of 31 Dec 85

17. Production Rate Data:

a. Annual Production Rates -- Annual production rates shown differ from the annual funded quantities because the funded delivery period is 39 months for FY84, 42 months for FY85, 54 months for FY86, 42 months for FY87 and 36 months for FY88.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1984	.3	.3	.3	.3
1985	1.7	1.7	1.7	1.7
1986	2.0	2.0	2.0	2.0
1987	2.8	2.8	2.8	2.8
1988	1.3	1.3	1.3	1.3

b. Cost Variance -- Dollars in Millions -- Maximum production rate is being reached based on contractor's current two shifts and that the contractor is tooling up as fast as feasible.

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY$)	1803.6	0.0	1803.6	0.0	1803.6
	(TY$)	2611.6	0.0	2611.6	0.0	2611.6
PAUC	(BY$)	45.090	0.0	45.090	0.0	45.290
	(TY$)	65.290	0.0	65.290	0.0	65.290

c. Schedule Variance -- (Note: Subject to the limitations on production rates above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	9/83	--	9/83	--	9/83
Duration (in Months)	85	--	85	--	85
End Date (Mo/Yr)	9/90	--	9/90	--	9/90

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	12/12
Procurement	0/0

18. Operating and Support Costs -- N/A

N-4 AV-8B

(5) [redacted]

SAR-85-012

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: AV-8B

AS OF DATE: DECEMBER 31, 1985*

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1. Designation and Nomenclature: AV-8B/Attack, V/STOL, Close Air Support (Harrier II)

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

2. DoD Component: Department of the Navy

11 AS AMENDED

3. Responsible Office and Telephone Number:
Harrier Program Office
Naval Air Systems Command
Washington, D.C. 20361

PM: John A. Conners
Assigned: Dec 13, 1985
AV 222-8324; COMM (202) 692-8324

4. Program Elements:
RDT&E: 64214N
PROCUREMENT: 26110M; 26497M APPN 1506 ICN 0124
MILCON: 26496M, 26497M

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OASD(PA) DFOISR 86-0886

5. Related Programs: F/A-18, F-15, GR5 (UK collaborative program), and AV-8B(S) Spanish program.

6. Mission and Description: The AV-8B (Harrier II) is a second generation vertical/short takeoff and landing (V/STOL) light attack jet aircraft to be utilized by the Marine Corps. The primary mission of the AV-8B is to provide responsive close air support for the ground forces. This single piloted advanced V/STOL aircraft can operate from short fields, forward sites, roads and surface ships providing minimum response time to target. The aircraft incorporates basic aerodynamic improvements such as a composite, super critical high lift wing leading edge root extension, engine inlet modification, lift improvement devices, composite forward fuselage as well as a modern avionics package. The AV-8B is a transonic aircraft designed to carry up to 9200 lbs. of conventional ordnance including 4 AIM-9 Sidewinder missiles and a 25mm high rate of fire gattling gun. The Marine Corps plans to replace all of its AV-8As and A-4M squadrons with the newer AV-8B, thus transitioning to an all Harrier II light attack force by the early 1990s. A two seat trainer is planned for 1987. A night attack version, incorporating a forward looking infrared sensor (FLIR), is in development for an early 1989 fleet introduction.

7. Program Highlights:

a. Significant Historical Developments: DSARC I (March 1976) authorized two prototype aircraft, designated YAV-8Bs, to be built in order to validate aspects of the AV-8B. As a result of this flight demonstration phase (FDP) trials involving the validation of maximum weight vertical takeoff's (VTO's) and short takeoff's (STO's) as well as sustained "G" and cruise performance, a Milestone II decision supported entering full scale development (FSD). FSD utilized the FDP validation phase results wherever possible. Laboratory and ground test results included over 13,000 wind tunnel hours, complete (static, drop, and fatigue) structural qualification, manned flight simulation, and functional avionics integration. FSD flight tests were conducted using one YAV-8B, 4 FSD AV-8B's and 2 production aircraft as required. Eleven Navy developmental test and evaluation periods were completed. DNSARC IIIA, July 1983, released funds for the limited production aircraft and approved long lead funding for 1984. Final technical evaluation (TECHEVAL) completed in October 1984. FSD aircraft flew a total of 2157 sorties and 2288 flight hours in support of operational evaluation (OPEVAL) which commenced in the fourth quarter of FY-84.

b. Significant Developments Since Last Report: OPEVAL Phase I (air-to-ground) completed 6 February 1985. OPEVAL Phase II (air-to-air) completed 30 March 1985. A Phase I quick look report was published on 11 March 1985 indicating the AV-8B OPEVAL "was the best OPEVAL conducted in nearly three years". Milestone IIIB occurred in May 1985. Authorization for full production (AFP) was granted by the Secretary of the Navy on 9 September 1985. In calendar year 1985, 24 production AV-8Bs were delivered. Total production deliveries through December 1985 number thirty-seven. The AV-8B program has now shifted to DT-III final development phase with B-1

b. Significant Developments Since Last Report: (continued)

conducting concurrent -406 engine TECHEVAL and LPD ship certification. B-2 is conducting digital engine control testing. B-3 is preparing for weapon system incorporation and B-4 is conducting weapons envelope expansion. Thus far, 422 final development phase flights have been flown. The TAV-8B FSD program is conducting sequence and divergence sled testing in preparation for first flight in December 1986. The AV-8B night attack development program is conducting FLIR installation trade studies, low speed and polysonic wind tunnel tests, and FLIR location flight testing. To date approximately 50% of the design engineering has been completed. First flight of the night attack AV-8B is scheduled for May 1987. The AV-8B fulfills the Marine Corps requirement to provide timely and accurate close air support for the ground forces. In addition, the aircraft maintains the capability of versatile operations including the capability to operate from roads, grass fields, forward sites and amphibious ships.

c. Changes Since "As Of" Date - - None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 20 June 1979) threshold breaches.

9. Schedule:

a. (U) Milestones	Development Estimate/ Approved Program	Current Estimate	
Program Initiated (DSARC I)	Mar 76	Mar 76	
First Flight YAV-8B Prototype	Dec 78	Nov 78	
DSARC II (FSD)	Jun 79	Jul 79	
FSD Contract Award	Jun 79	Aug 79	
Critical Design Review	Jul 80	Jul 80	
First Flight AV-8B (FSD)	Oct 81	Nov 81	
Award of Production Contract	Apr 82	Apr 82	
TECHEVAL Avionics	Sep 83	Oct 84	
TECHEVAL Performance	Sep 83	Oct 84	
OPEVAL	Dec 83	Mar 85	
Milestone IIIB	Apr 85	May 85	CH-1
IOC	Jun 85	Aug 85	

b. Previous Change Explanations - Technical performance slipped 5 months due to lack of sufficient instrumented test program.

c. Current Changes Explanations:
(CH-1) Program briefing approval in May 1985.

d. References: DCP 160 dtd 20 June 1979 and approved September 1979.
Approved Program: FY 1987 President's Budget

10. (U) Technical/Operational Characteristics:

a. Technical	Dev. Estimate/ Appvd. Program	Demonstrated Performance	Current Estimate
(U) Weight (lbs) Empty	12,750	12,835	13,126 (CH-1)
(U) Speed Maximum (Mach No.)	0.91	0.905	.91
(U) Dimensions (ft)			
Length	46.33	46.33	46.33
Height	11.65	11.65	11.65
Span	30.33	30.33	30.33
(U) Spotting Factor (A-7=1.0)	.95	TBD	.95
b. Operational			
(U) Maximum Vertical Gross Take-Off (VTO) Weight (lbs)	19,185	18,935	19,185
(U) Maximum Short Gross Take-off (STO) (Weight) (lbs) (1,000 ft. roll)	28,350	27,950	28,350
(U) Close Air Support Radius of Action (NM)			
VTO	50	TBD	50
STO	209	155	155
(U) Mean Flight Hours Between Failures (MFHBF), (hrs.)	2.40	2.04	2.04
(U) Maintainability (DMMH/FH), (hrs.)	16.9	16.5	16.5
(U) Standard Depot Level Maintenance Cycle (Airframe Hours)			
1st Period	1,000	TBD	1,000
2nd Period	800	TBD	800
3rd Period	600	TBD	600
(U) VTO Close Air Support Payload (lbs)	2,850	TBD	2,850
(U) STO Close Air Support Payload (lbs) (600' 20 kts WOD 89°F Tropical Day)	7,980	TBD	7,980

(b)(1) [redacted]

[redacted]

10. (U) Technical/Operational Characteristics: (continued)

c. Previous Change Explanations - Current estimate reflects known weight growth to accommodate LERX, 25mm gun provisioning, and deficiencies corrections. Speed maximum (mach number), maximum vertical take off (VTO) weight (pounds) and maximum short grass take off (STO) demonstrated performance reflects RR-404 engine. Current estimate based upon production RR-406 engine. Close air support radius of action (NM) STO, current estimate and demonstrated performance changed to reflect specific mission profile from MS IIIA DNSARC and 5 Aug 1984 DCP. Mean flight hours between failures (MFHBF) (hrs). Maintainability (DMMH/FH) and gun accuracy (Mils) current estimate changes to reflect demonstrated performance.

d. Current Change Explanations
(CH-1) Current estimate reflects known weight growth to accommodate LERX, 25mm gun provisioning, and deficiencies corrections. Demonstrated performance in all other categories reflects RR-F404 engine. Current estimates are based upon production RR-F406 engine.

d. References - DCP 160 dated 20 June 1979 and approved September 1984.
Approved Program: FY 1987 President's Budget

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost - -	Development Estimate	Changes	Current Estimate
Development (RDT&E)	$ 872.7	$+194.5	$ 1067.2
Procurement	4862.4	-851.2	4011.2
Airframe	(2650.5)	(-416.4)	(2234.1)
Engine	(899.0)	(-478.9)	(420.1)
Avionics	(258.9)	(-6.2)	(252.7)
Other GFE	(145.5)	(+ 66.6)	(212.1)
Total Flyaway	(3953.9)	(-834.9)	(3119.0)
Other Wpn Sys Cost	(439.3)	(+101.2)	(540.5)
Initial Spares	(469.2)	(-117.5)	(351.7)
Construction (MILCON)	5.5	0	5.5
Total FY79 Base-Year $	$ 5740.6	$-656.7	$ 5083.9
Escalation	3384.9	+636.0	4020.9
Development (RDT&E)	(185.3)	(+106.0)	(291.3)
Procurement	(3196.8)	(+530.0)	(3726.8)
Construction (MILCON)	(2.8)	(0)	(2.8)
Total Then-Year $	$9125.5	$ -20.7	$9104.8
b. Quantities - -			
Development (RDT&E)	6	-	6
Procurement	336	-8	328
Total	342	-8	334

11. Program Acquisition Cost (continued)

c. Unit Cost - -

Procurement:			
FY79 Base-Year $	$ 14.5	-2.3	12.2
Then-Year $	24.0	-.4	23.6
Program:			
FY79 Base-Year $	16.8	-1.6	15.2
Then-Year $	$ 26.7	+.6	27.3

d. Approved Design to Cost Goal - - Not applicable.

e. Foreign Military Sales -- At present there is a Spanish FMS case for 12 aircraft. The planned recoupement was $10,408,476. A waiver of $5,204,232 was granted by DSAA. The revised recoupment is $5,204,244.

f. Nuclear Cost - - None.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
a. Program Acquisition - -	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
(1) Cost	9,104.8	10,498.3	9,104.8
(2) Quantity	334	334	334
(3) Unit Cost	27.3	31.4	27.3
b. Current Procurement - -	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	918.9	1076.7	761.9
Less CY Adv Proc	-83.1	-86.6	-77.0
Plus PY Adv Proc	+80.4	+80.4	+83.1
Net Total	916.2	1070.5	768.0
(2) Quantity	46	46	42
(3) Unit Cost	19.9	23.3	18.3

13. Cost Variance Analysis:

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

	RDT&E	Proc	MILCON	Total
Development Estimate	1058.0	8059.2	8.3	9125.5
Previous Changes:				
Economic	+8.2	-375.1	-	-366.9
Quantity	-	-171.0	-	-171.0
Schedule	+17.7	+881.4	-	+899.1
Engineering	+181.1	+442.4	-	+623.5
Estimating	+110.4	-588.2	+11.2	-466.6
Other	-	-	-	-
Support	-	+854.7	-	+854.7
Subtotal	+317.4	+1044.2	+11.2	+1372.8
Current Changes:				
Economic	-1.8	-478.6	-	-480.4
Quantity	-	-	-	-
Schedule	-	+229.4	-	+229.4
Engineering	-	+66.2	-	+66.2
Estimating	-15.1	-521.4	-11.2	-547.7
Other	-	-	-	-
Support	-	-661.0	-	-661.0
Subtotal	-16.9	-1365.4	-11.2	-1393.5
Total Changes	+300.5	-321.2	-	-20.7
Current Estimate	1358.5	7738.0	8.3	9104.8

(FY 1979 Constant (Base Year) Dollars in Millions)

	RDT&E	Proc	MILCON	Total
Development Estimate	872.7	4862.4	5.5	5740.6
Previous Changes:				
Quantity	-	-77.6	-	-77.6
Schedule	+10.8	+430.3	-	+441.1
Engineering	+115.7	+198.9	-	+314.6
Estimating	+65.0	-1020.1	+6.8	-948.3
Other	-	-	-	-
Support	-	+183.5	-	+183.5
Subtotal	+191.5	-285.0	+6.8	-86.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+187.4	-	+187.4
Engineering	-	+31.3	-	+31.3
Estimating	+3.0	-649.6	-6.8	-653.4
Other	-	-	-	-
Support	-	-135.3	-	-135.3
Subtotal	+3.0	-566.2	-6.8	-570.0
Total Changes	+194.5	-851.2	-	-656.7
Current Estimate	1067.2	4011.2	5.5	5083.9

13. Cost Variance Analysis: (continued)
b. Previous Change Explanations:

RDT&E

Economic:	Revised escalation rates.
Schedule:	Extend flight test program 2 years for follow-on flight test program.
Engineering:	Addition of design/fabrication/integration/test of 25mm gun pak, development of the TAV-8B. Increase for night attack capability with United Kingdom FLIR system.
Estimating:	Decreased currency conversion rate for engine procurement, decrease offset for new economic indices, and refinement of estimate, base year adjustment and prior year reprogrammings, prior year increase due to foreign exchange adjustment, and increase for TAV-8B.

Procurement

Economic:	Correction of application of procurement outlay factors and revised escalation rates.
Quantity:	Reduction in aircraft from 336 to 328.
Schedule:	Revised procurement schedule for 336 aircraft accelerated procurement schedule.
Engineering:	Addition of ASPJ. Increase due to night attack capability, ASPJ and ECPs which provide recurring systems for aircraft procured in FY-88 and subsequent years.
Estimating:	Decreased currency conversion rate for engine procurement, offset for new economic decrease, correction of procurement outlay factor, and refinement of estimate, decrease dollar pound exchange rate, quantity adjustment, base year adjustment, and FY-82/FY-83 reprogramming. Prior year contracts negotiated lower than anticipated (-32.2), exchange rate change (+536.6) and repricing based on negotiation of FY-84 airframe and engine contracts.
Support:	Increased spares and PSE due to redefinition and refinement of requirements, reduce spares required due to reduced aircraft buy. Outyear increases in GSE, pubs, ILS/ME and spares to accommodate night attack, ASPJ and other configuration ECP's.

MILCON

Economic:	Revised escalation rates.
Estimating:	Base year adjustments. Increase due to hangar project at MCAS Cherry Point and hangar requirements at MCAS Yuma not previously reported for FY-85 and FY-86.

13. Cost Variance Analysis: (continued)

c. Current Change Explanations

	(Dollars in Millions) Base Year	Then-Year
(1) RDT&E		
Economic:	-	-1.8
Estimating:	+3.0	-15.1
Anticipated savings in TAV-8B and night attack.	(-10.1)	(-15.1)
Correction of error in computation of inflation indices.	(+13.1)	(0)
(2) Procurement		
Economic:	-	-478.6
Schedule:	+187.4	+229.4
Revised Schedule Change From: FY86 & Prior FY87 FY88 FY89 FY90 FY91 138 A/C 47 48 60 35 To: 138 A/C 42 42 42 42 22		
Engineering: Increase due to schedule change.	+31.3	+66.2
Estimating: Decrease due to overhead and labor rate decrease at MCAIR.	-649.6	-521.4
Repriced based on prior year negotiated contracts for engine and airframe.	(-462.3)	(-521.4)
Correction of error due to computation of inflation indices.	(-49.0)	(0.0)
Adjustment to correct should be in support variance.	(-138.3)	(0.0)
Support:	(-135.3)	(-661.0)
Decrease in pubs, ground support equipment, training due to refined pricing based on contract negotiated lower than anticipated.	(-183.8)	(-431.6)
Decrease in spares due to refined prices because of airframe and engineer contracts negotiated lower than anticipated.	(-89.8)	(-229.4)
Support adjustment due to error in prior SARS in estimated variance category.	(+138.3)	(0.0)

13. Cost Variance Analysis: (continued)

(3) MILCON

Deletion of requirements for hangars at MCAS Yuma.	-6.8	-11.2

d. References: Development estimate based on DCP #160 dtd 20 June 1979. Current estimate based on FY 1987 Presidential Budget.

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

a. Initial SAR Estimate to Current Baseline Estimate -

(1) Same as current baseline.

b. Current Baseline Estimate to Current Estimate -

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
26.7	-2.5	+.1	+3.4	+2.0	-3.0	+.6	-	+.6	27.3

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

a. Procurement

Airframe	Initial Contract Price Target	Ceiling	Qty
McDonnell Douglas Corp., St. Louis, Missouri, N0001982-C-0359, FFP, Award: September 7, 1983 Definitized: May 24, 1985	$405.0	$ N/A	27

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$ 496.5	$ N/A	27	$ 496.5	$ 496.5

Variance analysis does not apply to FFP contracts.

Engine	Initial Contract Price Target	Ceiling	Qty
Rolls Royce, Ltd. Bristol, England N0001982-C-0436, FFP, Award: May 19, 1983 Definitized: March 27, 1985	$ 69.9	$ N/A	27

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$ 81.1	$ N/A	27	$ 81.1	$ 81.1

Variance analysis does not apply FFP contracts.

Airframe	Initial Contract Price Target	Ceiling	Qty
McDonnell Douglas Corp., St. Louis, Mo. N0001983-C-0267, FFP, Award: February 24, 1984 Definitized: Not Definitized	$ 363.0	$ N/A	32

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$ 436.7	$ N/A	32	$ 436.7	$ 436.7

Variance analysis does not apply to FFP contracts.

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

Engine	Target	Ceiling	Initial Contract Price Qty
Rolls Royce, Ltd., Bristol, England N0001983-C-0255, FFP, Award: February 24, 1984 Definitized: Not Definitized	$ 60.7	$ N/A	32

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 109.3	$ N/A	32	$ 109.3	$ 109.3

Variance analysis does not apply to FFP contracts.

Airframe	Target	Ceiling	Initial Contract Price Qty
McDonnell Douglas Corp., St. Louis, Mo. N0001985-C-0109, FFP, Award: March 29, 1985 Definitized: Not Definitized	$ 63.0	$ N/A	46

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 63.0	$ N/A	46	$ 534.0	$ 534.0

Variance analysis does not apply to FFP contracts.

Engine	Target	Ceiling	Initial Contract Price Qty
Rolls Royce, Ltd., Bristol, England N0001984-C-0340, FFP, Award: August 19, 1985 Definitized: Not Definitized	$ 13.9	$ N/A	46

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 13.9	$ N/A	46	$ 115.0	$115.0

Variance analysis does not apply to FFP contracts.

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

a. Program Status --

(1) Percent Program Completed: 68.8% (11 yrs./16 yrs.)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 57.7% ($5248.5/$9104.8)
(Funds Appropriated to Date in Millions/Total Program Funding in Millions)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY76-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Balance To Complete Beyond FYDP (FY92)	Total
RDT&E	1261.1	48.6	48.8	-	1358.5
Procurement	3979.1	761.9	2997.0	-	7738.0
MILCON	8.3	-	-	-	8.3
Total	5248.5	810.5	3045.8	-0-	9104.8

c. Annual Summary

Fiscal Year	Qty	FY79 Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl Rate (%)
		Appropriation: RDT&E						
1976				5.2			4.3	6.6
197T				2.2			1.9	2.9
1977				37.6			33.6	2.6
1978				61.2			58.9	6.8
1979	2			158.8			168.7	8.4
1980				155.3			182.4	10.6
1981				186.6			239.1	10.6
1982	4			167.7			226.2	7.6
1983				83.4			117.5	4.9
1984				69.5			101.9	3.8
1985				40.4			61.3	3.6
1986				41.6			65.3	3.2
1987				29.8			48.6	4.1
1988				12.1			20.5	3.9
1989				3.7			6.4	3.4
1990				6.0			10.8	2.9
1991				6.1			11.1	2.3
Subtotal	6			1067.2			1358.5	

16. Program Funding Summary: (continued)
c. Annual Summary (continued)

Fiscal Year	Qty	FY79 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
		Appropriation: Procurement						
1981				59.0	86.6	-	86.6	11.6
1982	12	14.1	322.2	403.2	35.5	86.6	650.3	14.3
1983	21	3.6	286.8	478.7	59.9	35.5	817.1	9.0
1984	27	.8	270.9	449.4	96.6	59.9	810.6	8.0
1985	32	5.4	261.8	370.4	80.4	96.6	695.5	4.1
1986	46	10.3	374.7	473.8	83.1	80.4	918.9	4.1
1987	42	7.7	317.0	376.3	77.0	83.1	761.9	4.1
1988	42	2.9	357.9	436.2	80.4	77.0	905.6	3.9
1989	42	1.4	354.3	413.4	79.8	80.4	880.3	3.4
1990	42		334.4	374.4	82.6	79.8	814.5	2.9
1991	22		192.7	176.4		82.6	396.7	2.3
Subtotal	328	46.2	3072.7	4011.2	761.9	761.9	7738.0	
Appropriation: MILCON								
1983				3.2			4.6	4.9
1986				2.3			3.7	3.2
Subtotal				5.5			8.3	
Total	334	46.2	3072.7	5083.9	761.5	761.9	9104.8	

d. Obligations and Expenditures

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation:	RDT&E	
1976	4.3	4.3	4.3
197T	1.9	1.9	1.9
1977	33.6	33.6	33.6
1978	58.9	58.9	58.9
1979	168.7	167.0	167.0
1980	182.4	182.4	182.4
1981	239.1	239.1	235.9
1982	226.2	226.2	223.7
1983	117.5	117.5	108.4
1984	101.9	101.9	80.7
1985	61.3	61.2	3.4
1986	65.3	26.6	-
To Complete	97.4	N/A	N/A
Total	1358.5	1220.6	1100.2

16. Program Funding Summary: (continued)
d. Obligations and Expenditures (continued)

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation:	Procurement	
1981	86.6	86.6	83.2
1982	650.3	650.3	600.2
1983	817.1	812.3	677.2
1984	810.6	765.9	329.8
1985	695.5	463.5	57.7
1986	918.9	88.8	3.0
To Complete	3759.0	N/A	N/A
Total	7738.0	2867.4	1751.1
	Appropriation: MILCON		
1983	4.6	3.7	2.9
1986	3.7	-	-
To Complete	N/A	-	-
Total	8.3	3.7	2.9

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum Economic
1981	-	-	-	-
1982	12	12	12	12
1983	24	21	21	21
1984	54	27	27	27
1985	54	32	32	32
1986	54	46	46	46
1987	54	42	42	42*
1988	54	42	42	72
1989	30	42	42	72
1990		42	42	72
1991		22	22	72

*Note: Adv procurement FY87 for FY88 will have to increase quantity from 42 to 72 and also increase the dollars by +55M.

b. Cost Variance -- Dollars in Millions

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog. Acq. Cost	(BY$)	5083.9	-0-	5083.9	+59.7	5143.6
	(TY$)	9104.8	-0-	9104.8	+80.4	9185.2
PAUC	(BY$)	15.2	-0-	15.2	+.2	15.4
	(TY$)	27.3	-0-	27.3	+.2	27.5

17. Production Rate Data: (continued)

c. Schedule Variance --

	Production Estimate	Variance (CE vs. PdE)	Current Estimate	Variance (CE vs. Max)	Maximum
Start Date (Mo/Yr)	4/86	-0-	4/86	N/A	4/86
Duration (in Months)	90	-0-	90	-34	56
End Date (Mo/Yr)	9/93	-0-	9/93	N/A	4/91

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	6/ 6
Procurement	39/37

18. Operating and Support Costs: Not Applicable.

AF-6 B-1B

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

PROGRAM: B-1B

AS OF DATE: 31 December 1985

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MAR 13 1986 18
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. Designation/Nomenclature (Popular Name): B-1B

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

B-1B Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH

PM: Maj Gen Peter W. Odgers
Assigned: 15 July 1985
AV: 785-3281 COMM: (513)255-3281

4. Program Elements:

RDT&E: PE 64226F APPN: 3600 (No Shared Funding)
PROCUREMENT: PE 11126F APPN: 3010 ICN# B001B0 (No Shared Funding)
MILCON: None

5. Related Programs: B-1B Simulator, Common Strategic Rotary Launcher (CSRL), Air Launched Cruise Missile (ALCM), Advanced Cruise Missile (ACM)

6. Mission and Description: The major purpose of the B-1B is to modernize the aircraft leg of the Strategic Triad. The B-1B has the capability to perform the missions of conventional bomber, cruise missile launch platform and a nuclear weapon delivery system in both the strategic and tactical roles. The long range and large payload of the B-1B make it an ideal aircraft to support the United

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CLASSIFIED BY: B-1B SPO, 31 Oct 84
DECLASSIFY ON: 31 Dec 2001

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6. Mission and Description (Cont'd):

States' deterrent posture across the full spectrum of conflict. The B-1B uses the B-1A aerodynamic shape and structure, as well as many of the B-1A systems. The B-1B will have a heavyweight landing gear and will be powered by four F101-GE-102 afterburning turbofan engines which are a direct derviative of the F101-GE100 engines used on the original B-1A. The avionics systems are updated to accommodate revised B-1B missions, counter new threats, and employ currently available equipment and technology. The communications and traffic control group remains essentially the same as B-1A A/C , except current inventory replacements and AFSATCOM are used. The offensive systems group maximizes the use of B-52 Offensive Avionics System equipment as well as adding a new forward Looking Radar/Terrain Following Sensor and a new inertial system. The Defensive Systems Group improves on the capabilities of the ALQ-161 as well as adding smart jamming enhancements and a Tail Warning Function. The B-1B weapon system will be able to deliver conventional as well as nuclear ordnance. The 100 B-1B aircraft will modernize the bomber leg of the Strategic Triad by partially replacing the 1950's designed B-52.

7. Program Highlights:

a. Significant Historical Developments.

The 1981 Defense Authorization Act directed the Department of Defense to vigorously pursue full scale engineering development of a strategic multirole bomber. As a result of the Joint OSD/Air Force Bomber Alternatives Study, the Administration directed in October 1981 that the B-1B be produced. The baseline configuration for the B-1B aircraft was established 4 November 1981 by the DepSecDef. Production and FSD contracts were awarded to Rockwell, General Electric, AIL, and Boeing in early 1982. B-1A A/C #2 started in the B-1B flight test program in March 1983 but was lost in a catastrophic crash in August 1984. Flight test continued with B-1A A/C #4. The rollout of the first B-1B occurred on 4 September 1984, several weeks ahead of schedule. First flight occurred 18 October 1984, five months ahead of schedule. The aircraft is currently performing flight test activities at Edwards AFB, CA.

b. Significant Developments Since Last Report.

The Functional Configuration Audit/Physical Configuration Audit (FCA/PCA) for the B-1B Crew Egress Maintenance Trainer was held at Rockwell International 22-24 January 1985. The review was very successful and a configuration baseline was established. B-1A Mission 4-99, flown on 28 Mar 85, was configured with operational offensive and defensive avionics systems. The Offensive Systems Operator reported he could clearly identify bridges, piers, buildings, etc. in the San Francisco Bay area. The first B-1B production aircraft going to the Strategic Air Command (SAC) (B-1B A/C #2) arrived at SAC HQs with the Secretary of the Air Force aboard on 27 June 1985. B-1B A/C #3 and A/C #4 were also delivered to SAC during 1985--ahead of the contract schedule.

The B-1B is expected to meet all current mission requirements.

7. Program Highlights (Cont'd):

c. Changes Since "As Of" Date -- none.

Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 30 Sep 83), or SDDM (dated 4 Nov 81) threshold breaches.

9. Schedule:

a. Milestones:	Development Estimate/ Approved Program	Current Estimate
R&D Contract Award	Jan 82/Jan 82	Jan 82*
Production Contract Award	Jan 82/Jan 82	Jan 82*
Engineering Review	Apr 82/Apr 82	Apr 82*
OSD Program Review	Sep 82/Feb 83	Feb 83*
Configuration Review	Jan 83/Jan 83	Jan 83*
DT&E/IOT&E Start	Apr 83/Apr 83	Mar 83*
First Flight B-1/Aircraft #2	Apr 83/Apr 83	Mar 83*
First B-1B Flight	Mar 85/Mar 85	Oct 84*
FOT&E Phase I Start	Oct 85/Oct 85	Jul 85*
DT&E/IOT&E Complete	Jun 86/Jun 86	Sep 86 (Ch-1)
IOC (15th Aircraft Delivery)	Sep 86/Sep 86	Sep 86
FOT&E Phase I Complete	Oct 87/Oct 87	Jun 88 (Ch-2)
Production Complete (100 A/C)	Jun 88/Jun 88	Jun 88

* Reflects actual dates of accomplishment

b. Previous Change Explanations

OSD Program Review changed to Feb 83 by OSD direction. DT&E Start and First Flight of B-1A Aircraft #2 occurred in March 1983, one month ahead of schedule. Rollout of B-1B #1 was early, resulting in an early first flight. Delivery of B-1B Aircraft #2 to Dyess AFB was ahead of schedule and allowed early start of FOT&E Phase I. Extension of FOT&E Phase I reflects updated plan by AFOTEC.

c. Current Change Explanation

(Ch-1) DT&E/IOT&E effort extended to fully demonstrate IOC capabilities.
(Ch-2) Reflects second updated plan by AF Operational Test and Evaluation Center

d. References --

Development Estimate: DCP dated 30 Sep 83

Approved Program: PMD R-Q1010(5); 64226F/11126F dated 28 May 82; DepSecDef B-1 Program Memorandum dated 4 Nov 81 as amended by PMD R-Q1010(8), 64226F/11126F, 8 Feb 84.

(U) Technical/Operational Characteristics:

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a. (U) Technical			
(U) Speed (MACH #):			
(U) Best cruise at altitude	0.72/0.72		0.72
(b)(1)			
(U) Weapon Carriage			
(U) AGM-69A (Internal)	24/24		24
(U) AGM-86B (Internal/External)	8/14/8/14		8/14
(U) B61/B83 (Internal)	24/24		24
(U) MK-82 AIR/36DST(AIR)(Internal)	84/84		84
(U) Takeoff Distance (feet)			
(U) 470,000 pound A/C	9,300/9,300		9,300
(U) 440,000 pound A/C	6,000/7,600		7,600
(b)(1)			
(U) Weight empty (pounds)	186,000/186,000		186,000
b. (U) Operational			
(b)(1)			
(U) Reliability	0.92/0.92		0.92
(U) Readiness/Supportability:			
(b)(1)			
(U) Maintainability (B-1B Sys)	37.6/37.6		37.6
(U) Mean Time Between Unsched Maintenance Actions (Flight Hours)	1.0/1.0		1.0

c. (U) Previous Change Explanations -- None

d. (U) Current Change Explanations -- None

e. (U) References --
Development Estimate: DCP dated 30 Sep 83
Approved Program: - PMD R-Q1010(5); 64226F/11126F dated 28 May 82;
- DepSecDef B-1 Program Memorandum dated 4 Nov 81
as amended by PMD R-Q1010(8), 64226F/11126F, 8 Feb 84

Classified By: B-1B Security Classification Guide, 31 Oct 84
Declassify On: 31 December 2001

. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate (FY81-87)	Changes	Current Estimate (FY81-89)
a. Cost --			
Development (RDT&E)	2538.9	35.0	2573.9
Procurement	17961.1	-671.8	17289.3
Airframe	(10584.9)	(-391.3)	(10193.6)
Engine	(1859.3)	(-633.1)	(1226.2)
Avionics	(2684.7)	(+502.2)	(3186.9)
Total Flyaway	(15128.9)	(-522.2)	(14606.7)
Peculair Support	(1768.0)	(-132.8)	(1635.2)
Initial Spares	(1064.2)	(- 16.8)	(1047.4)
Construction (MILCON)*	-	-	-
Total FY Base-Year	20500.0	-636.8	19863.2
Escalation	9037.6	-1712.4	7325.2
Development (RDT&E)	(583.2)	(-86.6)	(496.6)
Procurement	(8454.4)	(-1625.8)	(6828.6)
Construction (MILCON)*			
Total Then-Year $	29537.6	-2349.2	27188.4
b. Quantities --			
Development (RDT&E)			
Procurement	100	-	100
Total	100	-	100
c. Unit Cost --			
Procurement:			
FY 81 Base-Year $	179.611	-6.718	172.893
Then-Year $	264.155	-22.976	241.179
Program:			
FY 81 Base-Year $	205.000	-6.368	198.632
Then-Year $	295.376	-23.492	271.884

d. Approved Design to Cost Goal -- None

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

* The current estimate in then-year dollars of construction costs not included in the SAR is $365.8 million.

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	27188.4	28204.3	27188.4
(2) Quantity	100	100	100
(3) Unit Cost	271.884	282.043	271.884
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	5094.9	5624.0	-
Less CY Adv Proc	0	0	-
Plus PY Adv Proc	2170.9	2170.9	-
Net Total	7265.8	7794.9	-
(2) Quantity	48	48	-
(3) Unit Cost	151.371	162.394	-

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	3122.1	26415.5	-	29537.6
Previous Changes:				
Economic	-94.5	-743.0		-837.5
Quantity				
Schedule				
Engineering				
Estimating	+152.0	-648.0		-496.0
Other				
Support		+0.2		+0.2
Subtotal	+57.5	-1390.8	-	-1333.3
Current Changes:				
Economic	-6.8	-476.1		-482.9
Quantity				
Schedule				
Engineering				
Estimating	-102.3	-529.1		-631.4
Other				
Support		+98.4		+98.4
Subtotal	-109.1	-906.8	-	-1015.9
Total Changes	-51.6	-2297.6	-	-2349.2
Current Estimate	3070.5	24117.9	-	27188.4

(FY 1981 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2538.9	17961.1	-	20500.0
Previous Changes:				
Quantity				
Schedule				
Engineering				
Estimating	+114.3	-380.4		-266.1
Other				
Support		+0.5		+0.5
Subtotal	+114.3	-379.9	-	-265.6
Current Changes:				
Quantity				
Schedule				
Engineering				
Estimating	-79.3	-141.8		-221.1
Other				
Support		-150.1		-150.1
Subtotal	-79.3	-291.9	-	-371.2
Total Changes	+35.0	-671.8	-	-636.8
Current Estimate	2573.9	17289.3	-	19863.2

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations:

(1) RDT&E

Economic: Revised economic escalation indices

Estimating: Congressional reduction during FY85 enactment process; applied to reserves

Reestimate based on impact of revised economic escalation rates on prior years

Transfer of ALCM and CSRL integration from Procurement and increases in airframe and avionics for ALCM and CSRL integration

Correction of typographical error in Dec 82 SAR.

(2) Procurement

Economic: Revised economic escalation indices

Estimating: Congressional reduction during FY85 enactment process; applied to reserves

Reestimate based on impact of revised economic escalation rates on prior years

One-time change resulting from a correction to the methodology for computing inflation on programs with advance procurement funding

Transfer of ALCM and CSRL integration from procurement to RDT&E

Support: Reestimate of initial spares requirement

c. Current Change Explanations --

	(Dollars in Millions) Base-Year $	Then-Year $
(1) RDT&E		
	-	-6.8
Congressional reduction during FY86 enactment process; applied to reserves and other government costs (estimating)	-73.6	-95.8
Adjustment for prior year escalation (estimating)	+5.2	+6.5
Realignment of fiscal phasing for other government costs (estimating)	-10.9	-13.0

c. Current Change Explanations (Cont'd) --

	(Dollars in Millions) Base-Year $	Then-Year $
(2) Procurement		
Revised economic escalation indices (economic)	-	-476.1
Congressional reduction during FY86 enactment process; applied to weapons equipment and contract reserves (estimating)	-552.1	-808.9
Adjustment for prior year escalation (estimating)	+334.3	+476.1
Congressionally directed reprogramming to Peacekeeper (FY85 enactment process); applied to reserves (estimating)	-80.6	-108.3
Reestimate of engine requirements (estimating)	-14.8	-19.4
Reestimate of spares requirements (support)	+21.3	+29.8
Adjustment to refine the mix of previous support and estimating category changes primarily related to the impact of escalation changes in current and prior years.	0.0	0.0
-Change to estimating category (estimating)	+171.4	-68.6
-Change to support category (support)	-171.4	+68.6

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

Initial SAR/Development Estimate to Current Estimate

PAUC (Initial SAR/Dev Est)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	ECON	QTY	SCH	ENG	EST	SPT	OTHER	TOTAL	
295.376	-13.204				-11.274	+.986		-23.492	271.884

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

a. RDT&E

Airframe	Initial Contract Price Target	Ceiling	Qty
North American Rockwell	$1317.0	$1554.4	-

F33657-81-C-0208, FPIF
Award: 20 Jan 82
Definitized: 20 Jan 82

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1580.2(Ch1)	$1860.0	-	$1580.2	$1580.2(Ch1)

(Ch1) Change in price and EPAC resulted from addition of miscellaneous engineering changes.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+28.5	$+1.2
Cumulative Variances To Date (27 Dec 85)	$+36.5	$-4.3
Net Change	$+ 8.0	$-5.5

Explanation of Change: The continuing favorable cost variance reflects stability in the flight test program. Schedule variance caused by late flight test spares. No program impact.

Avionics	Initial Contract Price Target	Ceiling	Qty
Boeing Military Airplane Co.	$435.0	$512.5	1

F33657-81-C-0212, FPIF
Award: 8 Jun 82
Definitized: 8 Jun 82

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$587.6(Ch1)	$685.8	1	$587.6	$587.6(Ch1)

(Ch1) Change in price and EPAC resulted from addition of miscellaneous engineering changes.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	+8.5	-8.6
Cumulative Variances To Date (31 Dec 85)	+10.6	-1.3
Net Change	+2.1	+7.3

Explanation of Change: Both cost and schedule variances have improved markedly since the last report. Variances not significant. No program impact.

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

b. Procurement

Airframe	Initial Contract Price Target	Ceiling	Qty
North American Rockwell	$886.0	$1051.2	1
F33657-81-C-0210			
Award: 20 Jan 82			
Definitized: 20 Jan 82			

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$13682.0(Ch1)	$16146.9	100(Ch1)	$13682.0	$14875.0(Ch2)

(Ch1) Change in price, quantity and Contractor's EPAC resulted from addition of Lots IV and V and miscellaneous engineering changes.

(Ch2) Program Manager projects cost overrun. Program Impact -- Insufficient contract reserves.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	+80.9	+22.7
Cumulative Variances To Date (27 Dec 85)	-8.1	+111.3
Net Change	-89.0	+88.6

Explanation of Change: The cost variance change is a result of training equipment, weapon delivery systems, and foward fuselage all experiencing cost growth. The unfavorable cost variance change is not attributable to any single WBS or functional item. Schedule variance continues to improve and is ahead of schedule on Lots IV and V. There is no program impact expected from either.

Avionics	Initial Contract Price Target	Ceiling	Qty
Boeing Military Airplane Co.	$172.0	$183.1	9
F33657-81-C-0213, FPIF			
Award: 11 Jun 1982			
Definitized: 11 Jun 1982			

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1951.7(Ch1)	$2207.7	100(Ch1)	$1951.7	$2092.4(Ch2)

(Ch1) Change in price, quantity and Contractor's EPAC due to incorporation of Lots II,III,IV and V.

(Ch2) Program Manager projects cost overrun. Program Impact -- Insufficient contract reserves.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	+8.1	-7.6
Cumulative Variances To Date (31 Dec 85)	+14.8	-8.8
Net Change	+ 6.7	-1.2

Explanation of Change: Change due to incorporation of Lots II,III,IV and V into current values. Baseline SAR values include only Lot I.

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

b. Procurement (Cont'd)

AIL Division of Eaton
F33657-81-C-0215, FPIF
Award: 22 May 1982
Definitized: 22 May 1982

Initial Contract Price		
Target	Ceiling	Qty
$143.8	$171.1	4.6

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$2442.8(Ch1)	$2824.7	100(Ch1)	$2450.0(Ch2)	$2764.4(Ch3)

(Ch1) Change in price, quantity and EPAC resulted from addition of Lots III,IV, and V and miscellaneous engineering changes.

(Ch2) Contractor projects cost overrun.

(Ch3) Program Manager projects cost overrun. Program impact -- Insufficient contract reserves.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-6.2	-13.6
Cumulative Variances To Date (22 Dec 85)	-32.0	-35.9
Net Change	-25.8	-22.3

Explanation of Change: Cost variance results from excessive expenditures in production support equipment, the Band 8 Traveling Wave Tube (TWT) and rework for 6/7 Driver and 6/7 Transmitter. Schedule variance results from late delivery of LRUs. The primary sources of the schedule variance are delinquent RF components, delayed vendor deliveries, shortages of purchased parts, and on-going engineering changes.

Engine
General Electric Co.
F33657-81-C-2047, FFP
Award: 20 Jul 1984
Definitized: 20 Jul 1984

Initial Contract Price		
Target	Ceiling	Qty
$1387.6	N/A	368

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$1407.3(Ch1)	N/A	368(Ch1)	$1407.3	$1407.3(Ch1)

(Ch1) This is the first reporting for this contract. It covers Lots III,IV, and V. No program impact.

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

Explanation of Change: N/A

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

a. Program Status --

(1) Percent Program Completed: 66.7% (6yrs/9yrs)

(2) Percent Program Cost Appropriated: 99.4% (27027.0/$27188.4)

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

Appropriation	Current & Prior Yrs (FY81-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY -)	Total
RDT&E	$2909.1	$118.7	$42.7	N/A	$3070.5
Procurement	$24117.9	-	-	N/A	$24117.9
MILCON	-	-	-	N/A	-
Total	$27027.0	$118.7	$42.7	N/A	$27188.4

16. Program Funding Summary (Cont'd):

c. Annual Summary --

FISCAL YEAR	QTY	FY81 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE *
		FLYAWAY		TOTAL	ADVANCE PROC		TOTAL	%
		NON-REC	REC		DEBIT	CREDIT		
Appropriation: RDT&E								
1981				209.8			219.0	11.9
1982				422.0			470.9	9.2
1983				645.1			753.5	4.9
1984				602.1			731.6	3.8
1985				368.2			462.5	3.6
1986				208.8			271.6	3.2
1987				87.7			118.7	4.1
1988				20.6			28.9	3.9
1989				9.6			13.8	3.4
Subtotal	N/A			2573.9			3070.5	
Appropriation: Procurement								
1982	1	683.3	420.1	1312.7	257.0		1612.0	9.6
1983	7	892.7	1404.4	3028.3	660.0	257.0	3964.1	9.0
1984	10	641.9	1695.8	4329.6	1846.8	436.9	5966.2	8.0
1985	34	539.8	3728.6	5213.0	1544.4	1443.4	7480.7	4.1
1986	48	259.1	4341.0	3405.7		2170.9	5094.9	4.1
Subtotal	100	3016.8	11589.9	17289.3	4308.2	4308.2	24117.9	
Appropriation: MILCON								
Subtotal				N/A			N/A	
Total	100			19863.2			27188.4	

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated *	Expended *
Appropriation: RDT&E			
81	219.0	219.0	219.0
82	470.9	470.6	470.6
83	753.5	750.3	726.7
84	731.6	731.1	620.5
85	462.5	338.2	43.1
86	271.6	39.8	1.4
87	118.7	-	-
88	28.9	-	-
TO COMPLETE	13.8	-	-
TOTAL	3070.5	2549.0	2081.3
Appropriation: Procurement			
82	1612.0	1598.2	1571.0
83	3964.1	3964.1	3636.4
84	5966.2	5652.3	3693.4
85	7480.7	5909.7	1055.6
86	5094.9	1397.1	-
TOTAL	24117.9	18521.4	9956.4
Appropriation: Construction			
N/A	N/A	N/A	N/A

* Reflects Program Office records as of 31 Dec 85.

17. Production Rate Data:

a. Annual Production Rates -- (Note: The annual production rates differ from the annual funded quantities because the funded delivery period is 5 months for FY84, 10 months for FY85 and 13 months for FY86.)

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1982	1	1	1	1
1983	7	7	7	7
1984	25	25	24	25
1985	40.8	40.8	40.8	40.8
1986	44.3	44.3	44.3	44.3
1987				
1988				

b. Cost Variance -- Dollars in Millions

		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BYS)	20500.0	- 636.8	19863.2		19863.2
	(TYS)	29537.6	-2349.2	27188.4		27188.4
PAUC	(BYS)	205.000	-6.368	198.632		198.632
	(TYS)	295.376	-23.492	271.884		271.884

c. Schedule Variance --

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	1/82 *		1/82		1/82
Duration (in Months)	78		78		78
End Date (Mo/Yr)	6/88		6/88		6/88

* Date of contract award.

d. Deliveries (Plan/Actual) --

	To Date: 31 Dec 85
RDT&E	N/A
Procurement	4/4

18. Operating and Support Costs: None

N-27 PHOENIX

SAR-85-046

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: PHOENIX (AIM-54C)

AS OF DATE: December 31, 1985 *

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1.(U) Designation/Nomenclature (Popular Name): PHOENIX (AIM-54C)

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

3.(U) Responsible Office and Telephone Number:
Navy Air Systems Command
APC-203
Washington, D.C.

PM: CAPT J. J. Stewart
Assigned : July 24, 1985
(202) 692-0915
AUTOVON 222-0915

4.(U) Program Elements:

RDT&E:	PE 64354N		
PROCUREMENT:	PE 24162N	ICN: 2212	APPN: 1507
MILCON:	PE 72031N		

5.(U) Related Programs: F-14A/D

AS AMENDED
CLEARED
APR 1 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

CLASSIFIED BY: ~~OPNAVINST 5513.2A-87~~
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OASD(PA) DFOISR 86-F-0868

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6. Mission and Description: The Phoenix Missile System is comprised of a long-range airborne weapons control system (AWCS) with multiple target-handling capabilities and long-range missiles utilizing semi-active midcourse guidance and active terminal guidance. The mission is to kill multiple air targets with conventional warheads. Six such missiles can be carried aboard the F-14A/D. Near simultaneous launch is possible against six targets in all weather, heavy jamming environments. The improved Phoenix, the AIM-54C, provides improved lethality, stream raid discrimination, ECCM performance, high and low altitude performance, and improved reliability and maintainability. As a result of these improvements, the missile has greater capability to counter the projected threat tactical aircraft and cruise missile threats. The Phoenix does not replace any other missile.

7. Program Highlights:

a. Significant Historical Developments -- The Phoenix AIM-54C is a major improvement of the AIM-54A which ended production in 1979. A major upgrade was required to meet a more sophisticated threat.

b. Significant Developments Since Last Report -- Initial Operational Capability (IOC) has been slipped two months to allow Hughes Aircraft Company (HAC) time to correct quality deficiencies in previously delivered missiles slated for IOC. The DNSARC IIIB milestone has been delayed pending completion of Follow On Test and Evaluation (FOT&E). FOT&E is required to evaluate a major Electronic Counter Counter Measures (ECCM)/Sealed Missile engineering change (ECP-82) that becomes effective with the FY 1984 production missiles. FOT&E (OT-IIIA) has been successfully completed. FOT&E (OT-IIIB) is scheduled to begin in June 1986 with a completion date of June 1987. Approval for Full Production (AFP) will be requested 60 days following completion of OT-IIIB.

HAC has corrected quality problems that resulted in a Phoenix production line shutdown from July 1984 through January 1985. HAC is achieving a slow production ramp-up, and should be producing at a nominal rate of 23 per month by the Summer of 1986.

The Navy has proceeded with plans to second source the Phoenix missile. There are currently two contractors, Ford Aerospace and Raytheon, competing for award of the Phase II second source contract for initial validation units in FY 1986, and production quantities of 56 and 180 in FY 1987 and 1988, respectively. The second source will be in a head-to-head competitition with HAC in FY 1989. The FY 1985 through 1988 FYDP contains full funding for second source development and initial production quantities. Prior to award of the Phase II second source contract, the Navy must brief the OSD Cost Analysis Improvement Group (CAIG) and obtain certification that the second source program is economically viable, and, once certification is obtained, the Secretary of Defense (SECDEF) will certify to Congress that the second source program is supportable within the FYDP. SECDEF certification is expected in May 1986. These certification requirements are in accordance with the joint FY 1986 House Appropriations Committee (HAC)/Senate Appropriations Committee (SAC) conference report.

The AIM-54C Phoenix Missile system satisfies the mission requirement

c. Changes Since "As Of" Date -- Phase II second source proposals have been received and are currently being evaluated by the Navy. On February 14, 1986, the Phoenix Program Office (APC-203) merged with the Air-to-Air Missile Program Office (PMA-259) and CAPT J. J. Stewart assumed command of the Air-to-Air Missile Program Office (PMA-259).

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated November 21, 1980) threshold breaches.

9. (U) Schedule:

a. Milestones --

	Development Estimate/ Approved Program	Current Estimate
AIM-54C Full Development Go-Ahead	Oct 76/Oct 76	Oct 76
Development Contract Award	Sep 77/Sep 77	Sep 77
Complete AIM-54C Section Intergration Test	Dec 78/Dec 78	Mar 79
Award Pilot Production Contract	Jul 79/Jul 79	Sep 79
Award First Low Rate Production Contract	Dec 79/Dec 79	Dec 79
Complete Delivery of EDM Missiles	Dec 80/Dec 80	May 81
Complete Contractor Development	Apr 81/Apr 81	May 82
Begin Pilot Production Missile Deliveries	Oct 81/Oct 81	Oct 81
Begin Navy Technical Evaluation	Oct 81/Oct 81	May 82
Complete Navy Technical Evaluation	Jun 82/Jun 82	Nov 82
Begin Navy Operational Evaluation	Jan 83/Jan 83	Mar 83
Complete Navy Operational Evaluation	Mar 84/Mar 84	Jun 84
Approval For Full Production	Mar 83/Mar 83	Aug 87 (Ch-1)
Begin Full Rate Production	Oct 83/Oct 83	Oct 90 (Ch-2)
IOC (First carrier load-out available)	Oct 83/Oct 83	Mar 86 (Ch-3)

b. Previous Change Explanations --

AIM-54C Section Integration Test slippage due to delay in component build up caused primarily by unanticipated design complexity. Award of Pilot Production Contract slippage caused by administrative delays. Begin Navy Technical Evaluation slippage due to delays in delivery of pilot production missiles, and delay in completion of contractor developmental testing. Delay in completion of Navy Technical Evaluation caused by slippage of start date. Delay in beginning of Navy Operational Evaluation due to late completion of Navy Technical Evaluation. Delay in completion of Navy Technical Evaluation due to slippage of start date.

c. Current Change Explanations --

(Ch-1) Approval for Full Production (DNSARC IIIB) has been delayed from December 1985 to August 1987 to fully evaluate the ECCM/Sealed engineering change (ECP-82) which becomes effective with the FY 1984 production missiles.
(Ch-2) Full rate production has been delayed from April 1990 to October 1990, and will commence when head-to-head competition between HAC and the second source is achieved.
(Ch-3) IOC has been delayed from January 1986 to March 1986 while the contractor corrects quality deficiencies in previously delivered missiles, and incorporates improved quality control procedures in the production process for current and subsequent production missiles.

d. References --
Development Estimate: DCP, dated November 21, 1980, subject "AIM-54 Improvement Program."
Approved Program: FY 1987 President's Budget.

10.([redacted]) Technical/Operational Chracteristics:

a.([redacted]) Technical	Development Estimate	Demonstrated Performance	Current Estimate
(b)(1)			

b.(U) Operational

Launch wt (lbs)	1020	1018	1014
Length (inches)	156	156	156
Diameter (inches)	15	15	15
Guidance	Radar, Pulse Doppler, Semiactive/Active, HOJ Modes		
Propulsion	Solid Boost		

c.(U) Previous Change Explanations -- none

d.(U) Current Change Explanations -- none

e.(U) References -- DCP, dated November 21, 1980, subject "AIM-54 Improvement Program." Approved Program: FY 1987 President's Budget.

11.(U) Program Acquisition Cost (current Estimate in Millions of Dollars

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	73.8	+49.3	123.1
Procurement	296.7	+2450.9	2747.6
Total Flyaway	231.6	+2249.7	2481.3
Other Wpn Sys Cost	56.9	+165.1	222.0
Initial Spares	8.2	+36.1	44.3
Construction (MILCON)	1.5	-0.2	1.3
Total FY 77 Base-Year $	372.0	+2500.0	2872.0
Escalation	92.3	+3985.8	4078.1
Development (RDT&E)	11.4	+37.3	48.7
Procurement	80.7	+3948.4	4029.1
Construction (MILCON)	0.2	+0.1	0.3
Total Then-Year $	464.3	+6485.8	6950.1
b. Quantities --			
Development (RDT&E)	30	+15	45
Procurement	705	+6499	7204
Total	735	+6514	7249
c. Unit Cost --			
Procurement:			
FY 77 Base-Year $	0.421	-0.040	0.381
Then-Year $	0.535	+0.406	0.941
Program:			
FY 77 Base-Year $	0.506	-0.110	0.396
Then-Year $	0.631	+0.328	0.959

[redacted]

11. (U) Program Acquisition Cost (Con't):

d. Approved Design to Cost Goal -- none

e. Foreign Military Sales -- none

f. Nuclear Costs -- none

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	6950.1	7327.8	6950.1
(2) Quantity	7249	7249	7249
(3) Unit Cost	0.959	1.011	0.959
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	353.3	393.5	321.5
Less CY Adv Proc	24.8	38.3	28.4
Plus PY Adv Proc	24.4	24.4	24.8
Net Total	352.9	379.6	317.9
(2) Quantity	265	265	205
(3) Unit Cost	1.332	1.432	1.551

13. (U) Cost Variance Summary:
a. Summary -- (Current (Then Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	85.2	377.4	1.7	464.3
Previous Changes:				
Economic	+11.7	+306.9	+0.1	+318.7
Quantity	-	+7098.7	-	+7098.7
Schedule	+10.1	+298.7	-	+308.8
Engineering	+23.6	+314.2	-	+337.8
Estimating	+39.7	-1833.1	-0.2	-1793.6
Support	-	+552.1	-	+552.1
Other	-	+41.0	-	+41.0
Subtotal	+85.1	+6778.5	-0.1	+6863.5
Current Changes:				
Economic	-	-786.0	-	-786.0
Quantity	-	-	-	-
Schedule	-	+81.9	-	+81.9
Engineering	-	-	-	-
Estimating	+1.5	+305.5	-	+307.0
Support	-	+19.4	-	+19.4
Other	-	-	-	-
Subtotal	+1.5	-379.2	-	-377.7
Total Changes	+86.6	+6399.3	-0.1	+6485.8
Current Estimate	171.8	6776.7	1.6	6950.1

13 (N) Cost Variance Analysis (Con't):

(FY 1977 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	73.8	296.7	1.5	372.0
Previous Changes:				
Quantity	-	+2371.4	-	+2371.4
Schedule	+3.0	+50.8	-	+53.8
Engineering	+16.0	+137.9	-	+153.9
Estimating	+29.3	-462.7	-0.2	-433.6
Support	-	+193.8	-	+193.8
Other	-	+20.5	-	+20.5
Subtotal	+48.3	+2311.7	-0.2	+2359.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+3.5	-	+3.5
Engineering	-	-	-	-
Estimating	+1.0	+132.6	-	+133.6
Support	-	+3.1	-	+3.1
Other	-	-	-	-
Subtotal	+1.0	+139.2	-	+140.2
Total Changes	+49.3	+2450.9	-0.2	+2500.0
Current Estimate	123.1	2747.6	1.3	2872.0

b. Previous Change Explanations --

RDT&E

Economic: revised escalation indices

Schedule: increase due to slippage resulting from technical problems experienced in development

Engineering: increase due to guidance, control, and thermal conditioning design changes

Estimating: higher prototype and R&D effort cost

Procurement

Economic: revised escalation indices

Quantity: increase due to revision of inventory objective

Schedule: increase due to internal service, OSD, and Congressional quantity reductions experienced during the budget process. Missiles reduced in earlier years shift to out years, thus causing schedule increase

Engineering: increase due to non-recurring and recurring costs associated with guidance, control, and thermal conditioning configuration changes.

Estimating: reduction due to updated actuals and incorporation of competitive procurement strategy into the cost model

Support: increased support required to accommodate expanded inventory objective

MILCON

Economic: revised escalation indices

Estimating: reduction due to updated actuals

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

b. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Increase due to updated actuals. (Estimating)	+1.0	+1.5
(2) Procurement		
Revised Jan 85 economic escalation rates. (Economic)	N/A	-786.0
Increase due to internal Navy and OSD quantity reductions in the FYDP, thus increasing the quantity to be procured in the final year of the program (FY 1998). Revised schedule escalated total program cost. (Schedule)	+3.5	+81.9
Increase in cost estimate due to updated actuals. (Estimating)	+132.6	+305.5
Increase due to a reassessment of spares and support equipment requirements. (Support)	+3.1	+19.4
(3) MILCON: N/A		

d. References --

Development Estimate: NDCP, dated November 21, 1980, subject "AIM-54 Improvement Program."

Approved Program: FY 1987 President's Budget.

14. (4) Program Acquisition Unit (PAUC) History:

a. Initial SAR Estimate to Current Baseline Estimate:

Same as current baseline estimate.

b. Current Baseline Estimate to Current Estimate

PAUC (Dev Est)	CHANGES (Then Year Dollars in Millions)								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
+0.631	-0.064	+0.411	+0.054	+0.047	-0.205	+0.079	+0.006	+0.328	+0.959

15. (U) Contract Information:

b. Procurement:

Guidance, Control, & Airframe	Initial Contract Price Target	Ceiling	Qty
Hughes Aircraft Company, Tuscon, AZ, N00019-82-C-0106, FPIF, Award: February 12, 1982 Definitized: March 12, 1984	114.8	119.8	108

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
114.8	119.8	108	119.8	119.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-	-
Cumulative Variances To Date	-	-
Net Change	-	-

Explanation of Change: No variances, since the contractor has not yet completed deliveries, or exceeded the target price.

Guidance, Control, & Airframe	Initial Contract Price Target	Ceiling	Qty
Hughes Aircraft Company, Tuscon, AZ, N00019-83-C-0014, FFP, Award: June 8, 1983 Projected Definitization: March 28, 1986	223.4	223.4	265

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
223.4	223.4	265	223.4	223.4

Explanation of Change: Not reported on FFP contracts.

Guidance, Control, & Airframe	Initial Contract Price Target	Ceiling	Qty
Hughes Aircraft Company, Tuscon, AZ, N00019-84-C-0379, FFP, Award: March 1, 1985 Projected Definitization: September 15,1986	378.0	378.0	265

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
378.0	378.0	265	378.0	378.0

Explanation of Change: Not reported on FFP contracts.

15. (U) Contract Information (Con't)

Target Detection Device	Initial Contract Price Target	Ceiling	Qty
Motorola Corporation, Scottsdale, AZ, N00019-83-C-0350, FFP, Award: November 30, 1983 Definitized: August 2, 1985	19.3	19.3	265

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
19.3	19.3	265	19.3	19.3

Explanation of Change: Not reported on FFP contracts.

Target Detection Device	Initial Contract Price Target	Ceiling	Qty
Motorola Corporation, Scottsdale, AZ, N00019-84-C-0231, FFP, Award: November 11, 1984 Projected Definitization: March 28, 1986	21.0	21.0	265

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
21.0	21.0	265	21.0	21.0

Explanation of Change: Not reported on FFP contracts.

Target Detection Device	Initial Contract Price Target	Ceiling	Qty
Motorola Corporation, Scottsdale, AZ, N00019-85-C-0285, FFP, Award: October 11, 1985 Projected Definitization: September 15, 1986	24.0	24.0	331

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
24.0	24.0	345	24.0	24.0

Explanation of Change: Not reported on FFP contracts.

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

a. Program Status --

(1) Percent Program Completed: 45.5% (10 yrs/22 yrs)

(2) Percent Program Cost Appropriated: 27.5% ($1912.6/$6950.1)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY77-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-98)	Total
RDT&E	171.8	-	-	-	171.8
Procurement	1739.2	321.5	1829.8	2886.2	6776.7
MILCON	1.6	-	-	-	1.6
Total	1912.6	321.5	1829.8	2886.2	6950.1

c. Annual Summary --

Fiscal Year	FY 77 Base-Year Dollars				Then-Year Dollars			Escl Rate (%)
	Qty	Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1977	-			9.2			9.5	2.58
1978	-			6.4			7.1	6.80
1979	15			19.1			23.5	8.40
1980	30			27.9			38.0	10.59
1981	-			23.9			35.4	10.61
1982	-			21.1			32.9	7.60
1983	-			14.0			22.8	4.90
1984	-			1.5			2.6	3.80
Subtotal	45			123.1			171.8	

16. Program Funding Summary (Con't):

Fiscal Year	Qty	FY 77 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: WPN								
1979	-	-	-	7.0	-	10.7	10.7	8.72
1980	60	15.2	52.0	69.4	10.7	7.7	107.4	11.80
1981	60	9.9	55.8	72.8	7.7	5.6	125.6	11.60
1982	72	7.8	50.0	80.6	5.6	20.6	151.5	14.30
1983	108	22.3	68.0	110.1	20.6	24.4	218.8	9.00
1984	265	14.1	122.2	158.3	24.4	24.0	331.8	8.00
1985	265	52.1	113.5	202.1	24.0	24.4	440.1	4.10
1986	265	44.4	103.2	156.2	24.4	24.8	353.3	4.10
1987	205	58.7	67.1	137.4	24.8	28.4	321.5	4.10
1988	430	63.3	105.2	183.5	28.4	9.1	441.9	3.90
1989	560	3.4	175.4	192.2	9.1	9.2	475.3	3.40
1990	560	3.5	160.3	183.3	9.2	9.3	463.8	2.90
1991	560	3.5	145.4	173.4	9.3	9.5	448.8	2.30
1992	560	3.6	147.3	159.5	9.5	9.5	422.5	2.30
1993	560	3.7	143.7	155.9	9.5	9.5	422.9	2.30
1994	560	3.7	141.3	153.7	9.5	9.5	425.3	2.30
1995	560	3.7	139.1	151.4	9.5	9.5	429.0	2.30
1996	560	3.8	137.2	149.5	9.5	9.5	433.8	2.30
1997	560	3.8	135.9	148.2	9.5	9.5	439.6	2.30
1998	434	3.4	94.8	103.1	9.5	-	313.1	2.30
Subtotal	7204	323.9	2157.4	2747.6	264.7	264.7	6776.7	
Appropriation: MILCON								
1978				1.3			1.6	7.68
Subtotal				1.3			1.6	
Total	7249.0	323.9	2157.4	2872.0	264.7	264.7	6950.1	

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1977	9.5	9.5	9.5
1978	7.1	7.1	7.1
1979	23.5	23.5	23.5
1980	38.0	38.0	38.0
1981	35.4	35.4	35.4
1982	32.9	32.9	32.7
1983	22.8	22.8	20.2
1984	2.6	2.6	1.5
Total	171.8	171.8	167.9

16. (1) Program Funding Summary (Con't):

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: WPN			
1979	10.7	10.7	10.7
1980	107.4	107.4	106.6
1981	125.6	125.6	124.9
1982	151.5	151.5	134.8
1983	218.8	218.8	162.4
1984	331.8	241.8	146.8
1985	440.1	119.6	27.1
To Complete	5390.8	N/A	N/A
Total	6776.7	975.4	713.3
Appropriation: MILCON			
1978	1.6	1.6	1.6
Total	1.6	1.6	1.6

17. (1) Production Rate Data:

a. Annual Production Rates -- Production estimate not available, since Approval for Full Production (AFP) is pending.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1980	60	N/A	60	60
1981	60	N/A	60	60
1982	72	N/A	72	72
1983	220	N/A	108	108
1984	307	N/A	265	265
1985	307	N/A	265	265
1986	307	N/A	265	265
1987	97	N/A	205	420
1988	-	N/A	430	530
1989	-	N/A	560	720
1990	-	N/A	560	720
1991	-	N/A	560	720
1992	-	N/A	560	720
1993	-	N/A	560	720
1994	-	N/A	560	720
1995	-	N/A	560	720
1996	-	N/A	560	119
1997	-	N/A	560	-
1998	-	N/A	434	-

17. Production Rate Data (Con't):

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	2872.0	-152.4	2719.6
(TY $)	N/A	N/A	6950.1	-534.3	6416.8
PAUC (BY $)	N/A	N/A	.396	-.021	.375
(TY $)	N/A	N/A	.959	-.074	.885

c. Schedule Variance --

Item	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance CE vs Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	8/82	N/A	8/82
Duration	N/A	N/A	218	24	194
End Date	N/A	N/A	9/00	N/A	9/98

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	45/45
Procurement	204/204

18. Operating and Support Costs: N/A

SAR-85-093

A-10 JTIDS

UNCLASSIFIED

SELECTED ACQUISITION REPORT (RCS: DD-COMP (Q&A) 823)
PROGRAM: JTIDS Class 2 TDMA Terminal
Army Supplement

AS OF DATE: December 31, 1985

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CLEARED
FOR OPEN PUBLICATION
MAR 21 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. Designation/Nomenclature (Popular Name): AN/URC-107(V)/Joint Tactical Information Distribution System Time Division Multiple Access Terminal (JTIDS Class 2 TDMA Terminal)

2. DOD Component: U.S. Army

3. Responsible Office and Telephone Number:

Project Manager
PLRS/TIDS
Ft Monmouth, NJ 07703-5216

PM: LTC (P) JOHN S. DUFF
Assigned: 1 Dec 85
AUTOVON: 992-4251
Commercial: (201) 532-4251

4. Program Elements/Procurement Line Items:

RDTE&E: 64702A Project: D451

Procurement: Not Applicable

MILCON: Not Applicable

No SECURITY Objection to PUBLIC RELEASE
18 MAR 1986
SECURITY REVIEW, OACSI, HQDA

5. Related Programs: Position Location Reporting System/Joint Tactical Information Distribution System Hybrid (PJH) or Army Data Distribution System (ADDS).

86-0721

6. Mission and Description. 12/

7. Program Highlights:

a. Significant Historical Developments - In 1977, the JTIDS Joint Program Office (JPO) acquired engineering development (full scale) models of the Class 1 (AN/URQ-31) JTIDS TDMA Terminal. Class 1 Terminal testing was completed and a production contract awarded in July 1980. A smaller version of a JTIDS terminal, designated the Class 2 (AN/URC-107(V)) subsequently underwent advanced development and testing. This Class 2 Terminal entered Full Scale Development (FSD) with award of a firm fixed price contract to Singer-Kearfott/Rockwell International in January 1981. This contract will provide the Army with the initial terminals to be used in the PJH (ADDS) program development. The first major contractual milestone was passed with the completion of the Preliminary Design Review (PDR) of the Class 2 Terminal in October 1981. Software changes to support necessary Army unique net management concepts of the PJH system have been incorporated into the Class 2 contract. December 1982 System Acquisition Decision Memorandum (SADM), signed by the Secretary of the Army, approved an acquisition strategy to buy 20 Developmental Prototype (DP) Class 2 Terminals to support the PJH (ADDS) Program. (The PJH Phase 3/4 (Advanced Development) testbed contract was awarded to Hughes Aircraft Company (HAC) in March 1982. JTIDS Class 2 Terminals were integrated into this testbed April 1984).

b. Significant Developments Since Last Report - DT/OT IIA on the JTIDS Class 2 Terminal began 1 Oct 85 at Eglin AFB, FL. As of 31 Dec 85, the Army received delivery of 25 FSD JTIDS Class 2 Terminals. In Dec 85, DA approved go ahead on development of a new, downsized JTIDS Class 2M Terminal. Contract award in Feb 85 began a three - phase 36 months program; Phase 3 of which began in Dec 85. The Army budget line for FY87-89 was zeroed out and incorporated into an OSD Joint Service Line per PBD #252.

The JTIDS Class 2 TDMA Terminal is expected to satisfy the mission requirement.

c. Changes Since "As Of" Date - None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: 12/

9. Schedule: 12/

10. Technical/Operational Characteristics: 12/

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development(RDT&E) 1/ 5/ 11/	81.9	+11.0	92.9
Procurement 2/ 7/	0.0	0.0	0.0
Total Flyaway	0.0	0.0	0.0
Other Weapon System Cost	0.0	0.0	0.0
Initial Spares	0.0	0.0	0.0
Construction (MILCON)	0.0	0.0	0.0
Total FY81 Base-Year$	81.9	+11.0	92.9
Escalation	18.1	-6.9	11.2
Development(RDT&E)	0.0	0.0	0.0
Procurement	0.0	0.0	0.0
Construction (MILCON)	-	-	-
Total (Then-Year) $ 3/	100.0	+4.1	104.1 9/
b. Quantities --			
Development(RDT&E) 8/	5	+27	32
Procurement	0	0	0
Total	5	+27	32
c. Unit Cost --			
Procurement: 6/			
FY81 Base-Year $	N/A	N/A	N/A
Then-Year $	N/A	N/A	N/A
Program: 10/ 13/			
Constant FY 1981 $	-	-	-
Current (Then-Year) $	-	-	-
d. Approved Design to Cost Goal -- 4/			

FOOTNOTES:

1/ This stub item submission reflects all the RDT&E funds required for the Army JTIDS Program. Development activities include the Class 2 TDMA Terminal, PJH concept study, ASIT Army configuration assessment and Army Tactical Data Link (ATDL-1) interface, technology insertion such as the Very High Speed Integrated Circuit (VHSIC), JTIDS/ADDS System Test Item Stimulator (TIS), joint network management, integrated logistics system analysis and planning and JTIDS testing. These Army JTIDS efforts will provide the hardware and technology required for the support and fielding of jam resistant and secure data capability to support existing and programmed automated systems for maneuver control, fire support, air defense, intelligence/electronic warfare and combat service support.

2/ Planned Procurement costs are to be funded under the Army Data Distribution System (ADDS), or PJH. Under the ADDS concept, it is planned that the Class 2 Terminal will be embedded within the host system, wherever possible, and will, therefore, use power, Environmental Conditioners, Collective Protection Requirements (CPRs), shelter, and prime vehicle associated with the host platform.

3/ DCP shows $35M for Army RDT&E costs. This includes the cost of the basic Class 2 Full Scale Engineering Development contract only. The period of performance of the contract runs from FY81 through FY86. RDTE funding of development in support of the basic Class 2 contract is not shown in the DCP, but is included in the Development Estimate and Current Estimate.

The current Class 2 Terminal contract provides for delivery of 27 full scale development model Class 2 Terminals to the Army. A contract option was exercised June 1982 for 20 of these Class 2 full scale development models to support the PJH (ADDS) future testing program. The cost of exercising this option is funded by the PJH (ADDS) program. Five of the terminals went to the PJH (ADDS) program test bed beginning in April 1984, the other 20 terminals will support DT/OT.

4/ The Air Force contracts for all JTIDS Class 2 TDMA Terminals. Hence, a separate Army Design to Cost Goal is not applicable. The Air Force Design to Cost Goal is $0.178M in FY81 dollars.

5/ The Development Estimate and Current Estimate include $12.6M in development costs prior to the Base Year which have not been escalated to constant FY81 dollars. The $12.6M equates to $13.2M in FY81 dollars. These dollars were not in the basic Class 2 contract; however, they were used in developments leading to the definition of the Army Class 2 requirements. ($6.4M of these dollars were issued to the PJH program from JTIDS Program Element. These dollars equate to $6.9M in FY81 dollars.)

6/ Procurement unit cost is not included because the Army JTIDS Class 2 production units will be procured under the Army PJH (ADDS) Program.

7/ $12.7M in FY82 Other Procurement Army (OPA) was released in December 1982, under Standard Study Number (SSN) BU1500 to procure four JTIDS Adaptable Surface Interface Terminals (ASITs) in conjunction with the Air Force procurement.

FOOTNOTES (Cont'd):

8/ Quantity of 32 Development Terminals include:

5 - Class 2 Terminals purchased with Army JTIDS funds.
20 - Class 2 Terminals purchased and funded by the PJH (ADDS) Program.
2 - Class 2 Terminals to be purchased and funded by Short Range Air Defense (SHORAD) related program (HTLD, P.E. 64323A).
5 - Class 2M Terminals purchased and funded with Army JTIDS funds.

9/ Total Program Cost of $104.1M does not include:

$ 12.0M - funded by the PJH (ADDS) Program to purchase 20 Class 2 Terminals.
$ 1.3M - funded by SHORAD related programs to purchase 2 fully integrated Class 2 Terminals.

10/ Program Acquisition Unit Cost (PAUC) is calculated on the basis of actual total number terminals being purchased, and includes funds provided by other programs. (See Footnotes 8 and 9 above.) Department of Army PAUC developed as of 1 January 1986. PAUC calculation: $104.1M (JTIDS Current Estimate) + $12.0M (PJH) + $1.3M (HTLD) = $117.4M divided by 32 = $3.7M (PAUC Escalated).

11/ Base line adjusted by $1.7M to reflect true FY81 Base Year Dollars (31 Dec 84 SAR).

12/ See Air Force JTIDS Class 2 TDMA Terminal Selected Acquisition Report Supplement for the Mission and Description, DCP Threshold Breaches, Schedule and Technical/Operational Characteristics.

13/ Not required in accordance with ASD (c) letter, Subject: Unit Cost Reporting for ADDS, JTIDS and SHORAD C2, dated 15 May 1985.

11. d. Program Acquisition Cost (cont'd)

(Average Unit Flyaway Cost)		
Development Estimate/ Approved Program	Current Estimate	Latest Approved Threshold
N/A	N/A	N/A

e. Foreign Military Sales - - None

f. Nuclear Costs - - None

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate
a. Program Acquisition -- 1/ 2/			
(1) Cost	N/A	N/A	N/A
(2) Quantity	N/A	N/A	N/A
(3) Unit Cost 2/	N/A	N/A	N/A
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	N/A	N/A	N/A
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	N/A	N/A	N/A
(2) Quantity	N/A	N/A	N/A
(3) Unit Cost	N/A	N/A	N/A

1/ Program Acquisition Unit Cost is based on total quantity of 32 terminals; 25 RDTE terminal (25 JTIDS/PJH DT/OT II, 2 FSD terminals for SHORAD C2 plus 5 Class 2M). Funding Share: 10 terminals (5 JTIDS Class 2, 5 JTIDS Class 2M) funded by JTIDS; 20 terminals funded by PJH ($12.0M); 2 terminals funded by SHORAD C2 ($1.3M).

2/ Not required in accordance with ASD (c) letter, Subject: Unit Cost Reporting for ADDS, JTIDS and SHORAD C2, dated 15 May 1985.

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	100.0	-	-	100.0
Previous Changes:				
Economic	-6.1	-	-	-6.1
Quantity	+3.9	-	-	+3.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+16.5	-	-	+16.5
Other	-	-	-	-
Support	+13.3	-	-	+13.3
Subtotal	27.6	-	-	27.6
Current Changes:				
Economic	-0.7	-	-	-0.7
Quantity	+3.9	-	-	+3.9
Schedule	-2.0	-	-	-2.0
Engineering	-	-	-	-
Estimating	-24.7	-	-	-24.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-23.5	-	-	-23.5
Total Changes	4.1	-	-	4.1
Current Estimate	104.1	-	-	104.1

13. Cost Variance Analysis (Cont'd):

(FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	+81.9 1/	-	-	+81.9
Previous Changes:				
Economic	-	-	-	-
Quantity	+3.5	-	-	+3.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+11.8	-	-	+11.8
Other	-	-	-	-
Support	+10.9	-	-	+10.9
Subtotal	26.2	-	-	26.2
Current Changes:				
Economic	-	-	-	-
Quantity	+3.1	-	-	+3.1
Schedule	-1.5	-	-	-1.5
Engineering	-	-	-	-
Estimating	-16.8	-	-	-16.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-15.2	-	-	-15.2
Total Changes	11.0	-	-	11.0
Current Estimate	92.9	-	-	92.9

1/ Base line adjusted by $1.7M to reflect true FY81 Base Year Dollars (31 Dec 84 SAR).

b. Previous Change Explanations --

RDT&E

Economic:	Revised escalation indices.
Quantity:	Addition of Class 2 Terminals to be purchased by JTIDS Program
Support:	Develop, demonstrate and evaluate a direct link between the E-3A airborne warning and control system (AWACS) and HIMAD elements in Europe using JTIDS Class 2 Terminals
Estimating:	Adjustment made to correct erroneous prior year obligation figures.
	Adjustment required to correct erroneous application of inflation indices in December 1983 SAR.

Procurement - NA

MILCON - NA

c. Current Changes Explanation --

$

	(Dollar in Millions) Base Year $	Then Year
(1) RDT&E		
Revised Jan 86 Escalation Rates (Economic)	N/A	-0.7
Correction of errors from Dec 84 SAR (Estimating)	0.3	-1.3
Development of the JTIDS Class 2M Terminal as directed by the Under Secretary of the Army (Quantity)	3.1	3.9
Funds were originally programmed for DT/OT IIA; Due to schedule slip in JTIDS Class 2 contract DT/OT IIA was slipped to FY86; Therefore funds programmed for test support were no longer required in FY85 (Schedule)	-1.5	-2.0
Army Budget line for FY87-FY89 zeroed out Funds will be managed at OSD level (Estimating)	-17.1	-23.4

13. Cost Variance Analysis (Cont'd):

	(Dollar in Millions) Base Year $	Then Year $
(2) Procurement	NA	NA
(3) MILCON -	NA	NA

d. References -- SDDM, 16 January 1981; DCP, 31 March 1981.

14. Program Acquisition Unit Cost (PAUC) History: 1/

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

JTIDS/PJH HIU:

Initial Contract Price Target	Ceiling	Qty
$11.6	NA	22

Singer Kearfott Division
Little Falls, NJ
DAAB07-83-C-J045, CPFF
Award: July 29, 1983
Definitized: July 29, 1983

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Project Manager
$23.4	NA	20	$24.3	$24.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances (10/84)	$-1.96	$-2.4
Cumulative Variances To Date (10/85)	-1.33	-1.1
Net Change	$ .63	$ 1.3

1/ Not required in accordance with ASD (c) letter, Subject: Unit Cost Reporting for ADDS, JTIDS and SHORAD C2, dated 15 May 1985.

Explanation of Change: The unfavorable variances were caused by unanticipated design costs that have occurred in the HIU hardware and software tasks; delays in delivery of HIU/shelters, and increased efforts on modification of the local memory Shop Replaceable Units (SRUs). The Project Manager has descoped efforts on non-critical contract tasks to eliminate cost and schedule variances. Descoping will result in savings of approximately $1.1M. One descoped effort was the reduction of quantities of HIUs form 22 to 20.

b. Procurement - NA.

c. MILCON - NA.

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

a. Program Status --

(1) Percent Program Completed: 100.0% (12 yrs/12 yrs)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 100.0% (104.1/104.1)
(Funds Appropriated To Date In Millions/Total Program Funding in Millions)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY76-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92)	Total
RDT&E	104.1	0.0	0.0	0.0	104.1
Procurement	0.0	0.0	0.0	0.0	0.0
MILCON	0.0	0.0	0.0	0.0	0.0
Total	104.1	0.0	0.0	0.0	104.1

16. PROGRAM FUNDING SUMMARY (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty 1/	FY83 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway						
		Nonrec	Rec	Total			Total 2/	
APPROPRIATION: RDT&E								
1976	0			0.1			0.1	6.6
1977T	0			0.0			0.0	2.9
1977	0			1.4			1.0	2.6
1978	0			1.1			0.8	6.8
1979	0			7.8			6.4	10.6
1980	0			4.8			4.3	10.6
1981	0			2.9			2.9	7.6
1982	5			11.3			12.2	4.9
1983	10			17.6			19.9	3.8
1984	12			18.0			21.6	3.6
1985	0			18.4			22.8	3.2
1986	5			9.4			12.1	4.1
1987	0			0.0			0.0	3.9
1988	0			0.0			0.0	3.4
1989	0			0.0			0.0	2.9
Total	32	0.0	0.0	92.9	0.0	0.0	104.1	

17. Production Rate Data: NA

18. Operating and Support Costs: NA

1/ Includes 27 JTIDS Class 2 Terminals and 5 JTIDS Class 2M Terminals.

2/ The budget for FY87 and FY88 will be managed at the OSD level.

N-18 JTIDS

~~CONFIDENTIAL~~

SAR-85-100

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

AS OF DATE: December 31, 1985*

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1. Designation and Nomenclature: AN/URQ (to be determined)/Joint Tactical Information Distribution System (JTIDS), Navy/Marine Corps Distributed Time Division Multiple Access (DTDMA)

2. DoD Component: U.S. Navy

3. Responsible Office and Telephone Number:
   Space and Naval Warfare Systems Command — PD: Capt Henry M. Ring, USN
   PDW/PMA 109 — Assigned: August 13, 1984
   Washington, D.C. — A/C (202) 746-1784

4. Program Elements:
   RDT&E: 25604N
   Procurement: 24662N

AS AMENDED MAR 31 1986

5. Related Programs: None

~~CLASSIFICATION BY: ESD/[illegible]~~
~~SECURITY CLASSIFICATION GUIDE, 15 MAY 1982~~
~~REVIEW ON: 31 DECEMBER 1990~~

THIS PAGE IS UNCLASSIFIED

USD(PA) DPC 1 DR 86-T-0861

~~CONFIDENTIAL~~

(U) Mission and Description: The DTDMA family of JTIDS terminals will alleviate operational deficiencies in U.S. Navy/Marine Corps tactical air and surface units by providing crypto-secure, jam-resistant, low probability of intercept communications at a high data rate, with the additional required capabilities of common-grid relative navigation (in aircraft application). DTDMA terminals are planned for installation in most Navy Combatant ships and aircraft. The Class 1 DTDMA terminal provides the highest level of capability and is designed to satisfy the requirements of major shipboard and landbased command and control centers. The Class 1A DTDMA terminal is similar in capability to the Class 1 except that it provides for fewer simultaneous voice channels. The Class 2 DTDMA terminal also provides capabilities similar to Class 1 except that two voice channels and a lower level of RF power output and throughput are required. This acquisition will result in Full Scale Development and Production of Class 1, Class 1A, and Class 2 airborne, shipboard and landbased DTDMA terminals. The DTDMA terminals will be compatible and interoperable with the TDMA to be deployed by the Air Force and Army. The JTIDS DTDMA program has been canceled in accordance with SecNav letter of October 16, 1985 which directed the following actions:

Suspend payment immediately on Hughes/ITT contract and begin process of establishing our rights for recovery of direct and consequent damages from Hughes/ITT.

Permanently drop all plans to procure Navy DTDMA terminals.

(U) Program Highlights:

a. Significant Historical Developments -- The Terminal Development Contract with Hughes Aircraft Company which was reinstated on 13 January 1984 was capped at $147 million. There was a nine month delay in the delivery of the first JTIDS FSD terminal. The delay was due to late release of drawings to manufacturing, additional rework time to correct design problems surfaced during brassboard testing, and extended lead time for parts delivery from vendors. JTIDS integration contract options were exercised with McDonnell Douglas for the F/A-18 and with Grumman Aerospace Corporation for the E-2C and F-14D. Integration requirements studies were started for the EA-6B and the EP-3. Drawings and shipalts were submitted for USS Constellation JTIDS installation. The JTIDS Development Evaluation Site (JDES) contract has been awarded. Preliminary DOD EMC test/simulations were performed.

b. Significant Developments Since Last Report: See paragraph (6) above.

c. Changes Since "As Of" Date -- None

(U) Decision Coordinating Paper (DCP) Threshold Breaches: None

9. (U) Schedule:

	Development Estimate/ Approved Program	Current Estimate	
a. Milestones			
Program Initiated (JOR Issued)	Mar 76/Mar 76	MAR 76	
Class 2 TDMA ADM Terminal Delivered to Navy/Air Force	Aug 78/Aug 78	Aug 78	
Class 1 DTDMA ADM Terminal Delivered to Navy	May 80/May 80	May 80	
Class 2 DTDMA ADM Terminal Delivered to Navy	Aug 80/Aug 80	Aug 80	
Design Analyses and Commonality Studies Awarded	Dec 80/Dec 80	Dec 80	
DSARC IIB	Jan 82/Jan 82	Jan 82	
FSD Contract Awarded	Jan 82/Jan 82	Jan 82	
FSD Contract Terminated	N/A	Nov 83	
FSD Contract Reinstated	N/A	Jan 84	
Block 1 FSD Terminal Deliveries Commence	Jun 84/Jul 86		(Ch 1)
Block 2 FSD Terminal Deliveries Commence	Jul 85/		(Ch 1)
DSARC IIIA	Sep 85/May 88		(Ch 1)
OT IIA	Dec 85/Jan 88		(Ch 1)
TECHEVAL Complete	Jul 86/		(Ch 1)
OPEVAL Complete	Apr 87/Feb 90		(Ch 1)
DSARC IIIB (AFP)	Sep 87/Mar 90		(Ch 1)
Initial Operational Capability(IOC)	Sep 87/Mar 90		(Ch 1)
First Full Production Award	Jan 88/		(Ch 1)
First Limited Production Terminal Delivery	Jan 88/		(Ch 1)

b. Previous Change Explanations --

Block 1 FSD Terminal deliveries were delayed due to late release of drawings to manufacturing, additional rework time to correct design problems surfaced during brassboard testing, and extended lead time for parts delivery from vendors. Block 2 FSD Terminal deliveries were delayed due to 9 month slip in delivery of first Block 1 JTIDS terminal.

c. Current Change Explanations --

(Ch 1) The JTIDS DTDMA Terminal Program has been canceled.

d. References --

Development Estimate: DCP, dated 19 February 1982, subject: Joint Tactical Information Distribution System (JTIDS), DTDMA, Full Scale Development ~~(Confidential)~~.

Approved Program: CNO letter serial 094/5C341737 dated 28 February 1985, subject: Joint Tactical Information Distribution System (JTIDS).

[redacted].(U) Technical/Operational Characteristics:

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a.(U) Technical			
(b)(1)			
(U) Weight (lbs)			
(1) Class 1	1200/1200	N/A	(Ch 1)
(2) Class 1A	135/135	N/A	(Ch 1)
(3) Class 2	125/125	N/A	(Ch 1)
(U) Size (cubic ft)			
(1) Class 1	7.25/7.25	N/A	(Ch 1)
(2) Class 1A	1.97/1.97	N/A	(Ch 1)
(3) Class 2	1.70/1.70	N/A	(Ch 1)
(U) Coded Message Error Probability	10 -2/ 10 -2	N/A	(Ch 1)
b.(U) Operational			
(U) Mean Time Between Failure, all classes (hrs)	500/250	N/A	(Ch 1)
(U) Mean Time to Repair, all classes (min)	30/30	N/A	(Ch 1)

c.(U) Previous Change Explanations -- Size and weight of Class 2 terminal represents approved Terminal for F/A-18. Size and weight are not SDDM thresholds.

d.(U) Current Change Explanations -- (Ch 1) The JTIDS DTDMA Terminal Program has been canceled.

e.(U) References --

[redacted]Development Estimate: DCP, dated 19 February 1982, subject: Joint Tactical Information Distribution System (JTIDS), DTDMA, Full Scale Development ~~(Confidential)~~.
Approved Program: CNO letter serial 094/5C341737 dated 28 February 1985, subject: Joint Tactical Information Distribution System (JTIDS).

(U) Program Acquisition Costs (Current Estimate in Millions of Dollars)

a. Cost --	(1) Development Estimate	(2) Changes	(3) Current Estimate
Development 1/	710.1	-304.4	405.7
Class 1	(170.4)	(-73.1)	(97.3)
Class 1A	(35.5)	(-15.1)	(20.4)
Class 2	(504.2)	(-216.2)	(288.0)
Procurement APN			
Flyaway 2/	347.7	-347.7	-
Class 1A	(23.6)	(-23.6)	-
Class 2	(324.1)	(-324.1)	-
Integration Hardware	73.1	-73.1	-
Class 1A	(5.1)	(-5.1)	-
Class 2	(68.0)	(-68.0)	-
Other Weapon System Costs	26.2	-26.2	-
Class 1A	(1.7)	(-1.7)	-
Class 2	(24.5)	(-24.5)	-
Initial Spares	38.9	-38.9	-
Class 1A	(2.7)	(-2.7)	-
Class 2	(36.2)	(-36.2)	-
Total Procurement APN	485.9	-485.9	-
Procurement OPN			
Sailaway 2/	44.9	-44.9	-
Class 1	(37.2)	(-37.2)	-
Class 2	(7.7)	(-7.7)	-
Integration Hardware	122.9	-122.9	-
Class 1	(105.3)	(-105.3)	-
Class 2	(17.6)	(-17.6)	-
Other Weapon System Cost	14.7	-14.7	-
Class 1	(11.7)	(-11.7)	-
Class 2	(3.0)	(-3.0)	-
Initial Spares	9.6	-9.6	-
Class 1	(8.0)	(-8.0)	-
Class 2	(1.6)	(-1.6)	-
Total Procurement OPN	192.1	-192.1	-

(U) Program Acquisition Costs (Current Estimate in Millions of Dollars)

a. Cost --(con't)	(1) Development Estimate	(2) Changes	(3) Current Estimate
Procurement SCN 3/			
Sailaway 2/	-	-	-
Class 1	-	-	-
Class 2	-	-	-
Integration Hardware	-	-	-
Class 1	-	-	-
Class 2	-	-	-
Other Weapon System Cost	-	-	-
Class 1	-	-	-
Class 2	-	-	-
Initial Spares	-	-	-
Class 1	-	-	-
Class 2	-	-	-
Total Procurement SCN	-	-	-
Construction	-	-	-
Total: Constant FY81$	1388.1	-982.4	405.7
Escalation	753.8	-697.3	56.5
Development	(251.1)	(-194.6)	(56.5)
Procurement	-	-	-
(APN)	(353.2)	(-353.2)	-
(OPN)	(149.5)	(-149.5)	-
(SCN)	-	-	-
Construction	-	-	-
Total Then-Year $	2141.9	-1679.7	462.2
b. Quantities --			
Development (RDT&E)			
Class 1	13	-11	2
Class 1A	19	-19	-
Class 2	58	-49	9
Procurement			
Class 1	81	-81	-
Class 1A	81	-81	-
Class 2	1,772	-1,772	-
Total			
Class 1	94	-92	2
Class 1A	100	-100	-
Class 2	1,830	-1821	9
	2,024	-2,013	11

(U) Program Acquisition Costs (Current Estimate in Millions of Dollars)

c. Unit Cost --

	(1) Development Estimate	(2) Changes	(3) Current Estimate
Procurement:			
Class 1			
Constant FY81$	2.002	-2.002	-
Escalated	3.548	-3.548	-
Class 1A			
Constant FY81$	0.409	-0.409	-
Escalated	0.672	-0.672	-
Class 2			
Constant FY81$	0.272	-0.272	-
Escalated	0.473	-0.473	-
Program:			
Class 1			
Constant FY81$	3.538	4/	4/
Escalated	5.512	4/	4/
Class 1A			
Constant FY81$	0.686	4/	4/
Escalated	1.025	4/	4/
Class 2			
Constant FY81$	0.539	4/	4/
Escalated	0.831	4/	4/

d. Approved Design to Cost Goal --

	(Average Unit Flyaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
Class 1 @ Qty: 0 @ Peak Rate: 0/mo			
FY 81 Base-Year$	0.459/0.459	-	0.551
Then-Year $	0.789/0.789	-	0.946
Class 1A @ Qty: 0 @ Peak Rate: 0/mo			
FY 81 Base-Year$	0.291/0.291	-	0.349
Then-Year $	0.477/0.477	-	0.572
Class 2 @ Qty: 0 @ Peak Rate: 0/mo			
FY 81 Base-Year$	0.187/0.187	-	0.226
Then-Year $	0.323/0.323	-	0.388

Foreign Military Sales -- None

f. Nuclear Costs -- None

1/ Development costs have been allocated on a per class basis. Although development costs are interdependent due to the modular development approach, cost allocation by class was undertaken to facilitate unit cost reporting.

2/ Flyaway/Sailaway costs include the cost of terminals, secure data units and an allowance for engineering change proposals only. Production costs for integration hardware have been excluded since these elements vary for each platform type.

3/ SCN costs were included in the OPN costs at the time of the Development Estimate.

4/ The JTIDS DTDMA Terminal Program has been canceled.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
Program Acquisition --			
Class 1			
(1) Cost	110.9	667.6	110.9
(2) Quantity	2	146	2
(3) Unit Cost	1/	4.572	1/
Class 1A			
(1) Cost	23.2	123.0	23.2
(2) Quantity	0	103	0
(3) Unit Cost	1/	1.194	1/
Class 2			
(1) Cost	328.1	1710.3	328.1
(2) Quantity	9	1755	9
(3) Unit Cost	1/	.974	1/
b. Current Procurement	(FY 1986) N/A	(FY 1986) N/A	(FY 1987) N/A

1/ The JTIDS DTDMA program has been canceled.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	$961.2	$1180.7	N/A	$2141.9
Previous Changes:				
Economic	-68.4	+44.3		-24.1
Quantity	0.0	-2.6		-2.6
Schedule	+24.0	+54.4		+78.4
Engineering	+66.3	+13.5		+79.8
Estimating	+163.7	+143.4		+307.1
Other	0.0	0.0		0.0
Support	+23.8	-103.4		-79.6
Subtotal	+209.4	+149.6		+359.0
Current Changes:				
Economic	+68.4	-44.3		+24.1
Quantity	0.0	-1,178.1		-1,178.1
Schedule	-24.0	-54.4		-78.4
Engineering	-565.3	-13.5		-578.8
Estimating	-163.7	-143.4		-307.1
Other	0.0	0.0		0.0
Support	-23.8	+103.4		+79.6
Subtotal	-708.4	-1330.3		-2038.7
Total Changes	-499.0	-1180.7		-1679.7
Current Estimate	$462.2	-		$462.2

(FY 1981 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	$710.1	$678.0	N/A	$1388.1
Previous Changes:				
Quantity	0.0	+4.0		+4.0
Schedule	+14.4	-2.0		+12.4
Engineering	+54.9	+4.1		+59.0
Estimating	+115.1	+79.4		+194.5
Other	0.0	0.0		0.0
Support	+20.0	-64.5		-44.5
Subtotal	+204.4	+21.0		+225.4
Current Changes:				
Quantity	0.0	-682.0		-682.0
Schedule	-14.4	+2.0		-12.4
Engineering	-359.3	-4.1		-363.4
Estimating	-115.1	-79.4		-194.5
Other	0.0	0.0		0.0
Support	-20.0	+64.5		+44.5
Subtotal	-508.8	-699.0		-1207.8
Total Changes	-304.4	-678.0		-982.4
Current Estimate	$405.7	-		$405.7

UNCLASSIFIED

(U) Cost Variance Analysis (Con't):

b. Previous Change Explanations --

RDT&E

Economic:	Revised escalation indices
Engineering:	Increased costs of integration
Estimating:	Program schedule slip of nine months caused by termination and reinstatement of terminal FSD Contract, additional funding to develop Class 2A terminal
Support	Revised estimate of maintenance equipment and initial spares

Procurement

Economic:	Revised escalation indices
Quantity:	Changes in yearly ship and aircraft installation plans, and shipyard availabilities
Schedule:	Delay in procurement of terminals to later years
Engineering:	Related engineering changes
Estimating:	Revised estimate of integration costs
Support:	Costs of Platform Adapter Groups absorbed by Other Equipment

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
RDT&E		
SECNAV decision to cancel the DTDMA Terminal program. (Other)	-508.8	-708.4
Procurement		
SECNAV decision to cancel the DTDMA Terminal program. (Other)	-699.0	-1330.3

d. References --

DCP, February 19, 1982, subject "Joint Tactical Information Distribution System (JTIDS), DTDMA, Full Scale Development ~~(Confidential)~~"

14. (U) Program Acquisition Unit Cost (PAUC) History: Class 1

a. Initial SAR Estimate to Current Development Estimate
Not applicable. Initial SAR was Development Estimate.

b. Current Development Estimate to Current Estimate

PAUC (Development Est)	Changes (Then Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
512									1/

(U) Program Acquisition Unit Cost (PAUC) History (Con't): Class 1A

a. Initial SAR Estimate to Current Development Estimate
Not applicable. Initial SAR was Development Estimate.

b. Current Development Estimate to Current Estimate

PAUC (Development Est)	Changes (Then Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
1.025									1/

Program Acquisition Unit Cost (PAUC) History: Class 2

a. Initial SAR Estimate to Current Development Estimate
Not applicable. Initial SAR was Development Estimate.

b. Current Development Estimate to Current Estimate

PAUC (Development Est)	Changes (Then Year Dollars in Millions)								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
.831									1/

The JTIDS DTDMA Terminal Program has been canceled.

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

a. RDT&E --
Terminal Development

	Initial Contract Price		
	Target	Ceiling	Qty
Hughes Aircraft Co.	$109.1	$147.0	79

N00039-82-C-0071
Award: 13 January 1984 CPIF
Definitized: 13 January 1984

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$111.1	$150.6	N/A	$188.8	$125.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$- 5.2	$- 8.7
Cumulative Variances To Date (8/31/85)	$-25.5	$-21.3
Net Change	$-20.3	$-12.6

Explanation of Change: The contract was terminated for default on November 1985.

Contract Information (Cont'd): (Then-Year Dollars in Millions)

Aircraft Integration - E2-C	Initial Contract Price Target	Ceiling	Qty
Grumman Aircraft Co.	$121.7	$121.7	--

N00019-83-C-0037 CPIF
Award: 30 September 1983
Definitized: 28 September 1984

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$121.7	$121.7	--	$116.6	$121.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ +1.1	$ -2.1
Cumulative Variances To Date (10/31/85)	$ +1.4	$ -8.5
Net Change	$ + .3	$ -6.4

Explanation of Change: The DTDMA Terminal program was canceled in October 1985.

Aircraft Integration - F/A-18	Initial Contract Price Target	Ceiling	Qty
McDonnell Aircraft Co.	$ 16.7	$ 53.1	--

N00019-83-C-0335 CPFF
Award: 23 July 1984
Not Definitized

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$ 64.4	$ 64.4	--	$ 53.0	$ 23.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ + .4	$ .0
Cumulative Variances To Date (8/31/85)	$ +1.1	$ - .4
Net Change	$ + .7	$ - .4

Explanation of Change: The DTDMA Terminal portion of the contract was terminated in October 1985.

Aircraft Integration - F-14D	Initial Contract Price Target	Ceiling	Qty
Grumman Aircraft Co.	N/A	N/A	N/A

N00019-84-C-0015 FFP
Award: July 1984
Definitized: N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
N/A	N/A	N/A	86.1	86.1

	Cost Variance	Schedule Variance
ious Cumulative Variances	N/A	N/A
lative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change: FFP Contract. Not subject to variance analysis. The DTDMA program was canceled in October 1985.

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

a. Program Status --

(1) Percent Program Completed: 100% (11 yrs/11 yrs)

(2) Percent Program Cost Appropriated: 100% ($462.2/462.2)

b. Appropriation Summary --

	(Then-Year Dollars in Millions)				
Appropriation	Current & Prior Yrs (FY81-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	462.2	-	-	-	462.2
Procurement	-	-	-	-	-
TOTAL	462.2	-	-	-	462.2

c. Annual Summary --

Fiscal Year	Qty	FY 81 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1981	11			101.6			101.6	10.61
1982	-			43.4			47.9	7.60
1983	-			78.9			90.9	4.90
1984	-			88.0			105.5	3.80
1985	-			93.8			116.3	3.60
TOTAL	11			405.7			462.2	

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
1981	101.6	101.6	100.9
1982	47.9	47.9	47.3
1983	90.9	90.9	78.8
1984	105.5	105.5	102.7
1985	116.3	116.3	87.7
To Complete	-	-	-
TOTAL	462.2	462.2	417.4

17 (U) Production Rate Data: N/A

(U) Operating and Support Costs: N/A

AF-23 JTIDS

SAR-85-063

~~SECRET~~

SELECTED ACQUISITION REPORT (SAR) (RCS: DD-COMP(Q&A)823)
PROGRAM: JTIDS Class 2 TDMA Terminal

AS OF DATE: December 31, 1985

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DEPARTMENT OF DEFENSE

18

1. Designation/Nomenclature (Popular Name): Joint Tactical Information Distribution System Time Division Multiple Access Terminal/JTIDS Class 2 TDMA Terminal

SAF/PASS
86-162A-T

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:
JTIDS Joint Program Office
Electronics Systems Division
Hanscom AFB, MA 01731-5000

PM: Lt Col Dennis J. Berry
Assigned: April 15, 1985
AUTOVON: 478-5980 x3532
Commercial: (617) 271-3532

4. Program Element/Procurement Line Items:
RDT&E: 64754F (Shared funding)
64771D (Shared funding)

5. Related Programs: E-3 (AWACS); NATO Airborne Early Warning and Control System; E-2C; Adaptable Surface Interface Terminal (ASIT); Tactical Air Operations Center (TAOC); Modular Control Equipment (MCE); JTIDS Class 1 TDMA terminal; F-15 Eagle; F-14 Tomcat; Position Location Reporting System (PLRS)/JTIDS Hybrid (PJH) System; Joint Interoperability of Tactical Command and Control Systems (JINTACCS); CV/CVN (Aircraft Carrier/Nuclear Aircraft Carrier); CG/CGN (Guided Missile Cruiser/Nuclear Guided Missile Cruiser); DDG (Guided Missile Destroyer)

~~Classified by: JTIDS Security Classification Guide, 15 May 1982~~
~~Declassify on:~~ OADR

(THIS PAGE IS UNCLASSIFIED)

~~SECRET~~

86-0735

6. Mission and Description:

The JTIDS Class 2 TDMA Terminal will provide mobile tactical platforms with the earliest jam-resistant, secure, digital communications (data and voice) capability, and will include Tactical Air Navigation (TACAN) and Time-of-Arrival (TOA) positioning functions and an inherent identification (ID) capability. This Terminal will enable sensor information from many sources to be displayed to Air Force pilots and Army elements in a real-time coherent fashion. It will also be interoperable with Class 1 TDMA JTIDS terminals in air (AWACS) and ground systems in both United States and North Atlantic Treaty Organization (NATO) forces. The size of the Class 2 TDMA terminal is 1.6 cubic feet, and the weight is 125 pounds. The Class 2 TDMA terminal does not replace any existing USAF system.

7. Program Highlights:

a. Significant Historical Developments -- The Class 2 Advanced Development Model (ADM) terminal underwent successful pod testing (completed January 1982) on F-4 and A-10 aircraft which demonstrated the utility of the Class 2 terminal in fighter aircraft and provided data for subsequent development of the Full Scale Engineering Development (FSED) terminal. Following the DSARC IIA decision on 13 January 1981, the Under Secretary of Defense authorized FSED of the JTIDS Class 2 TDMA terminal to meet Air Force and Army requirements for jam-resistant tactical communications. Authorization was also given to develop a comprehensive fighter integration program to identify cost effective integration options. An FSED contract was awarded 14 January 1981 to the Singer Company, Kearfott Division, to design, develop and fabricate 20 Class 2 TDMA terminals (5 Army and 15 Air Force) for Air Force and Army test and evaluation. Since the initial contract, the Army has purchased an additional 22 terminals while the Air Force has purchased 4 more bringing the total to 27 Army terminals and 19 Air Force terminals. Class 2 Preliminary Design Review (PDR) was completed in October 1981; Critical Design Review (CDR) for the JTIDS Class 2 TDMA terminal was completed in July 1982. In 1983, Singer began bilingual terminal development which will give the TDMA terminal the capability to communicate in either Interim JTIDS Message Specification (IJMS) or Tactical Data Link J (TADIL J) message structure during the transition by all services to the TADIL J message standard, and the United Kingdom awarded a contract to the Singer Company for 19 JTIDS Class 2 TDMA terminals for Tornado, Nimrod, and UKADGE testing.

The Government accepted the first Army Full Scale Development (FSD) Class 2 terminal in March of 1984 and the first Air Force terminal in June of 1984. Following the initial delivery, the Army has received 24 terminals and Air Force has received 13 terminals for a total of 39 terminals delivered. In November 1984, The Class 2 Program experienced a schedule slip of six months in the start of DT&E because of problems in terminal hardware/software integration.

b. Significant Developments Since Last Report -- The Class 2 flight demonstration on 18 June 1985 at McDonnell Douglas Aircraft (McAir) in St Louis MO demonstrated all major functions of the FSD terminals worked (i.e. digital data via TADIL J, 16 Kpbs digital voice, and internal terminal TACAN function). DT&E began in October 1985.

7. Program Highlights (Continued:

b. Significant Developments Since Last Report (Continued) -- In November 1985, the Secretary of the Navy directed that development work on the Navy DTDMA JTIDS be terminated and that the Navy join with the Army and Air Force to develop TDMA terminals. The Navy is presently evaluating a Singer Proposal for studies that will evaluate the feasibility of Navy TDMA terminals.

On 31 December 1985, the Air Force let a contract to Singer, Kearfott Division for Follow-on Terminal development. This contract consists of 6 FSD Class 2M terminals for the Army and long lead parts buy for both the Army and the Air Force. The major Follow-on Development for the Air Force (the Class 2H, High-powered Amplifier terminal) is scheduled to be on contract by 1 March 1986. The Class 2M will go into the Army PLRS-JTIDS Hybrid while the Class 2H will go into the AWACS and MCE.

The JTIDS Class 2 TDMA Terminal is expected to satisfy the mission requirement.

c. Changes Since "AS Of" Date -- Paragraph 13.c(1) below, Cost Variance Analysis Current Changes Evaluations, includes an entry increasing Then Year cost by $4.0 Million due to inflation rate change not withdrawn by OSD. OSD has since withdrawn excess funds.

8. Decision Coordinating Paper (DCP) Threshold Breaches

The six month slip of DT&E in November 1984 caused an additional 2 month delay in IOT&E which pushed Milstone III into January of 1987 breaching the DCP threshold of December 1986. Milestone III has slipped an additional two months to March of 1987 due to delays in DT&E testing. This was reported in the December 1984 SAR .

9. Schedule

a. Milestones	Development Estimate/ Approved Program	Current Estimate
Program Initiation	Mar 76/Mar 76	Mar 76
Class 2-TDMA ADM Delivery	Aug 78/Aug 78	Aug 78
Milestone II	Jan 81/Jan 81	Jan 81
TDMA Development Contract Award	Jan 81/Jan 81	Jan 81
Pod Preliminary OT&E	Jan 81/Jan 82	Jan 82
Delivery of First FSD Terminal		
Army	Apr 83/Apr 83	Mar 84
Air Force	Jul 83/Jul 83	Jun 84

9. Schedule (Cont'd)

a. Milestones	Development Estimate/ Approved Program	Current Estimate	
Army Unique Development Test/ Operational Test (DT/OT)	Dec 84/Jul 86	Jul 86	
Air Force Testing Complete	Jan 86/Jan 87	Mar 87	(Ch-1)
Milestone III	Jun 86/Mar 87	Mar 87	(Ch-2)
Production Decision	Jun 86/Mar 87	Mar 87	(Ch-2)
Production Contract Award	Jun 86/Mar 87	Mar 87	
PLRS/JTIDS HYBRID Army Systems ASARC	Oct 86/ N/A	N/A	(Ch-3)
Army First Unit Equipped A/	Nov 86/Jul 88	Jul 88	
Delivery of First Production Unit	Jun 88/Mar 89	Mar 89	
IOC			
Army A/	Oct 89/Oct 88	Oct 88	
Air Force	Sep 88/Dec 89	Dec 89	

A/ The PJH is not driven by the JTIDS schedule. If no Class 2 production units are available, then development terminals will be used.

b. Previous Change Explanations --

In the December 1981 SAR, the DSARC Production Decision Milestone was revised from June 1986 to June 1985.

In the September 1982 SAR, the delivery of the Air Force and Army terminals was delayed one month. Also, the Army Unique Development and the AF Testing Complete Milestones were increased three months because the Test Program was reduced from a full production modification in the F-15 and F-16 DT&E/IOT&E to test-only modification to the F-15 only with a shortened test program (F-15 only IOT&E). This impacted the Production Decision which was changed to correspond to the end of DT&E testing. This in turn affected the Contract award date and first production terminal delivered.

In the June 1983 and September 1983 SARs, milestones for Delivery of First FSD Terminal (Army and AF), Army Unique development, AF Testing Complete, Milestone III, Production Decision, and Contract Award were adjusted 3 months respectively in order to accomplish design work associated with the PACKED 4 message structure and June 1983 TADIL J message implementation.

In the December 1983 SAR, the IOC was redefined from initial terminal delivery to F-15 to a full squadron of F-15s having JTIDS capability moving the IOC to Dec 89. Also, due to a delay in the initial terminal delivery, DT&E/IOT&E testing announced a six month schedule slip.

In the December 1985 SAR, the milestone for the completion of Air Force testing was delayed eight months - six months because of hardware/software integration problems with the terminal and 2 additional months because of test asset availability and schedule adjustments mandated by new test timeframe. This, in turn, caused an 8 month delay in Milestone III and the Production Decision. The Contract Award date Milestone was adjusted an additional two months because of anticipated delays in the new DT&E review cycle.

The first production terminal will be delivered two years after the Production Contract Award.

9. Schedule (Cont'd)

c. Current Change Explanations:

Ch-1 - The end of Air Force testing has slipped two months from January 87 to March 87 due to a delay in the arrival of F-15s at Eglin AFB FL for DT&E testing. These F-15s are needed to complete all of our test objectives.

Ch-2 - Milestone III and the Production Decision have slipped two months due to delays in DT&E testing.

Ch-3 - The Secretary of the Army deemed that the PLRS-JTIDS Hybrid could continue into FSD without an ASARC.

d. References --

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.

Approved Program: FY 87 President's Budget

10. (U) Technical/Operational Characteristics:

a. (U) Technical	Dev Estimate/ Appr Program	Demonstrated A/ Performance	Current A/ Estimate
(U) Coded/Uncoded Data Rate (double pulse Tx or Rx) (kbps)	28.8/59.5 57.6/119.0 B/	N/A	57.6/119.0 B/
(b)(1)			
(U) Relay Range (nm)	1200/1200	N/A	1200
(b)(1)			
(U) Communication Range (nm)	300/300	N/A	300
(U) Voice Channels	3/3	N/A	3
(U) Coded Message Error Probability	.01/.01	N/A	.01
b. (U) Operational			
(U) Mean Time Between Maintenance (hr)	120/120		120
(U) Mean Corrective Maintenance Time (min)	30/30		30

c. (U) Previous Change Explanation:
None

d. (U) Current Change Explanations:
None.

e. (U) References --

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.

Approved Program: FY 87 President's Budget

A/ (U) Demonstrated Performance and Current Estimate will be updated after completion of Field Test.

B/ (U) A new message packing structure accounts for increase in the data rate. The data rate for single pulse is 238 kbps.

11. PROGRAM ACQUISITION COST: (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	$227.1	$219.0	$446.1
Procurement	N/A	N/A	N/A A/
Constuction (MILCON)	N/A	N/A	N/A
Total FY 81 Base-Year $	$227.1	$219.0	$446.1
Escalation	$ 55.4	$91.0	$146.4
Development (RDT&E)	($55.4)	($91.0)	($146.4)
Procurement	N/A	N/A	N/A
Construction (MILCON)	N/A	N/A	N/A
Total Then-Year $	$282.5	$310.0	$592.5
b. Quantities --			
Development (RDT&E)	15	22 B/	37
Procurement	N/A	N/A	N/A
Total	15	22	37

c. UnitCost -- N/A

d. Approved Design to Cost Goal --

	Dev Estimate Apr Program	(Average Unit Flyaway Cost) Current Estimate	Latest Approved Threshold
@ QTY: 2700			
@ Peak Rate: 40/mo			
FY 81 Base-Year $	0.2/0.2	0.2	0.2
Then-Year $	0.3/0.3	0.3	0.3

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

A/ The JTIDS Class 2 terminal Current Production Estimate including A Kit, B Kit, and start up is $93.2 (FY 81$), $165.6 (TY$) for 212 aireraft plus 9 support terminals with an FY 87 start.

B/ In the December 1983 SAR, we were directed to include an engineering upgrade of all TDMA terminals for E3 and MCE platforms for TADIL J applications. We did not include any quantity for Follow-on Development terminals. This number contains the additional 18 Follow-on terminals.

12. Program Acquisition/Current Procurement Unit Cost Summary: N/A

13. Cost Variance Analysis

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

	RDT&E	PROC	MILCON	TOTAL
DEVELOPMENT ESTIMATE	282.5	-	-	282.5
PREVIOUS CHANGES				
ECONOMIC	-22.9	-	-	-22.9
QUANTITY	2.7	-	-	2.7
SCHEDULE	24.8	-	-	24.8
ENGINEERING	285.8	-	-	285.8
ESTIMATING	-2.7	-	-	-2.7
OTHER	-	-	-	-
SUPPORT	-	-	-	-
SUBTOTAL	287.7	-	-	287.7
CURRENT CHANGES				
ECONOMIC	-6.9	-	-	-6.9
QUANTITY	26.7	-	-	26.7
SCHEDULE	-	-	-	-
ENGINEERING	5.5	-	-	5.5
ESTIMATING	-3.0	-	-	-3.0
OTHER	-	-	-	-
SUPPORT	-	-	-	-
SUBTOTAL	22.3	-	-	22.3
TOTAL CHANGES	310.0	-	-	310.0
CURRENT ESTIMATE	592.5	-	-	592.5

13. Cost Variance Analysis (Cont'd)
(FY 1981 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
DEVELOPMENT ESTIMATE	227.1	-	-	227.1
PREVIOUS CHANGES				
QUANTITY	2.2	-	-	2.2
SCHEDULE	-	-	-	-
ENGINEERING	198.4	-	-	198.4
ESTIMATING	-2.2	-	-	-2.2
OTHER	-	-	-	-
SUPPORT	-	-	-	-
SUBTOTAL	198.4	-	-	198.4
CURRENT CHANGES				
QUANTITY	20.5	-	-	20.5
SCHEDULE	-	-	-	-
ENGINEERING	2.6	-	-	2.6
ESTIMATING	-2.5	-	-	-2.5
OTHER	-	-	-	-
SUPPORT	-	-	-	-
SUBTOTAL	20.6	-	-	20.6
TOTAL CHANGES	219.0	-	-	219.0
CURRENT ESTIMATE	446.1	-	-	446.1

b. Previous Change Explanation --

RDT&E

Economic: revised escalation indices

Quantity: $2.2M increase for quantity increase from 15 to 19 terminals

Schedule: increase of $5M due to 6 month schedule slip of DT&E

Engineering: increased scope of Sofware 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; decrease in scope of F-16 and Bilingual Interface. Development of Class 2 terminal High Power Amplifier and interfaces for upgrade in E-3 and NCE platforms to TADIL J capability

Estimating: original Cost Estimate included all future terminals, impact of revised indices for prior year dollars

c. Current Change Explanations

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-6.9

c. Current Change Explanations (Continued)

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E (Continued)		
Change in cost catagory for portion of previously added cost for 18 development terminals (from Engineering to Quantity).	0.0	0.0
Dec 83 SAR counted entire cost of 18 additional development terminals toward Engineering in error. This is an offsetting entry (Engineering)	(-20.5)	(-26.7)
Cost due to Quantity increase portion of 18 additional development terminals (Quantity)	(20.5)	(26.7)
New requirements added to program for Modular Control Element (MCE) and additional Development Test & Evaluation (Engineering)	23.1	32.2
Additional Class 1 work to be accomplished in FY 88 without increase in FY 88 budget. Previously only Class 2 work budgeted in FY 88. (Estimating)	-1.4	-2.0
Adjustment for current and prior year escalation (Estimating)	0.4	0.5
Adjustment based on the assumed allocation from OSD resulting from differences in inflation assumptions. (Estimating)	2.8	4.0
Undistributed Congressional cut absorbed by the program, but may result in future slip of MCE production and IOC. (Estimating)	-4.3	-5.5

d. References --

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.

14. Program Acquisition Unit Cost (PAUC) History: N/A

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

a. RDT&E--

(1) PME	Initial Contract Price Target	Ceiling	Qty
Singer-Kearfott Division, Little Falls NJ, F19628-81-C-0007, FFP Award: January 14, 1981 Definitization: January 14, 1981	$49.7	$49.7	20

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$100.3 (Ch-1)	$100.3 (Ch-1)	46	$100.3	$100.3

Ch-1 - This is a joint Air Force/Army contract with the Air Force being the lead service. The current Air Force price is $55.0M for 19 terminals while the Army price is $45.3M for 27 terminals. Air Force modifications since the last year are as follows: a) Class 2M study (+$0.6M); b) EJS/JTIDS Study (+$2.1M); c) Deobligation for Class 2M (-$3.2M). Total change is -$0.5M.

Explanation of Changes: Cost Performance Report is not on contract.

(2) F-15 Integration (Class II MOD)	Initial Contract Price Target	Ceiling	Qty
McDonnell Douglas Corp., St Louis MO, F33657-81-C-2168, CPFF Award: October 1, 1982 Definitization: October 1, 1982	$23.9	$23.9	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$26.1	N/A	N/A	$33.0 (Ch-1)	$33.0 (Ch-1)

Ch-1 - Estimated Price At Completion reflects $6.8M authorized undefinitized work.

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$+1.7	$0.0
Cumulative Variance To Date (31 Oct 85)	$+3.2	$0.0
Net Change	$+1.5	$0.0

Explanation of Change: Positive Cost Variance is due to late GFE and adjustments to the DT&E/IOT&E. McAir submitted a Proposal on 16 July 1985 with a price of $6.8M which reflects planning as authorized through contract ammendment 000307, the latest definitized change. Authority to proceed with this proposal schedule and workscope has been received and is scheduled for incorporation into the BCWS and BAC. All cost variances will be eliminated when the budget baseline is completed. No impact on program or contract at completion.

15. Contract Information (Cont'd): (Dollars in Millions)

(3) Joint System Exerciser Integration	Initial Contract Price Target	Ceiling	Qty
Analysis and Computer Systems Inc, (ACSI), Bedford MA, F19628-82-C-0137 CPIF, Award: October 1, 1982 Definitization: October 1, 1982	$8.1	$8.1	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$12.2 (Ch-1)	N/A	N/A	$12.2 (Ch-1)	$12.2 (Ch-1)

Ch-1 - Contract Mods since last year are as follows: a) Enhanced JSE ($3.1M); b) Various ECPs ($0.6M)

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$+0.1	$-0.1
Cumulative Variance To Date (30 Nov 85)	$+0.1	$-0.2
Net Change	$+0.0	$-0.1

Explanation of Change: The negative schedule variance is caused by delay in the delivery of the Class 2 TDMA terminal to ACSI. No impact on program or contract at completion.

(4) T-39 Integration	Initial Contract Price Target	Ceiling	Qty
The Charles Stark Draper Labs Inc., Cambridge MA, F19628-84-C-0045, CPFF/LOE, Award: September 12, 1984 Definitization: September 12, 1984	$2.1	$2.1	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$3.8 (Ch-1)	N/A	N/A	$3.8 (Ch-1)	$3.8 (Ch-1)

Ch-1 - Contract mods since last year are as follows: a) Integration and test support of JTIDS Class 2 terminal on T-39 ($0.9M); b) Special test equipment for support of T-39 Class 2 Integration ($0.8M)

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$+0.2	$0.0
Cumulative Variance To Date (30 Nov 85)	$+0.2	$0.0
Net Change	$+0.0	$0.0

Explanation of Change: No change since last report.

15. Contract Information (Cont'd): (Dollars in Millions)

		Initial Contract Price		
(5)	Follow-on Development A/	Target	Ceiling	Qty
	Singer-Kearfott Division, Little Falls NJ, F19628-81-C-0007, FFP	$23.6	N/A	6
	Award: December 31, 1985			
	Definitization: December 31, 1985			

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$23.6	N/A	6	$23.6	$23.6

A/ This is a joint Air Force/Army contract with the Air Force being the lead service. The current Air Force price is $12.5M for Class 2M development and long-lead parts buy. The current Army price is $11.1M for 6 Class 2M terminals. The major portion of the Follow-on is expected to be negotiated by 1 March 86.

Explanation of Changes: None - First Report. Cost Performance Report is not on contract.

b. Procurement -- None

c. Milcon -- None

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

a. Program Status --
(1) Percent Program Completed: 58.3% (7/12)

(2) Percent Program Cost Appropriated: 40.9% (242.3/592.5)

b. Appropriation Summary --

Appropriation	Current & Prior Yrs (FY80-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92)	Total
RDT&E	$242.3	$71.7	$278.5	N/A	$592.5

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

c. Annual Summary --

Fiscal Year	Qty	FY 81 Base-Year Dollars			Then Year Dollars			Escl Rate (%) **
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1980	--	--	--	5.8	--	--	5.5	9.4
1981	--	--	--	17.3		--	18.1	11.9
1982	--	--	--	32.0	--	--	35.7	9.2
1983	--	--	--	20.5	--	--	23.9	4.9
1984	--	--	--	18.8	--	--	22.8	3.8
1985	--	--	--	48.2	--	--	60.5	3.6
1986	--	--	--	58.3	--	--	75.8	3.2
1987	--	--	--	53.0	--	--	71.7	4.1
1988	--	--	--	64.2	--	--	90.0	3.9
1989	--	--	--	63.9	--	--	92.4	3.4
1990	--	--	--	33.5	--	--	49.7	2.9
1991	--	--	--	30.6	--	--	46.4	2.3
Total	37	--	--	446.1	--	--	592.5*	

* All JTIDS RDT&E funds have been consolidated at OSD in PE 64771D. This is the assumed AF portion of the total funding.

** Since spend out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures --A/

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1980	5.5	5.5	5.2
1981	18.1	18.1	17.5
1982	35.7	35.7	35.1
1983	23.9	23.9	23.1
1984	22.8	22.8	16.5
1985	60.5	31.1	21.4
1986	75.8 B/	8.0	0.0
To Complete	350.2 B/	-	-
Total	592.5 B/	145.1	118.8

A/ Program Office records as of 31 December 1985

B/ All JTIDS RDT&E funds have been consolidated at OSD in PE 64771D. This is the assumed AF portion of the total funding.

17. Production Rate Data:

a. Annual Production Rates -- N/A

b. Cost Variance -- N/A

c. Schedule Variance -- N/A

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	19/14

18. Operating and Supporting Costs: N/A

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A-3 AHIP

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

PROGRAM: ARMY HELICOPTER IMPROVEMENT PROGRAM (AHIP) 85-032

AS OF DATE: December 31, 1985

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Concur in Classification as marked
11 MAR 1986
SECURITY REVIEW, OACSI, HQDA

1. (U) Designation and Nomenclature (Popular Name): OH-58D/Scout Helicopter (AHIP).

2. (U) DOD Component: Department of the Army.

3. (U) Responsible Office and Telephone Number:

Project Manager's Office
Army Helicopter Improvement Program
St. Louis, MO 63120-1798

Colonel John N. Tragesser
Assigned: April 15, 1985
AV: 693-1360; Commercial: (314) 263-1360

4. (U) Program Elements:

RDT&E: 64220D518
PROCUREMENT: APPN 2031, SSN AZ2200
SSN AA 0961

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5. (U) Related Programs: None

6. (U) Mission and Description: The Army Helicopter Improvement Program (AHIP) OH-58D Aeroscout helicopter is a major modification of the existing OH-58A helicopter to incorporate improved hot-day and nap-of-the-earth (NOE) performance, a Mast Mounted Sight (MMS) day/night target acquisition designation system, improved NOE communication/navigation, and space, weight and power for later addition of the Air-to-Air Stinger. With these improvements, the AHIP scout will operate in air cavalry, attack helicopter and field artillery units and will provide a day/night/limited visibility command and control, surveillance, and target acquisition and laser designation system at stand-off ranges for Army and Air Force precision guided munitions. The MMS will enhance survivability by allowing surveillance, target acquisition and target designation from extended ranges with minimal exposure. The AHIP scout will be capable of worldwide deployment and will be a highly survivable, mobile, flexible system providing a full range of support to the ground commanders.

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86-0714

7. (U) Program Highlights:

(U) a. Significant Historical Developments -- On 30 November 1979, an ASH Special ASARC reaffirmed the need for an Advanced Scout Helicopter (ASH). In July of 1980, an ASARC management review formally approved a program to compete a modification effort that would incorporate day/night target acquisition/designation capabilities; improved Nap-of-the-Earth (NOE) and tactical communication and navigation and an aircraft performance improvement which would permit operation with the AH-64A APACHE in the hot day, high altitude environment. A Required Operational Capability (ROC) document was approved on 9 January 1981. A formal solicitation was then issued to multiple helicopter manufacturers. Proposals were received by a Source Selection Evaluation Board in April 1981, with Hughes Helicopter Company, Inc. and Bell Helicopter Textron, Inc. being the only offerors. In September 1981, recommendations of the Source Selection Authority were provided to the Under Secretary of the Army and the Under Secretary of Defense. The recommendation was approved contingent upon the incorporation in the development contract of a "cap" on early production costs. An agreement for ceiling priced options for the first two years of production was incorporated in the contract and on 21 September 1981, a Full Scale Engineering Development (FSED) contract was awarded to BHTI for development and qualification of an improved scout helicopter to be identified as the OH-58D. The OH-58D results from major modification to the OH-58A observation helicopter. In March 1982, a formal ASARC II was conducted. The ASARC approved the FSED program acquisition strategy, including a degree of concurrency consistent with the reduced risk of a modification program. The acquisition strategy was designed to permit fielding of production aircraft in FY 1986. In April 1982, subsequent to a formal Preliminary Design Review (PDR), an OSD Program Go-Ahead review was conducted covering the OH-58D development and its associated concurrency. On 31 August 1982, a Secretary of Defense Decision Memorandum (SDDM) was signed, concurring in the AHIP program. A formal DA level In-Process Review (IPR) was conducted prior to each of the long lead releases. The OH-58D aircraft entered formal Government Development Testing (DT) II in July 1984. In September 1984, subsequent to a DA level IPR which included assessment of emerging DT II results, a low rate initial production contract was awarded for 16 OH-58D helicopters, associated support equipment and spare and repair parts. Operational Testing (OT) II of the OH-58D was conducted from September 1984 through February 1985. An Army Systems Acquisition Review Council (ASARC) was held on 23 July 1985 with Secretary of the Army decision to type classify to OH-58D as Standard A and to proceed into Full Scale Production, pending concurrence from OSD.

(U) b. Significant Developments Since Last Report -- On 7 October 1985 an SDDM was signed, type classifying Standard, the AHIP, approving it for the Field Artillery Aerial Observer role and directing that a Follow-On-Evaluation be conducted to demonstrate the OH-58D's contribution to the attack and air cavalry roles. A Lot 2 Production Contract for 44 aircraft was signed with BHTI on 28 October 1985. Production aircraft #1 and #2 were accepted in December 1985 IAW contract schedule.

(U) c. Changes Since "As of" Date — Acceptance of production aircraft #3 and #4 occurred on 3 February 1986, in lieu of the 31 January 1986 contract schedule date. Delay was due to minor aircraft discrepancies which the Government required to be corrected over the weekend prior to acceptance.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: None

9. (U) Schedule:

(U) a. Milestones	Development Estimate/ Approved Program	Current Estimate
FSD Contract Award	Sep 81/Sep 81	Sep 81
Long Lead Release	Jun 83/Jul 83	Jul 83
Initial Production Award	Oct 84/Sep 84	Sep 84
DT II/OT II Complete	Jan 85/Feb 85	Feb 85
Full Production Award	Jun 85/Oct 85	Oct 85
Follow-On Evaluation (FOE) Start	N/A /Mar 87	Mar 87 1/
DSARC Review of FOE Results	N/A /Sep 87	Sep 87 2/
IOC	3QFY86/3QFY87	3QFY87 (CH 1)

b. (U) Previous Change Explanations:

Long Lead Release slipped one month because of late arrival of contractor proposal and more extensive negotiations. To preserve favorable ceiling price options negotiated within the FSED contract, the first year production option had to be exercised on or before 1 Oct 84. It was signed on 25 Sep 84. OT II was extended two weeks to allow time for additional tests and because of weather delays. Full Production Award was delayed due to delay in the ASARC/DSARC process.

c. (U) Current Change Explanations:

(CH 1) The original IOC was scheduled for 3QFY86 but a VCSA decision was made to field AHIP on the basis of an entire AAH Battalion rather than a company as originally planned, thus slipping IOC 6 months. A delay of an additional 6 months to 3QFY87 was due to the SDDM decision to field initially to the Field Artillery Aerial Observer (FAAO) role and requiring a Follow-On Evaluation (FOE). The FOE, which required additional resources, was needed to qualify the AHIP for the Attack and Air Cavalry roles. The IOC will be a divisional General Support Aviation Company (GSAC) with 6 AHIPs in the FAAO role. The delayed IOC is not a result of any known or perceived problems with hardware/software production.

d. (U) References --

Development Estimate: SDDMs, dated 31 August 1982 and 7 October 1985, subject: "Army Helicopter Improvement Program (AHIP) for the Scout Helicopter."

Approved Program: Same as Development Estimate.

1/ Additional tests required by SDDM to demonstrate OH-58D contribution to attack and air cavalry roles.

2/ Additional review required by SDDM to evaluate results of FOE.

10. (U) Technical/Operational Characteristics:

a. Technical

	Dev Est/ Appr Pgm	Demonstrated Performance	Current Estimate
(b)(1)	[redacted]		
(U) Mean Time Between Mission Affecting Failure (HR) (4 hour mission)	4.4	8.43	8.7
(U) Sortie Rate (Flight hours for Month)			
Peacetime	20	20	20
Wartime: Initial Surge	112	112	112
Sustained	65	65	65
(U) Maintenance Manhour/Flight Hr (AVUM)	3	1.07	3
(U) Mean Time to Repair (HRS) (AVIM)	2	.08	2

b. (U) Operational

Vertical Rate of Climb (FT/MIN)			
2000 ft and 70°F	650	725	725
4000 ft and 95°F	500	560	560
Forward Flight Speed (KTAS)	112	120	120
Endurance (Hrs)	2.4	2.4	2.4

c. (U) Previous Change Explanation: Demonstrated Performance updated to reflect results of DT II/OT II. Current estimates reflect performance of production configuration. Nov 84 ROC revision defined reliability based on mean time between mission affecting failures in place of Operational Mission Reliability. Maintenance Reliability no longer used.

d. (U) Current Change Explanation: None

e. (U) References --

Development Estimate: SDDMs, dated 31 August 1982 and 7 October 1985, subject: "Army Helicopter Improvement Program (AHIP) for the Scout Helicopter."

Approved Program: FY 1987 President's Budget

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. (U) Cost --			
Development	$ 213.5	$ +2.2	$ 215.7
Procurement	1454.4	+424.3	1878.7
Flyaway	(1152.9)	(+199.7)	(1352.6)
Airframe	(329.7)	(+101.7)	(431.4)
Engine	(67.6)	(+12.2)	(79.8)
MMS/CDS	(559.1)	(+76.9)	(636.0)
Other Avionics	(148.9)	(+8.3)	(157.2)
Non Rec	(47.6)	(+.6)	(48.2)
Other Wpn Sys Cost	(220.9)	(+85.6)	(306.5)
Initial Spares	(80.6)	(+139.0)	(219.6)
Total FY 82 Base Year $	$1667.9	$+426.5	$2094.4
Escalation	863.7	-14.7	849.0
Development (RDT&E)	(14.6)	(-2.6)	(12.0)
Procurement	(849.1)	(-12.1)	(837.0)
Total Then-Year $	$2531.6	$+411.8	$2943.4
b. (U) Quantities --			
Development (RDT&E)	5	-	5
Procurement	578	-	578
Total	583	-	583
c. (U) Unit Cost --			
Procurement:			
FY 82 Base-Year $	$2.52	$+.73	$3.25
Then-Year $	3.99	+.71	4.70
Program:			
FY 82 Base-Year $	2.85	+.74	3.59
Then-Year $	$4.34	$+.71	$5.05

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

	(Average Unit Flyaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
@ Qty: 578			
@ Peak Rate: 10/mo			
FY 82 Base-Year $	1.99/1.99	2.34	2.57
Then-Year $	3.19/3.19	3.38	3.67
@ Qty: 116			
@ Peak Rate: 10/mo			
FY 82 Base-Year $	2.80/2.80	3.17	3.61
Then-Year $	3.82/3.82	4.10	4.63

e. (U) Foreign Military Sales -- None

f. (U) Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

			Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a.	(U)	Program Acquisition--			
	(U)	(1) Cost	2943.4	2668.1	2943.4
	(U)	(2) Quantity	583	583	583
	(U)	(3) Unit Cost	5.05	4.58	5.05
b.	(U)	Current Procurement--	(FY 1986)	(FY 1986)	(FY 1987)
	(U)	(1) Cost	240.7	260.6	250.1
		Less CY Adv Proc	20.9	51.8	45.3
		Plus PY Adv Proc	47.8	47.2	20.9
		Net Total	267.6	256.0	225.7
	(U)	(2) Quantity	39	56	48
	(U)	(3) Unit Cost	6.86	4.57	4.70

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Development Estimate	228.1	2303.5	2531.6
Previous Changes:			
Economic	-5.0	-148.2	-153.2
Schedule	-	+93.1	+93.1
Engineering	+13.4	+33.7	+47.1
Estimating	-.7	-78.1	-78.8
Support	-	+228.3	+228.3
Subtotal	+7.7	+128.8	+136.5
Current Changes:			
Economic	-.3	-155.4	-155.7
Schedule	-	+83.9	+83.9
Estimating	-7.8	+320.3	+312.5
Support	-	+ 34.6	+ 34.6
Subtotal	-8.1	+283.4	+275.3
Total Changes	- .4	+412.2	+411.8
Current Estimate	227.7	2715.7	2943.4

(FY 1982 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	TOTAL
Development Estimate	213.5	1454.4	1667.9
Previous Changes:			
Schedule	-	+ 39.9	+ 39.9
Engineering	+ 11.1	+ 21.0	+ 32.1
Estimating	- 2.0	- 47.8	- 49.8
Support	-	+137.6	+137.6
Subtotal	+ 9.1	+150.7	+159.8
Current Changes:			
Schedule	-	+ 33.1	+ 33.1
Engineering	-	-	-
Estimating	- 6.9	+222.1	+215.2
Support	-	+ 18.4	+ 18.4
Subtotal	- 6.9	+273.6	+266.7
Total Changes	+ 2.2	+424.3	+426.5
Current Estimate	215.7	1878.7	2094.4

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

b. (U) Previous Change Explanations--

RDTE

Economic: Revised escalation indices
Engineering: Inclusion of Optical Improvement Program
Estimating: Congressionally directed reduction in Total Risk Assessing Cost Estimate (TRACE). Revised computational method for FY 82 base year 82 $

Procurement

Economic: Revised escalation indices
Engineering: Inclusion of Optical Improvement Program (Engineering)
Schedule: Pgm stretched in the FY 86-90 POM by Army.
Estimating: Congressional Cuts (IR&D), and funding profile adjustment.
Support: Increased Initial Spares estimate based on refined configuration data, changing LSA results, and more detailed modeling. Inclusion of estimated warranty risk requirements; reductions for PGSE, Data, Training and Spares.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(U) (1) RDT&E		
Revised Feb 20, 1986 economic escalation rates. (Economic)	N/A	- .3
Turn-in of unused FSED contract contingency. (Estimating)	- 6.9	- 7.8
(U) (2) Procurement		
Revised Feb 20, 1986 economic escalation rates. (Economic)	N/A	-155.4
Program stretchout into FY92 due to POM restructuring & SDDM guidance. Effects are a flatter learning curve, (90-98%), costs for delivery restrictions and inflation for additional year. (Schedule)	+ 33.1	+ 83.9
HQDA-directed program changes SINCGARS, GPS) plus revised ECO (% of recurring hardware costs) estimate for safety, RAM-D/O&S cost reduction efforts (+123.0); revised SPM based on first production contract cost experience (actuals) (+193.0). (Estimating)	+222.1	+320.3
Revised spares policy definition. (Support)	+ 18.4	+ 34.6

d. (U) References --

Development Estimate: SDDMs, dated 31 August 1982 and 7 October 1985, subject: "Army Helicopter Improvement Program (AHIP) for the Scout Helicopter."

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. (U) Initial SAR Estimate Current Baseline Estimate —

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	

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

PAUC (Dev Est)	Changes								PAUC (Cur Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
4.3	-.5	-	+.3	+0.1	+.4	-	+.4	+.7	5.0

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

a. (U) RDT&E —

	Initial Contract Price Target	Ceiling	Qty
Bell Helicopter Textron, Inc., Hurst, TX DAAK50-81-C-0021, FPIF 21 Sep 81	$148.00	$186.6	5

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager AS AMENDED
$160.1	$197.8	5	$180.4	(b)(4)

	Cost Variance	Schedule Variance
Previous Cumulative Variances (10/29/85)	$ -28.0	$ -4.0
Cumulative Variances to Date	$ -27.5	$ -2.1
Net Change	$ + .5	$ +1.9

Explanation of Change: Work around plans reduced cost and schedule variances as contractor work closes out. Contract is 96% complete.

b. (U) Procurement —

	Initial Contract Price Target	Ceiling	Qty
Low Rate Initial Production	204.0	N/A	16

Bell Helicopter Textron, Inc., Hurst, TX
DAAK50-83-C-0027, FFP, awarded 25 Jul 83

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

Current Contract Price

Target	Ceiling	Qty
190.2	N/A	16

Estimated Price at Completion

Contractor	Program Manager
190.2	190.2

Lot 2 Production
Bell Helicopter Textron, Inc.
Hurst, TX DAAK09-85-C-A633
FFP.
Award: 25 Oct 85
Definitized: 25 Oct 85

Initial Contract Price

Target	Ceiling	Qty
223.3	N/A	44

Current Contract Price

Target	Ceiling	Qty
223.3	N/A	44

Estimated Price at Completion

Contractor	Program Manager
223.3	223.3

Engine:
Allison Gas Turbine, Operations
DAAK50-83-C-0046, FFP
Award: 30 Sep 83
Definitized: 30 Sep 83

Initial Contract Price

Target	Ceiling	Qty
$ 3.8	N/A	20

Current Contract Price

Target	Ceiling	Qty
$ 3.8	N/A	20

Estimated Price at Completion

Contractor	Program Manager
$ 3.8	$ 3.8

Allison Gas Turbine, Operations
DAAJ09-85-C-A073, FFP
Award: 30 Oct 84
Definitized: 30 Oct 84

Initial Contract Price

Target	Ceiling	Qty
$ 7.8	N/A	44

Current Contract Price

Target	Ceiling	Qty
$ 7.8	N/A	44

Estimated Price at Completion

Contractor	Program Manager
$ 7.8	$ 7.8

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

a. (U) Program Status —

(U) (1) Percent Program Completed: 54% (7 yrs/13 yrs)

(U) (2) Percent Program Cost Appropriated: 32% ($940.8/$2943.4)

b. (U) Appropriation Summary —

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs	Budget Year	Balance to Complete FYDP	Balance to Complete Beyond FYDP	Total
RDT&E	227.7	-	-	-	227.7
Procurement	713.1	250.1	1538.0	214.5	2715.7
TOTAL	940.8	250.1	1538.0	214.5	2943.4

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

c. (U) Annual Summary -

Fiscal Year	Qty	FY 82 Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Debit	Proc Credit	Total	Escl Rate (%)
Appropriation: RDT&E								
1980				7.5			6.0	
1981	5		22.3	28.2			25.6	
1982			27.3	37.5			38.5	
1983			50.9	68.7			73.9	
1984			23.2	46.4			51.8	3.8
1985			1.5	21.8			25.2	3.6
1986				5.6			6.7	3.2
Subtotal	5		125.2	215.7			227.7	
Appropriation: Procurement								
1983		4.0	23.1	32.1	17.3		38.3	9.0
1984	16	32.1	89.9	155.8	39.3	17.3	196.3	8.0
1985	44	2.9	129.7	182.1	47.8	39.3	237.8	4.1
1986	39		101.1	177.2	20.9	47.8	240.7	4.1
1987	48	3.2	120.6	178.0	45.3	20.9	250.1	4.1
1988	32	3.5	134.3	181.4	125.8	45.3	262.8	3.9
1989	81	2.5	205.1	276.1	177.7	125.8	410.7	3.4
1990	116		229.9	291.8	181.9	177.7	444.4	2.9
1991	120		187.8	269.6	124.3	181.9	420.1	2.3
1992	82		82.9	134.6		124.3	214.5	2.3
Subtotal	578	48.2	1304.4	1878.7	780.3	780.3	2715.7	
Total	583		1429.6	2094.4	780.3	780.3	2943.4	

d. (U) Obligations and Expenditure --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: RDT&E		
1980	6.0	6.0	6.0
1981	25.6	25.6	25.6
1982	38.5	38.5	38.5
1983	73.9	73.9	73.9
1984	51.8	51.8	49.9
1985	25.2	11.6	9.4
1986	6.7	-	-
TOTAL	227.7	207.4	203.3

16. (U) Program Funding SUmmary (Cont'd):

Appropriation: Procurement

1983	38.3	38.3	38.3
1984	196.3	196.3	195.5
1985	237.8	228.6	125.4
To Complete	2243.3	-	-
TOTAL	2715.7	463.2	359.2

17. (U) Production Rate Data:

a. (U) Annual Production Rates — (NOTE: The annual production rates shown differ from the annual funded quantities because the funded delivery period is 8 mos for FY84 and 9 mos for FY85, FY86, & FY88.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1984	24		24	24
1985	57		48	57
1986	75		39	75
1987	92		48	92
1988	120		48	120
1989	130		81	130
1990	120		116	120
1991	-		120	-
1992	-		120	-

b. (U) Cost Variance -- Dollars in Millions (NOTE: Subject to limitations on production rates above.)

Item		Production Estimate	Variance (CE less) PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(82 $)	1663.9	+430.5	2094.4	+ 286.7	1807.7
	(ESC $)	2531.6	+411.8	2943.4	+ 499.3	2444.1
PAUC	(82 $)	2.85	+ 0.74	3.59	+ 0.49	3.1
	(ESC $)	4.34	+ 0.71	5.05	+ .85	4.2

c. (U) Schedule Variance — (NOTE: Subject to the limitations on production rates above.)

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)			10/85	N/A	10/85
Duration (in Months)			86	24	110
End Date (Mo/Yr)			11/92	N/A	5/91

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

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

	To Date
RDT&E	5/5
Procurement	2/2

18. (U) Operating & Support Costs:

N/A

N-4D. TRIDENT II SUB [redacted]

SAR-85-056

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

PROGRAM: OHIO CLASS D5 CAPABLE SUBMARINE

AS OF DATE: December 31, 1985*

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1.(U) Designation/Nomenclature (Popular Name): OHIO Class Submarine

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

3.(U) Responsible Office and Telephone Number:

Strategic Systems Program Office
Department of the Navy
Washington, D.C. 20376-5002

PM: RADM K. Malley
Assigned: June 21, 1985
Telephone: 695-2064
Autovon: 225-2098

AS AMENDED
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APR 1 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

9

4.(U) Program Elements:

RDT&E: 63371N, 64363N (J1546 only)
PROCUREMENT: 11228N, APPN 1611 ICN 1040

5.(U) Related Programs:

TRIDENT I Backfit and TRIDENT II (D5) Missile, and TRIDENT I System.

Classified by [redacted]
OPNAVINST S5513.5A - Enclosure (27)
Declassify on: OADR

(This Page is UNCLASSIFIED)

[redacted]

OASD(PA) EDGISR 86-R-0878

6. (U) Mission and Description: To provide an undersea strategic missile system to ensure that the U.S. continues to maintain a credible, survivable deterrent independent of foreseeable threats. The nuclear-powered OHIO Class D5 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 SSBNs. It has an integrated command and control system, including 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. 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 (D5) missile with a December 1989 IOC. The design characteristics of the TRIDENT II (D5) missile require modifications to the OHIO Class submarine. Efforts in FY 1982 included identification of the necessary subsystem changes to incorporate the TRIDENT II (D5) 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 weapons system into the fleet. A decision was made to incorporate the D5 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 would be extended one year. The schedules of the tenth (SSBN 735) and the eleventh (SSBN 736) have also been extended. The twelfth (SSBN 737) and subsequent ship construction periods will not be affected by the change to TRIDENT II (D5). On 1 June 1982 the SECDEF advised Congress of the decision to accelerate the rate of introduction of D5 while maintaining the 1989 IOC.

In November 1982, the Navy executed modifications to the Electric Boat contract which incorporated the D5 SWS into the ninth and tenth ships and revised their delivery dates to December 1988 and August 1989 respectively. On 21 November 1983 an option to acquire the eleventh ship (SSBN 736) was exercised. A contemporaneous modification to incorporate D5 and extend delivery to April 1990 was also executed. In December 1984 contract negotiations for the SSBN 737 were begun.

b. Significant Development Since Last Report -- The December 1985 SAR Current Estimates are based on acquisition of ten OHIO Class D5 Capable Submarines at a shipbuilding rate of 1,0,1,1,1,1,1,1,1,1,1,1, beginning in FY 1981. To date, seven OHIO Class C4 Capable submarines have been delivered five of which have operationally deployed successfully. On 15 August 1985 a contract for the SSBN 737 (the twelfth ship) was awarded to Electric Boat with an option for the SSBN 738 to be exercised by 31 December 1985. The estimates contained in this report are based on the acquisition of ten OHIO Class D5 Capable Submarines through FY 1991.

c. Changes Since "As Of" Date -- Due to the suspension of contracting with General Dynamics the option for SSBN 738 was not exercised until 14 March 1986.

8. Decision Coordinating Paper (DCP) Threshold Breaches:

a. DCP No. 67, 14 Sep 1971, as amended by Cover Sheet No. 3 of 17 Jan 1977

b. There are currently no DCP threshold branches.

9. Schedule:

a. Milestones --

	Production Estimate/ Approved Program*	Current Estimate
Complete Baseline Design	3/72	3/72
Characteristics Approved	1/73	1/73
Complete Ship Contract Design	8/84	8/84
Production Contract Award	1/82	1/82
Construction Started:		
(1) First Ship	1/82	1/82
(2) Last Ship	1/88	6/91 (CH-1)
Launch:		
(1) First Ship	11/86	11/86
(2) Last Ship	7/92	11/95 (CH-1)
Acceptance Trials:		
(1) First Ship	12/88	12/88
(2) Last Ship	12/93	4/97(CH-1)
Delivery:		
(1) First Ship	12/88	12/88
(2) Last Ship	12/93	4/97(CH-1)
System IOC	12/89	12/89

* Production Estimate and Approved Program are the same therefore separate entries are not required.

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(CH-1) The Current Estimate is based on a total program of 10 submarines vice the 7 included in the Production Estimate. Program year 1987 and subsequent years start of construction and ship delivery dates have been delayed due to the deletion of advance procurement funding for contractor furnished equipment long leadtime items.

d. References --

Production Estimate: USD (R&E) Memo of July 22, 1981, subject OHIO Class Submarine program.

Approved Program: FY 1987 President's Budget

10. (U) Technical/Operational Characteristics: The following characteristics are based on those of the currently deployed OHIO Class C4 Configured Submarine. No change is anticipated in the Demonstrated Performance.

a. Technical —	Production Estimate	Demonstrated Performance	Current Estimate
(U) Length Overall (feet)	558		560
(U) Beam Max. (hull diameter in feet)	42		42
(U) Draft Navigation (feet)	35.5		36.5
[redacted]			
(1) (U) Type	Nuclear		Nuclear
[redacted]			
b. Operational —			
[redacted]			
(1) Range	Unlimited		Unlimited
(2) Stores (days)	90		90
(U) Armament			
(1) Missile Tubes	24		24
(2) Torpedo Tubes	4		4

c. Previous Change Explanations -- None.

d. Current Change Explanation -- None.

e. References —

Production Estimate: OPNAVINST C-9010.296, dated April 12, 1981, subject approved characteristics of the OHIO Class Submarine.

Approved Program: FY 1987 President's Budget

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Production Estimate (FY81-FY88)	Changes	Current Estimate (FY81-FY91)
a. Submarine Costs --			
Development (RDT&E)	49.3	23.3	72.6
Procurement (SCN)	9980.0	2945.7	12925.7
Construction (MILCON)	519.6	-62.1	457.5
Total FY83 Base-Yr $	10548.9	2906.9	13455.8
Escalation	3536.3	-652.3	2884.0
Development (RDT&E)	3.6	4.3	7.9
Procurement (SCN)	3416.8	-627.3	2789.5
Construction (MILCON)	115.9	-29.3	86.6
Total Then-Yr $	14085.2	2254.6	16339.8
b. Submarine Quantities --			
Development (RDT&E)	0	0	0
Procurement (SCN)	7	3	10
Total	7	3	10
c. Submarine Unit Cost --			
Procurement:			
FY83 Base-Yr $	1425.7	-133.1	1292.6
Then-Yr $	1913.8	-342.3	1571.5
Program:			
FY83 Base-Yr $	1507.0	-161.4	1345.6
Then-Yr $	2012.2	-378.2	1634.0

d. Approved Design to Cost Goal -- None.

e. Foreign Military Sales -- None.

f. Nuclear Costs -- The Current Estimate for Procurement includes $1508.7 million for Nuclear Propulsion costs. The OHIO Class D5 Capable SSBN Program draws upon general reactor plan research and development work performed by the Department of Energy (DOE) but this contribution can not be quantified.

g. Excludes the following D5 Missile and General Support MILCON current estimates which are not unique to the Submarine Acquisition Program:

TRIDENT II (D5) Missile -	482.8
General Support -	813.2
Total -	1296.0

Excludes FY1991 RDT&E costs ($2.3M) which are not considered acquisition related.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Yr) Dollars in Millions)

	Current Year (FY86)		Budget Year (FY87)
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate
a. Program Acquisition -			
(1) Cost	16339.8	16096.6	16339.8
(2) Quantity	10	9	10
(3) Unit Cost	1634.0	1788.5	1634.0
b. Current Procurement -	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	1315.2	1532.6	1515.1
Less CY Adv Proc	-158.1	-248.2	-146.4
Plus PY Adv Proc	264.1	264.1	175.0
Less OF/PD	-5.8	-.8	-6.0
Net Total	1415.4	1547.7	1537.7
(2) Quantity	1	1	1
(3) Unit Cost	1415.4	1547.7	1537.7

13. Cost Variance Analysis:

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

	RDT&E	SCN	MILCON	TOTAL
Production Estimate	52.9	13396.8	635.5	14085.2
Previous Changes:				
Economic	-1.7	-985.2	-18.5	-1005.4
Quantity		4071.7		4071.7
Schedule				0.0
Engineering				0.0
Estimating	29.8	-970.7	-114.0	-1054.9
Other				0.0
Support				0.0
Subtotal	28.1	2115.8	-132.5	2011.4
Current Changes:				
Economic	-0.6	-1315.8	-8.8	-1325.2
Quantity		1712.1		1712.1
Schedule				0.0
Engineering				0.0
Estimating	0.1	-193.7	49.9	-143.7
Other				0.0
Support				0.0
Subtotal	-0.5	202.6	41.1	243.2
Total Changes	27.6	2318.4	-91.4	2254.6
Current Estimate	80.5	15715.2	544.1	16339.8

(FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	SCN	MILCON	TOTAL
Production Estimate	49.3	9980.0	519.6	10548.9
Previous Changes:				
Quantity		2588.6		2588.6
Schedule				0.0
Engineering				0.0
Estimating	23.3	-694.0	-96.1	-766.8
Other				0.0
Support				0.0
Subtotal	23.3	1894.6	-96.1	1821.8
Current Changes:				
Quantity		1237.2		1237.2
Schedule				0.0

Engineering				0.0
Estimating	0.0	-186.1	34.0	-152.1
Other				0.0
Support				0.0
Subtotal	0.0	1051.1	34.0	1085.1
Total Changes	23.3	2945.7	-62.1	2906.9
Current Estimate	72.6	12925.7	457.5	13455.8

13. (U) Cost Variance Analysis (cont'd):

b. Previous Change Explanations —

RDT&E
Economic: revised escalation indices.
Estimating: transfer of certain efforts properly identified with D5 capable SSBNs from the TRIDENT I program.

Procurement
Economic: revised escalation indices.
Quantity: two additional submarines.
Estimating: revised estimates for shipbuilding costs.

MILCON
Economic: revised escalation indices
Estimating: recategorization of constuction projects as unique to the General Support Program and revised estimates.

c. Current Change Explanations —

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	N/A	- .6
Revised estimates. (Estimating)		.1
(2) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	- 1315.8
Increase is the result of the addition of one ship (FY1991) to the program. Current program includes ten ships vice nine in the previous program. (Quantity)	1237.2	1712.1
Decrease due to revised estimates for shipbuilding costs. (Estimating)	-186.1	-193.7
(3) MILCON		
Revised Jan 86 economic escalation rates. (Economnic)	N/A	-8.8
Revised construction estimates. (Estimating)	33.9	49.9

14. Program Acquisition Unit Cost (PAUC) History:

a. Initial SAR Estimate to Current Baseline Estimate -- For the OHIO Class D5 Capable Submarine Program, the initial SAR estimate is the Current Baseline Estimate.

b. Current Baseline Estimate to Current Estimate --

PAUC BASELINE SAR EST. PdE	Changes (Then Year Dollars in Millions)								PAUC CURRENT ESTIMATE
	ECON	QTY	SCH	ENG	EST	SPT	OTHER	TOTAL	
2012.2	-233.1	-25.3	0.0	0.0	-119.8	0.0	0.0	-378.2	1634.0

15. Contract Information: (THEN-YEAR DOLLARS IN MILLIONS)

a. Procurement (SCN) —

Submarine:
General Dynamics Corp.,
Electric Boat Division
Groton, Ct.
N00024-81-C-2134/FPIF
Award Date: January 7, 1982
(Group IV Construction, FY81, 83 and 84 Ships)

INITIAL CONTRACT PRICE		
Target	Ceiling	Qty
1,590.7	1,801.8	3

CURRENT CONTRACT PRICE		
Target	Ceiling	Qty
1,675.6	1,898.2	3

ESTIMATED PRICE AT COMPLETION	
Contractor	Program Manager
1,675.6	1,675.6

	COST VARIANCE	SCHEDULE VARIANCE
PREVIOUS CUMULATIVE VARIANCE	(6.4)	19.5
CUMULATIVE VARIANCES as of Sept. 85	(2.4)	4.3
NET CHANGE	4.0	(15.2)

Explanation of Change: The net changes reflected are not significant in relation to the current contract target price. The favorable net change in cost variance is a result of slightly lower labor and material costs in a wide variety of cost accounts. The negative net change in schedule variance as related to the previous cumulative variance and the cumulative variance to date reflects that construction milestones remain slightly ahead of schedule but not to the extent previously reported. Program Manager's estimate at completion remains within approved budget.

Submarine:
General Dynamics
Electric Boat Division
Groton, CT
N00024-85-C-2062/FPIF
Baseline Date: Sept 1985
Awarded: Aug 13, 1985
(Group V Construction, FY85 Ship w/option for 1 ship in FY86)

INITIAL CONTRACT PRICE		
Target	Ceiling	Qty
616.4	725.9	1

CURRENT CONTRACT PRICE		
Target	Ceiling	Qty
616.4	725.9	1

ESTIMATED PRICE AT COMPLETION	
Contractor	Program Manager
616.4	616.4

	COST VARIANCE	SCHEDULE VARIANCE
PREVIOUS CUMULATIVE VARIANCE	N/A	N/A
CUMULATIVE VARIANCE TO DATE	N/A	N/A
NET CHANGE	N/A	N/A

There are no reported cost variances to date. Contract N00024-85-C-2062 requires EBDIV to meet the cost/schedule contract systems criteria of DoD Instruction 7000.2. The first Cost Performance Report is due February 1986. Program Manager's estimate at completion remains within approved budget.

15. Contract Information (cont'd): (THEN-YEAR DOLLARS IN MILLIONS)

Nuclear:
General Electric Company
Niskayuna, N.Y.
N00024-78-C-5235/CPFF
Award Date: July 1, 1977

Initial Contract Price	
Target	Qty
378.4	N/A

CURRENT CONTRACT		PM'S EST. PRICE AT COMPLETION
Target	Qty	
378.4	N/A	378.4

Explanation of Change: Under Naval Nuclear Propulsion Program prime contracts about 90 percent of the contract value is subcontracted in fixed price type subcontracts. In these circumstances, control of prime contract cost and measurement of planned vs. actual cost is exercised through detailed Government and prime contractor surveillance of subcontract obligations rather than through a cost-base "earned value" system such as that defined in DoD Instruction 7000.2. NAVMAT ltr MAT 0244:EAO of 18 Dec 1972 waives the requirements of DoD Instruction 7000.2 for Naval Nuclear Propulsion Program procurements. Program Manager's estimate at completion remains within approved budget.

Nuclear:
Department of Energy
Germantown, Md
N00024-67-F-5110/EAO
Award Date: July 1, 1977

Initial Contract Price	
Target	Qty
390.2	N/A

CURRENT CONTRACT		PM'S EST. PRICE AT COMPLETION
Target	Qty	
390.2	N/A	390.2

Explanation of Change: See above.

Nuclear:
General Electric Company
Schnectady, N.Y.
N00024-85-C-4011/CPFF
Award Date: December 3, 1984

Initial Contract Price	
Target	Qty
139.6	N/A

CURRENT CONTRACT		PM'S EST. PRICE AT COMPLETION
Target	Qty	
139.6	N/A	139.6

Explanation of Change: See above.

Nuclear:
Westinghouse
Pittsburgh, PA
N00024-85-C-4015/CPFF
Award Date: October 29, 1984

Initial Contract Price	
Target	Qty
44.2	N/A

CURRENT CONTRACT		PM'S EST. PRICE AT COMPLETION
Target	Qty	
44.2	N/A	44.2

Explanation of Change: See above.

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

a. Program Status --
(1) Percent Program Completed: 35.3% (6 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 50.1% ($8186.7/$16339.8)

b. Appropriation Summary --

Appropriation	Current & Prior Yrs (FY81-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP	Total
RDT&E	53.0	6.0	21.5	0.0	80.5
SCN	7852.5	1515.1	6186.1	161.5	15715.2
MILCON	281.2	133.1	90.5	39.3	544.1
Total	8186.7	1654.2	6298.1	200.8	16339.8

16. Program Funding Summary (Cont'd): (Current Estimate in Millions)

c. Annual Summary --

Fiscal Year	Qty	FY 83 Base-Year Dollars			Then-Year Dollars			Escl Rate
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		(%)
Appropriation: RDT&E								
1982				24.6			24.6	7.6
1983				0.0			0.0	4.9
1984				8.9			9.5	3.8
1985				8.6			9.5	3.6
1986				8.3			9.4	3.2
1987				5.1			6.0	4.1
1988				6.4			7.8	3.9
1989				6.2			7.8	3.4
1990				4.5			5.9	2.9
1991				0.0			0.0	2.3
Subtotal	0	0.0	0.0	72.6	0.0	0.0	80.5	
Appropriation: SCN								
1981	1		1458.0	1425.4	500.5	149.1	1466.6	9.6
1982	0			321.2	330.7		342.7	7.5
1983	1		1439.1	1251.5	81.3	286.0	1365.6	3.8
1984	1		1314.7	1629.4	306.5	322.4	1858.5	3.6
1985	1		1292.8	1274.1	265.5	287.9	1503.9	2.1
1986	1		1159.8	1077.7	158.1	264.1	1315.2	4.1
1987	1		1233.2	1215.1	146.4	175.0	1515.1	4.1
1988	1		1186.2	1205.2	155.0	158.1	1557.4	3.9
1989	1		1176.7	1212.2	162.5	146.4	1605.2	3.4

1990	1		1190.1	1095.4	0.0	155.0	1484.6	2.9
1991	1		1208.7	1110.0		162.5	1538.9	2.3
1992				21.3			30.2	2.3
1993				21.7			31.5	2.3
1994				22.0			32.7	2.3
1995				22.0			33.4	2.3
1996				12.3			19.1	2.3
1997				9.2			14.6	2.3
Subtotal	10	0.0	12659.3	12925.7	2106.5	2106.5	15715.2	

Appropriation: MILCON

1982				12.8			13.0	7.6
1983				14.1			14.8	4.9
1984				15.5			17.0	3.8
1985				130.4			147.7	3.6
1986				75.5			88.7	3.2
1987				109.4			133.1	4.1
1988				44.8			56.2	3.9
1989				26.6			34.3	3.4
1990				0.0			0.0	2.9
1991				0.0			0.0	2.3
1992				28.4			39.3	2.3
Subtotal	0	0.0	0.0	457.5	0.0	0.0	544.1	
Total	10	0.0	12659.3	13455.8	2106.5	2106.5	16339.8	

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
Appropriation: RDT&E			
1982	24.6	24.6	24.6
1983	0.0		
1984	9.5	9.5	9.2
1985	9.5	9.4	7.8
1986	9.4	2.9	0.0
To Compl	27.5	N/A	N/A
Total	80.5	46.4	41.6
Appropriation: SCN			
1981	1466.6	1360.4	1063.5
1982	342.7	329.8	275.6
1983	1365.6	927.5	384.8
1984	1858.5	1056.9	334.6
1985	1503.9	803.1	50.1
1986	1315.2	197.5	0.0
To Compl	7862.7	N/A	N/A
Total	15715.2	4675.2	2108.6
Appropriation: MILCON			
1982	13.0	13.0	13.0
1983	14.8	14.8	14.8
1984	17.0	17.0	17.0
1985	147.7	96.1	47.5
1986	88.7	0.0	0.0

To Compl	262.9	N/A	N/A
Total	544.1	140.9	92.3

. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Planning Estimate	Production Estimate	Current Estimate	Maximum
1981	1	1	1	See Notes
1982	0	0	0	Below
1983	1	1	1	
1984	1	1	1	
1985	1	1	1	
1986	1	1	1	
1987	1	1	1	
1988	1	1	1	
1989		1	1	
1990		1	1	
1991		1	1	

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY$)	10548.9	2906.9	13455.8		See Notes
Prog Acq Cost (TY$)	14085.2	2254.6	16339.8		Below
PAUC (BY$)	1507.0	-161.4	1345.6		
PAUC (TY$)	2012.2	-378.2	1634.0		

c. Schedule Variance -- Refer to paragraph 9.

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum

Start Date (Mo/Yr)	1/82		1/82	See Notes
Duration (Months)	84		84	Below
End Date (Mo/Yr)	12/88		12/88	

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	N/A
Procurement	None/None

Maximum Rate Explanations --

Maximum Production Rate 1 1/2 - 2 OHIO Class Submarines. A Special Committee to the Secretary of the Navy reported in 1981: ".....Electric Boat has the capacity to build at a rate of one and half TRIDENTS and three SSN's per year. Electric Boat believes that this same work force could produce two TRIDENTS and three SSN's per year."

The Navy has not priced the acquisition cost or developed schedules to support the maximum production rates identified above.

18. (U) Operating and Support Costs: Not applicable since OHIO Class D5 Capable Submarine is not a new SAR.

N-38 TRIDENT SUB

SELECTED ACQUISITION REPORT (RCS DD-COMP (Q + A)823)
SYSTEM: OHIO CLASS D5 CAPABLE SUBMARINE

SEP 06 1985

AS OF DATE: 31 DECEMBER 1984
BASE YEAR: FY 1983

1. PROGRAM FUNDING SUMMARY

CURRENT ESTIMATE
(Dollars in Millions)

FISCAL YEAR	QTY	BASE-YEAR DOLLARS: ADV PROC. (NON-ADD)	BASE-YEAR DOLLARS: NET SAIL-AWAY (NON-ADD) NON-REC	BASE-YEAR DOLLARS: NET SAIL-AWAY (NON-ADD) REC	BASE-YEAR DOLLARS: TOTAL	THEN-YEAR DOLLARS: TOTAL	THEN-YEAR DOLLARS: OBLIGATED	THEN-YEAR DOLLARS: EXPENDED	ESCALATION 1/ RATE (%)
APPROPRIATION: RDT&E,N									
82	-	-	-	-	24.6	24.6	24.6	24.6	7.60
83	-	-	-	-	-	-	-	-	4.90
84	-	-	-	-	9.1	9.6	9.5	6.7	3.80
85	-	-	-	-	8.5	9.3	8.2	1.1	3.70
86	-	-	-	-	8.2	9.3	-	-	4.40
87	-	-	-	-	5.1	6.1	-	-	4.20
88	-	-	-	-	6.4	7.9	-	-	4.00
89	-	-	-	-	6.1	7.9	-	-	3.70
90	-	-	-	-	4.6	6.1	-	-	3.40
TOTAL	-	-	-	-	72.6	81.0	42.3	32.4	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

85 1666

SELECTED ACQUISITION REPORT (RCS DD-COMP (Q + A)823)
SYSTEM: OHIO CLASS D5 CAPABLE SUBMARINE

AS OF DATE: 31 December 1984
BASE YEAR: FY 1983

1A. PROGRAM FUNDING SUMMARY

CURRENT ESTIMATE
(Dollars in Millions)

FISCAL YEAR	QTY	BASE-YEAR DOLLARS ADV PROC. (NON-ADD)	NET SAIL-AWAY (NON-ADD) NON-REC	NET SAIL-AWAY (NON-ADD) REC	BASE-YEAR DOLLARS TOTAL	THEN-YEAR DOLLARS TOTAL	THEN-YEAR DOLLARS OBLIGATED	THEN-YEAR DOLLARS EXPENDED	ESCALATION 1/ RATE (%)
APPROPRIATION: SCN									
81	1	479.6	-	1535.6	1485.9	1550.7	1341.3	928.4	11.90
82	-	302.6	-	-	313.6	342.7	317.8	196.0	7.50
83	1	70.8	-	1507.8	1329.5	1526.5	908.5	201.0	3.80
84	1	254.0	-	1368.4	1679.4	2026.9	1046.6	55.9	3.60
85	1	209.3	-	1276.6	1259.0	1596.9	283.3	-	4.80
86	1	186.5	-	1163.2	1151.9	1532.6	-	-	5.70
87	1	189.1	-	1203.0	1210.8	1686.1	-	-	5.50
88	1	193.0	-	1185.3	1222.2	1778.7	-	-	5.20
89	1	72.4	-	1190.6	1108.6	1684.7	-	-	4.80
90	1	-	-	1194.6	1024.2	1625.0	-	-	4.40
91	-	-	-	-	19.1	31.6	-	-	4.40
92	-	-	-	-	18.4	31.8	-	-	4.40
93	-	-	-	-	19.0	34.3	-	-	4.40
94	-	-	-	-	17.8	33.6	-	-	4.40
95	-	-	-	-	9.0	17.8	-	-	4.40
96	-	-	-	-	6.2	12.7	-	-	4.40
TOTAL	9	1957.3	-	11625.1	11874.6	15512.6	3897.6	1381.3	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

SELECTED ACQUISITION REPORT (RCS DD-COMP (Q + A)823)
SYSTEM: OHIO CLASS D5 CAPABLE SUBMARINE

AS OF DATE: 31 DECEMBER 1984
BASE YEAR: FY 1983

1B. PROGRAM FUNDING SUMMARY

CURRENT ESTIMATE
(Dollars in Millions)

FISCAL YEAR	QTY	BASE-YEAR DOLLARS: ADV PROC. (NON-ADD)	BASE-YEAR DOLLARS: NET SAIL-AWAY (NON-ADD) NON-REC	BASE-YEAR DOLLARS: NET SAIL-AWAY (NON-ADD) REC	BASE-YEAR DOLLARS: TOTAL	THEN-YEAR DOLLARS: TOTAL	THEN-YEAR DOLLARS: OBLIGATED	THEN-YEAR DOLLARS: EXPENDED	ESCALATION 1/ RATE (%)
APPROPRIATION: MCON									
82	-	-	-	-	12.8	13.0	13.0	13.0	7.60
83	-	-	-	-	13.9	14.8	14.8	14.8	4.90
84	-	-	-	-	15.4	17.0	9.9	2.6	3.80
85	-	-	-	-	128.5	147.7	97.7	18.5	3.70
86	-	-	-	-	127.9	153.0	-	-	4.40
87	-	-	-	-	97.6	121.2	-	-	4.20
88	-	-	-	-	5.7	7.3	-	-	4.00
89	-	-	-	-	21.8	29.0	-	-	3.70
TOTAL	-	-	-	-	423.5	503.0	135.4	48.9	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

2. Deliveries (Planned/Actual)

	To Date
R&D	N/A
Procurement	0/0

3. Program Acquisition Costs System: OHIO Class D5 Capable Submarine

As of Date: 31 December 1984
Base Year: FY 1983

a. Program Acquisition Cost

(Dollars in Millions)

	(1) Production Estimate (FY81-FY88)	(2) Changes	(3) Current Estimate (FY81-FY90)
(QUANTITY)	(7)	(+2)	(9)
Cost			
Development	49.3	+ 23.3	72.6
Procurement	9,980.0	+ 1,894.6	11,874.6
Construction	519.6	- 96.1	423.5
TOTAL CONSTANT FY83	10,548.9	+ 1,821.8	12,370.7
ESCALATION	3,536.3	+ 189.6	3,725.9
Development	3.6	+ 4.8	8.4
Procurement	3,416.8	+ 221.2	3,638.0
Construction	115.9	- 36.4	79.5
TOTAL PROGRAM COST	14,085.2	+ 2,011.4	16,096.6

b. Foreign Military Sales: Not Applicable

c. Nuclear Costs: The Current Estimate for Procurement includes $1,401.3 million for Nuclear Propulsion costs. The OHIO Class D5 Capable SSBN Program draws upon general reactor plan research and development work performed by the Department of Energy (DOE) but this contribution can not be quantified.

d. Excludes the following D5 Missile and General Support MCON costs which are not unique to the Submarine Acquisition Program:

TRIDENT II (D5) Missile	- $ 500.6
General Support	- 938.1
TOTAL	$1438.7

e. Total program costs remain unknown pending final decision on OHIO Class force levels. This report is based on submarines procured through the current FYDP.

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
SYSTEM: OHIO CLASS D5 CAPABLE SUBMARINE

4. CONTRACT INFORMATION — As of Date: 31 December 1984

	Initial Contract Price			Current Contract Price			Price at Completion
	Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor Estimate
PROCUREMENT							
ELECTRIC BOAT DIVISION 1/ GENERAL DYNAMIC CORP-SHIP 2/ N00024-81-C-2134 FPI AWARD: 7 Jan. 1982 CONSTRUCTION GROUP IV (FY81, 83 AND 84 SHIPS)	1590.7 1/	1801.8	3	1595.0 1/	1806.7	3	1595.0
GENERAL ELECTRIC - NUCLEAR N00024-78-C-5235 CPFF AWARD: 10 Nov. 1972	378.4	N/A	N/A	378.4	N/A	N/A	378.4
DEPT OF ENERGY (DOE)- NUCLEAR N00024-67-F-5110 EAO AWARD: 1 JULY 1977	225.9	225.9	N/A	225.9	225.9	N/A	225.9
GENERAL ELECTRIC - NUCLEAR N00024-85-C-4011 CPFF AWARD: 3 Dec. 1984	78.7	N/A	N/A	78.7	N/A	N/A	78.7
WESTINGHOUSE - NUCLEAR N00024-85-C-4015 CPFF AWARD: 29 Oct. 1984	23.8	N/A	N/A	23.8	N/A	N/A	23.8

1/ Excludes projected escalation which is outside the incentive provisions of the contract.
2/ Contract previously reported in the TRIDENT I Selected Acquisition Report. Costs associated with incorporation of D5 capability not yet reflected but will be included following completion of negotiations.

N-39 TRIDENT II MSL

SAR-85-055

~~SECRET RESTRICTED DATA~~

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

PROGRAM: TRIDENT II (D5) MISSILE

AS OF DATE: DECEMBER 31, 1985*

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

2

1. Designation and Nomenclature (Popular Name): Sea Launched Ballistic Missile - UGM 133A TRIDENT II (D-5) Missile

CLEARED

2. DOD Component: U.S. Navy

3. Responsible Office and Telephone Number:

Strategic Systems Program Office
Department of the Navy
Washington, DC 20376-5002

PM: RADM K. Malley
Assigned: June 21, 1985
Telephone: (202) 695-2064
Autovon: 225-2098

4. Program Elements:

RDT&E: PE 63371N, PE 64363N Project J0951 (Shared funding)

PROCUREMENT: PE 11228N, APPN 1507 ICN 1150

5. Related Programs: TRIDENT Submarine System, TRIDENT I (C4) Missile System, Fleet Ballistic Missile System, and Department of Energy re-entry vehicle development.

OASD(PA) DPD/ISR 86-D-0874

~~Classified by: OPNAVINST 5513.5M Enclosure (27)~~
~~Declassify on: OADR~~

(This page is unclassified)

~~SECRET RESTRICTED DATA~~

6. Mission and Description: The TRIDENT II (D5) Strategic Weapons System program develops an improved Sea Launched Ballistic Missile (SLBM) with greater accuracy and payload capability at equivalent ranges as compared to the current TRIDENT I (C-4) system. TRIDENT II will enhance U.S. strategic deterrence by providing a survivable sea-based system capable of engaging the full spectrum of potential targets. It will enhance the U.S. position in strategic arms negotiation by providing a weapons system with performance and payload flexibility that will accommodate various treaty initiatives. TRIDENT II's increased payload allows the deterrent mission to be achieved with fewer submarines.

7. Program Highlights:

a. Significant Historical Developments -- In March 1980 the Secretary of Defense described to Congress a Sea Launched Ballistic Missile Modernization Advanced Development Program which would lead 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 Advanced Development phase included consideration of options which increased payload using Mark 4 and new higher yield Re-entry Bodies, enhanced range, and significantly improved accuracy over that of the currently deployed TRIDENT I (C4) missile. The Secretary of Defense reaffirmed the need for an improved Sea Launch Ballistic Missile in his Decision Memorandum of 2 February 1981 and stated that the 7 March 1980 report to Congress "serves the role of a Mission Element Need Statement". The Deputy Secretary of Defense in his Program Decision Memorandum of 2 October 1981, directed the Navy to fund the development of the D5 missile with a December 1989 IOC and in his Program Budget Decision of 29 December 1982 he approved funds for the development of a new higher yield Re-Entry Body for the TRIDENT II (D5) Missile. The Deputy Secretary of Defense in his Memorandum to the Secretary of the Navy of 28 October 1983, authorized the Navy to proceed to full scale Engineering Development of the TRIDENT II (D5) SWS and initial production, as necessary, to meet a December 1989 IOC. All major D5 weapon system subsystem completion development contracts were awarded as of March 1984. Subsystem development testing is successfully underway.

b. Significant Developments Since Last Report -- Intensive TRIDENT II (D5) missile subsystem development testing continued throughout FY 1985. The past year's testing achievements included successful rocket motor static tests, system level tests of the post boost control system, and MK5 reentry system nose tip flight tests on TRIDENT I (C4) Demonstration and Shakedown Operation flights, providing confidence in achieving established missile performance objectives. Design and manufacture began or continued for the launcher, fire control, navigation, training, and test instrumentation development systems as well as near completion of construction of launch and missile processing facilities at Cape Canaveral. Interface characteristics between the six strategic weapons system subsystems and between the weapon system and the TRIDENT submarine were defined.

The estimates included in the December 31, 1985 SAR are based on: (1) a development flight test program of twenty flat pad test missiles and ten Performance Evaluation Missiles (PEM) flown from an SSBN leading to a December 1989 Initial Operational Capability.

7. Program Highlights (cont'd):

(2) acquisition of 788 TRIDENT II missiles through FY1998 to support eventual deployment of eighteen OHIO Class submarines.
(3) a MILCON program to support establishment of a TRIDENT II missile processing capability at the Strategic Weapons Facility, Atlantic in Kings Bay, GA and the Strategic Weapons Facility, Pacific in Bangor, WA.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP threshold breaches.

9. Schedule:

a. Milestones --

	Planning Estimate/ Approved Program*	Current Estimate
Initiated Concept Definition	10/77	10/77
Commenced Advance Development Phase	10/80	10/80
Commenced Full Scale Engineering Development	10/83	10/83
First Development Flight Test	1/87	1/87
Award Initial Missile Production Contract	3/87	3/87
First Demonstration and Shakedown (DASO) Missile Test Flight	8/89	8/89
Initial Operating Capability	12/89	12/89 **

* Planning Estimate and Approved Program are the same, therefore separate entries are not required.

** May be less than full missile outload due to reduction of FY 1987 quantity to 21 D-5 missiles.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimates:
SECDEF Report to Congress of March 7, 1980, subject SLBM Modernization Action Memorandum.
DEPSECDEF Memorandum to SECNAV of October 28, 1983, subject TRIDENT TRIDENT II Full Scale Engineering Development authorization.
DEPSECDEF Program Decision Memorandum of October 2, 1981, subject Funding of D5 missile with December 1989 IOC.

Approved Program: FY 1987 President's Budget

10. Performance Characteristics:

a. Characteristics --

	Base Line Estimate DCP Threshold	Demonstrated Performance	Current Estimate
(b)(1)			

b. Previous Change Explanations --

Latest estimate of military characteristics for the warhead for the TRIDENT II (D5) MK-5 Reentry Body as cited by the joint DOD/DOE Military Liaison Committee in letter dated July 23, 1984.

c. Current Change Explanations --

(CH-1) Range data refined based on static firings and attaining weights of actual hardware.

(CH-2) Results from deletion of production continuity and life-of-type buys of critical components.

d. References --

Planning Estimate:

SECNAV Memorandum for DEPSECDEF, dated August 16, 1976, subject, TRIDENT II Missile Conceptual Goals and Tentative Milestones.

SECDEF Decision Memorandum, dated February 2, 1981, subject, SLBM Modernization.

CNO Memorandum, dated April 28, 1982, subject, TRIDENT II (D5) Development Objectives.

DEPSECDEF Memorandum to SECNAV, dated October 28, 1983, subject, TRIDENT II (D5) Full Scale Engineering Development authorization.

DOD/DOE Military Liaison Committee letter dated July 23, 1984, subject, Characteristics for the TRIDENT II (D5) MK5 Reentry Body.

Approved Program: FY 1987 President's Budget

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Missile Costs --	Planning Estimate (FY78-96)	Changes	Current Estimate (FY78-98)
Development (RDT&E)	9057.2	-550.3	8506.9
Procurement (WPN)	14988.3	1821.6	16809.9 1/
Missile	14975.1	1807.3	16782.4
Initial Spares	13.2	14.3	27.5
Construction (MILCON)	217.4	172.1	389.5
Total FY83 Base-Yr $	24262.9	1443.4	25706.3
Escalation	13382.2	-4315.5	9066.7
Development (RDT&E)	1739.5	-613.9	1125.6
Procurement (WPN)	11600.1	-3752.3	7847.8 1/
Construction (MILCON)	42.6	50.7	93.3
Total Then-Yr $	37645.1	-2872.1	34773.0
b. Missile Quantities --			
Development (RDT&E)	30	0	30
Procurement (WPN)	710	78	788
Total	740	78	818
c. Missile Unit Cost --			
Procurement:			
FY83 Base-Yr $	21.1	0.2	21.3
Then-Yr $	37.4	-6.1	31.3
Program:			
FY83 Base-Yr $	32.8	-1.4	31.4
Then-Yr $	50.9	-8.4	42.5

d. Approved Design to Cost Goal -- None.

e. Foreign Military Sales -- Not Applicable.

f. Nuclear Costs -- The D5 Missile Program draws upon research and development work performed by the Department of Energy but this contribution cannot be quantified.

g. Excludes the following D5 Submarine and General Support MILCON current estimates which are not unique to the D5 Missile Acquisition Program:

D5 Submarine	-	$544.1
General Support	-	$813.2
TOTAL		$1,357.3

Excludes the following current estimates budgeted for development of Ballistic Missile Defense Penetration System and development effort (FY1991 only) which are not considered acquisition related:

FY 1984 -1991	$458.9

1/ These amounts correct the Procurement Annex.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Yr) Dollars in Millions)

	Current Year (FY86)		Budget Year(FY87)
	SAR Current Estimate	UCR Baseline Estimate (DEC 84 SAR)	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	34773.0	37481.6	34773.0
(2) Quantity	818	790	818
(3) Unit Cost	42.5	47.4	42.5
b. Current Procurement -	(FY86)	(FY86)	(FY87)
(1) Cost	550.9	582.0	1426.0
Less CY Adv Proc	-256.1	-269.3	-300.0
Plus PY Adv Proc	0.0	0.0	244.5
Net Total	294.8	312.7	1370.5
(2) Quantity	N/A	N/A	21
(3) Unit Cost	N/A	N/A	65.3

13. Cost Variance Analysis:

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

	RDT&E	WPN	MILCON	TOTAL
Planning Estimate	10796.7	26588.4	260.0	37645.1
Previous Changes:				
Economic	-419.3	-2209.7	-14.2	-2643.2
Quantity		2165.1		2165.1
Schedule				0.0
Engineering				0.0
Estimating	-460.0	524.2	254.8	319.0
Other				0.0
Support		-4.4		-4.4
Subtotal	-879.3	475.2	240.6	-163.5
Current Changes:				
Economic	-67.6	-3495.3	-16.5	-3579.4
Quantity		797.4		797.4
Schedule		343.2		343.2
Engineering				0.0
Estimating	-217.3	-33.3	-1.3	-251.9
Other				0.0
Support		-17.9		-17.9
Subtotal	-284.9	-2405.9	-17.8	-2708.6
Total Changes	-1164.2	-1930.7	222.8	-2872.1
Current Estimate	9632.5	24657.7	482.8	34773.0

(FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	WPN	MILCON	TOTAL
Planning Estimate	9057.2	14988.3	217.4	24262.9
Previous Changes:				
Quantity		972.6		972.6
Schedule				0.0
Engineering				0.0
Estimating	-365.3	335.2	175.9	145.8
Other				0.0
Support		-3.3		-3.3
Subtotal	-365.3	1304.5	175.9	1115.1
Current Changes:				
Quantity		474.5		474.5
Schedule		79.8		79.8

Engineering				0.0
Estimating	-185.0	-22.9	-3.8	-211.7
Other				0.0
Support		-14.3		-14.3
Subtotal	-185.0	517.1	-3.8	328.3
Total Changes	-550.3	1821.6	172.1	1443.4
Current Estimate	8506.9	16809.9	389.5	25706.3

13. Cost Variance Analysis (cont'd):

b. Previous Change Explanations —

RDT&E
Economic: revised escalation indices.
Estimating: final definitization of TRIDENT II (D5) Operational Systems Development and Production Contracts and guidance development contract.

Procurement
Economic: revised escalation indices
Quantity: additional missiles required for two additional submarines.
Estimating: latest repricing estimates.
Support: reduced initial spares.

MILCON
Economic: revised escalation indices.
Estimating: recategorization of construction projects as unique to the General Support Program and revised estimates.

c. Current Change Explanations —

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-67.6
Congressional reductions and revised estimating of potential change orders for the development contracts. (Estimating)	-185.0	-217.3
(2) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-3,495.3
Increases associated with addition of 28 missiles, which are required as a result of the OHIO Class Submarine Program quantity increase from seventeen to eighteen submarines. (Quantity)	474.5	797.4
Deferral of 24 missiles from FY 1987 through FY 1990 to FY 1998. (Schedule)	29.9	191.2
Requalification costs as a result of deferral of Production Continuity Material procurements until required on a lead-time away basis. (Schedule)	49.9	152.0

13. Cost Variance Analysis (cont'd):

	(Dollars in Millions) Base-Year	Then-Year
Decrease due to minor repricing (Estimating)	-22.9	-33.3
Decreases based on minor repricing. (Support)	-14.3	-17.9
(3) MILCON		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-16.5
Revised construction estimates. (Estimating)	-3.8	- 1.3

14. Program Acquisition Unit Cost (PAUC) History:

a. Initial SAR Estimate to Current Baseline Estimate -- For the Trident II (D5) Missile Program the initial SAR estimate is the Current Baseline Estimate.

b. Current Baseline Estimate to Current Estimate --

PAUC BASELINE SAR EST. PE	Changes (Then Year Dollars in Millions)								PAUC CURRENT ESTIMATE
	ECON	QTY	SCH	ENG	EST	SPT	OTHER	TOTAL	
50.9	-7.6	-1.2	0.3	0.0	0.1	0.0	.0	-8.4	42.5

15. CONTRACT INFORMATION: (THEN-YEAR DOLLARS IN MILLIONS)

a. RDT&E --

Launcher
Westinghouse Electric Corporation
Sunnyvale, CA
N00030-84-C-0105, CPIF
Award Date: October 14, 1983
Definitized Date: March 12, 1984

INITIAL CONTRACT PRICE		
Target	Ceiling	Qty
320.2	N/A	2

CURRENT CONTRACT PRICE			ESTIMATED PRICE AT COMPLETION	
Target	Ceiling	Qty	Contractor	Program Manager
324.4	N/A	2	326.4	324.4

	COST VARIANCE	SCHEDULE VARIANCE
PREVIOUS CUMULATIVE	(4.5)	(6.4)
CUMULATIVE VARIANCES TO DATE (10/30/85)	(13.3)	(6.1)
NET CHANGE	(8.8)	.3

Explanation of Change: The unfavorable cost and schedule variances are caused by Launch Tube manufacturing delays and greater-than-anticipated design complexities in the areas of Hunters Point test, Ejector Group, and Missile Hoist. However, the schedule variance has improved slightly in the Launch Tube area. No program level milestones have slipped or are expected to slip, and cumulative and at completion costs are expected to improve. Program manager's estimate at completion remains within approved budget.

Fire Control
General Electric Ordnance Systems
Pittsfield, MA
N00030-84-C-0022, CPIF
Award Date: October 14, 1983
Definitized Date: March 12, 1984

INITIAL CONTRACT PRICE		
Target	Ceiling	Qty
437.1	N/A	7

CURRENT CONTRACT PRICE			ESTIMATED PRICE AT COMPLETION	
Target	Ceiling	Qty	Contractor	Program Manager
436.0	N/A	7	435.8	436.0

	COST VARIANCE	SCHEDULE VARIANCE
PREVIOUS CUMULATIVE	2.1	(2.9)
CUMULATIVE VARIANCES TO DATE (11/03/85)	2.4	(22.1)
NET CHANGE	.3	(19.2)

15. CONTRACT INFORMATION (cont'd): (THEN-YEAR DOLLARS IN MILLIONS)

Explanation of Change: The favorable cost variance change is attributed to a lag in billings. No variance at completion is anticipated. The unfavorable schedule variance change is attributed primarily to late engineering. No major milestones are expected to be impacted. Program's manager's estimate at completion remains within approved budget.

Navigation:
Sperry Systems Management
Great Neck, NY
N00024-84-C-4003, CPIF
Award Date: December 21, 1983

INITIAL CONTRACT PRICE		
Target	Ceiling	Qty
644.6	N/A	3

CURRENT CONTRACT PRICE			ESTIMATED PRICE AT COMPLETION	
Target	Ceiling	Qty	Contractor	Program Manager
644.6	N/A	3	644.6	670.1

	COST VARIANCE	SCHEDULE VARIANCE
PREVIOUS CUMULATIVE	(.6)	(18.8)
CUMULATIVE VARIANCES TO DATE (09/30/85)	(17.8)	(21.4)
NET CHANGE	(17.2)	(2.6)

Explanation of Change: The unfavorable cost and schedule variance changes are attributable to continued navigation hardware and software design delays and a three month strike. The government anticipates an overrun at completion of ($25.5M). Program manager's estimate at completion remains within approved budget.

Test Instrumentation
Interstate Electronics Corporation
Anaheim, CA
N00024-84-C-0090, CPIF
Award Date: October 21, 1983
Definitized Date: March 13, 1984

INITIAL CONTRACT PRICE		
Target	Ceiling	Qty
237.5	N/A	21

CURRENT CONTRACT PRICE			ESTIMATED PRICE AT COMPLETION	
Target	Ceiling	Qty	Contractor	Program Manager
242.1	N/A	21	242.1	242.1

	COST VARIANCE	SCHEDULE VARIANCE
PREVIOUS CUMULATIVE	(1.7)	(6.9)
CUMULATIVE VARIANCES TO DATE (09/30/85)	(15.3)	(9.0)
NET CHANGE	(13.6)	(2.1)

15. CONTRACT INFORMATION (cont'd): (THEN-YEAR DOLLARS IN MILLIONS)

Explanation of Change: The unfavorable cost variance change is attributed to extra design and subvendor inventory material costs. However, extra design effort devoted to one of the systems is expected to benefit other systems and improve costs. Technical progress is satisfactory. The unfavorable schedule variance change is attributable mainly to delays in material receipts for manufacturing. Slack still exists in schedules and no major milestones are being jeopardized. In addition, the extra effort for the lead system should also improve schedules downstream. Program manager's estimate at completion remains within approved budget.

Missile:
Lockheed Missiles and Space Company, Inc.
Sunnyvale, CA
N00030-84-C-0100, CPIF
Award Date: October 21, 1983
Definitized Date: March 12, 1984

INITIAL CONTRACT PRICE		
Target	Ceiling	Qty
4,224.5	N/A	30

CURRENT CONTRACT PRICE			ESTIMATED PRICE AT COMPLETION	
Target	Ceiling	Qty	Contractor	Program Manager
4,229.6	N/A	30	4,229.6	4,229.6

	COST VARIANCE	SCHEDULE VARIANCE
PREVIOUS CUMULATIVE	(18.0)	(20.5)
CUMULATIVE VARIANCES TO DATE (11/03/85)	(51.7)	(28.5)
NET CHANGE	(33.7)	(8.0)

Explanation of Change: The unfavorable cumulative cost variance ($51.7M) is due to greater than planned costs of material, engineering, and propulsion subcontract effort. Actions are underway in engineering to reduce this cost variance and indications are it will not adversely impact the estimated price at completion. The unfavorable cumulative schedule variance ($28.5M) is the result of some procurements not being made on schedule, but 1 or 2 months late, and manufacturing delays due to late design releases. The variance is not adversely affecting major program milestones. Program manager's estimate at completion remains within approved budget.

Guidance Development:
Charles Stark Draper Laboratory
Cambridge, MA
N00030-84-C-0036, CPFF
Award Date: October 06, 1983
Definitized Date: March 07, 1984

INITIAL CONTRACT PRICE		
Target	Ceiling	Qty
846.4	N/A	-

15. CONTRACT INFORMATION (cont'd): (THEN-YEAR DOLLARS IN MILLIONS)

CURRENT CONTRACT PRICE			ESTIMATED PRICE AT COMPLETION	
Target	Ceiling	Qty	Contractor	Program Manager
913.5	N/A	-	913.5	913.5

	COST VARIANCE	SCHEDULE VARIANCE
PREVIOUS CUMULATIVE	6.8	(17.9)
CUMULATIVE VARIANCES TO DATE 11/03/85	(1.1)	(41.9)
NET CHANGE	(7.9)	(24.0)

Explanation of Change: The unfavorable cost variance is due to higher than planned costs for material and fabrication. Workaround efforts to maintain schedule are continuing. No impact on program milestones or total contract final cost is expected by the program manager or contractor. The unfavorable schedule variance is mainly due to procurement and material delays. However, replanning efforts to internal schedules are almost complete and improvement is predicted by early next year. Program manager's estimate at completion remains within approved budget.

b. Procurement (WPN) —

Missile:
Lockheed Missiles and Space Company, Inc.
Sunnyvale, CA
N00030-84-C-0100, CPIF
Award Date: October 21, 1983
Definitized Date: March 12, 1984

INITIAL CONTRACT PRICE		
Target	Ceiling	Qty
1,473.0	N/A	52

CURRENT CONTRACT PRICE			ESTIMATED PRICE AT COMPLETION	
Target	Ceiling	Qty	Contractor	Program Manager
1,460.8	N/A	52	1,460.8	1,460.8

	COST VARIANCE	SCHEDULE VARIANCE
PREVIOUS CUMULATIVE	(0.2)	(5.7)
CUMULATIVE VARIANCES TO DATE 11/03/85	9.1	(12.1)
NET CHANGE	9.3	(6.4)

Explanation of Change: The favorable cumulative cost variance of $9.1M is the result of production subcontracts being negotiated below planned cost. The unfavorable cumulative schedule variance ($12.1M) is due to late placement of orders for subcontract effort and material. There is no impact from this variance. Program manager's estimate at completion remains within approved budget

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

a. Program Status --

(1) Percent Program Completed: 42.8% (9 yrs/ 21 yrs)

(2) Percent Program Cost Appropriated: 20.6% ($7156.3/$34773.0)

b. Appropriation Summary --

Appropriation	Current & Prior Yrs	Budget Year	Balance to Complete FYDP	Balance to Complete Beyond FYDP	Total
RDT&E	6192.2	1624.9	1815.4	0.0	9632.5
WPN	713.8	1426.0	9052.7	13465.2	24657.7
MILCON	250.3	7.3	104.1	121.1	482.8
Total	7156.3	3058.2	10972.2	13586.3	34773.0

16. Program Funding Summary (Cont'd): (Current Estimate in Millions)

c. Annual Summary --

Fiscal Year	Qty	FY 83 Base-Year Dollars			Then-Year Dollars			Escl Rate
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		(%)
Appropriation: RDT&E								
1978				5.0			5.0	6.8
1979				5.0			5.0	8.4
1980				25.6			25.6	10.6
1981				96.7			96.7	10.6
1982				198.4			198.4	7.6
1983				343.8			351.0	4.9
1984				1363.5			1447.4	3.8
1985				1805.4			1983.2	3.6
1986				1827.7			2079.9	3.2
1987				1373.9			1624.9	4.1
1988				914.9			1120.9	3.9
1989				435.6			550.2	3.4
1990				111.4			144.3	2.9
Subtotal	30	0.0	0.0	8506.9	0.0	0.0	9632.5	
Appropriation: WPN								
1985			115.0	135.3	24.4	0.0	162.9	4.1
1986			235.8	440.6	256.1	0.0	550.9	4.1
1987	21		1057.9	1102.0	300.0	244.5	1426.0	4.1
1988	66		1685.1	1736.7	375.0	307.7	2316.2	3.9
1989	66		1760.2	1723.3	324.3	378.1	2359.0	3.4
1990	66		1661.3	1663.4	329.4	328.5	2330.9	2.9

1991	72		1438.7	1427.7	314.2	333.7	2046.6	2.3
1992	72		1287.9	1293.4	321.3	317.6	1896.8	2.3
1993	72		1263.0	1270.8	328.4	323.6	1906.4	2.3
1994	72		1239.3	1245.8	336.6	330.9	1912.0	2.3
1995	72		1216.2	1224.5	344.6	338.3	1922.5	2.3
1996	72		1192.7	1199.9	351.8	344.7	1927.2	2.3
1997	72		1170.3	1155.0	324.3	351.8	1897.6	2.3
1998	65		1388.4	1191.5	0.0	331.0	2002.7	2.3
Subtotal	788	0.0	16711.8	16809.9	3930.4	3930.4	24657.7	

Appropriation: MILCON

1984				50.3			55.0	3.8
1985				66.2			74.9	3.6
1986				102.5			120.4	3.2
1987				6.0			7.3	4.1
1988				1.9			2.4	3.9
1989				12.8			16.5	3.4
1990				64.5			85.2	2.9
1991				0.0			0.0	2.3
1992				53.1			73.4	2.3
1993				16.6			23.5	2.3
1994				0.0			0.0	2.3
1995				5.9			8.8	2.3
1996				0.0			0.0	2.3
1997				0.0			0.0	2.3
1998				9.7			15.4	2.3
ubtotal	0	0.0	0.0	389.5	0.0	0.0	482.8	
otal	818	0.0	16711.8	25706.3	3930.4	3930.4	34773.0	

16. Program Funding Summary (Cont'd):
d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
Appropriation: RDT&E			
1978	5.0	5.0	5.0
1979	5.0	5.0	5.0
1980	25.6	25.5	25.0
1981	96.7	96.6	93.7
1982	198.4	198.4	194.5
1983	351.0	347.2	339.1
1984	1447.4	1446.7	1446.7
1985	1983.2	1982.3	1227.7
1986	2079.9	626.3	10.0
To Compl	3440.3	N/A	N/A
Total	9632.5	4733.0	3346.7
Appropriation: WPN			
1985	162.9	134.6	43.9
1986	550.9	212.6	0.2
To Compl	23943.9	N/A	N/A
Total	24657.7	347.2	44.1
Appropriation: MILCON			
1984	55.0	26.9	26.0
1985	74.9	65.5	36.3
1986	120.4	0.0	0.0
To Compl	232.5	N/A	N/A
Total	482.8	92.4	62.3

17. Production Rate Data:

a. Annual Production Rates -- (NOTE: The production rates shown are annualized rates which differ from the funded quantities because the 27 missiles in the Planning Estimate for FY87 funding were planned for delivery over a five month period and the 21 missiles in the Current Estimate are planned for delivery over a four month period.)

Fiscal Year of Delivery	Production Rates (Quantity/Year)			
	Planning Estimate	Production Estimate	Current Estimate	Maximum
1989	65	N/A	63	N/A
1990	72	N/A	66	N/A
1991	72	N/A	66	N/A
1992	72	N/A	66	N/A
1993	72	N/A	72	N/A
1994	72	N/A	72	N/A
1995	72	N/A	72	N/A
1996	72	N/A	72	N/A
1997	72	N/A	72	N/A
1998	72	N/A	72	N/A
1999		N/A	72	N/A
2000		N/A	72	N/A

b. Cost Variance -- Not applicable, since TRIDENT II has not yet begun production.

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	25706.3	N/A	N/A
(TY $)	N/A	N/A	34773.0	N/A	N/A
PAUC (BY $)	N/A	N/A	31.4	N/A	N/A
(TY $)	N/A	N/A	42.5	N/A	N/A

c. Schedule Variance -- Not applicable, since TRIDENT II has not yet begun production.

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	3/87	N/A	N/A
Duration (in Months)	N/A	N/A	26	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	5/89	N/A	N/A

d. Deliveries (Plan/Actual) -- Not applicable, since TRIDENT II has not yet begun production

18. Operating and Support Costs: Not applicable since TRIDENT II (D5) Missile is not a new SAR.

4. CONTRACTOR INFORMATION CONTINUED

	Initial Contract Price			Current Contract Price			Price at Completion
	Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor Estimate
LOCKHEED - MISSILE N00030-84-C-0100 CPIF AWARD: 21 Oct. 1983 DEFINITIZED: 13 Mar. 1984	4225.0	N/A	30	4,235.0 1/	N/A	30	4235.0

2. PROCUREMENT

LOCKHEED - MISSILE N00030-84-C-0100 CPIF AWARD: 21 Oct. 1983 DEFINITIZED: 13 Mar. 1984	1472.5	N/A	52	1,472.5	N/A	52	1472.5

1/ Increase due to undefinitized contract mods authorized on a not to exceed basis.

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SAR-85-001

N-9 DDG-51-5

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

PROGRAM: DDG 51 Guided Missile Destroyer

AS OF DATE: December 31, 1985*

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APR 01 1986 2 AMENDED

1. Designation and Nomenclature (Popular Name): DDG 51 Guided Missile Destroyer Class; Guided Missile Destroyer: ARLEIGH BURKE CLASS

2. DoD Component: Department of the Navy

3. Responsible Office and Telephone Number:

AEGIS Shipbuilding Program Manager, PMS 400
Naval Sea Systems Command

PM: RADM J.F. Shaw, USN
ASSIGNED: September 3, 1985
AUTOVON: 222-7395
COMMERCIAL: (202) 692-7395

4. Program Elements/Procurement Line Items:

RDT&E: PE 63589N Project 1337-001 changed to PE 64307 Project 1337/1937
PE 64567N Project 0857-565; Project 1803-065 (shared funding)

PROCUREMENT (SCN): PE 24222N/APPN 1611N, APPN 1611, ICN 2122

MILCON

5. Related Programs: CG 47, SM-2(MR), TOMAHAWK, HARPOON, PHALANX, SEAFIRE, AN/SQS-53C, MK-46, TACTAS, LAMPS MK-I/MK-III, VERTICAL LAUNCH, and VERTICAL LAUNCH ASROC

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6. Mission and Description: The Navy has a priority requirement for a battle force capable surface combatant as a replacement for retiring battle force guided missile destroyers. This program provides for FY 1987 follow ship awards; includes a combat system with the capability to perform simultaneously in Anti-Air, Strike, Anti-Surface, and Anti-Submarine warfare areas; and operate as part of a Carrier Battle Group, Surface Action Group, Amphibious Task Force, and Underway Replenishment Group. The baseline ship will displace less than 8300 tons. The class is designed with a gas turbine propulsion system which is planned to be upgraded to incorporate energy efficiency features. This design provides outstanding combat capability and survivability characteristics while considering procurement and lifetime support costs.

7. Program Highlights:

a. Significant Historical Developments — Funding for the lead ship, ARLEIGH BURKE, was provided in FY 85, with the lead ship construction contract awarded to Bath Iron Works (BIW) in April 1985.

b. Significant Developments Since Last Report — The last SAR, dated 30 June 1985, reflected the transition from the Planning Estimate to the Development Estimate. Therefore, there are no previous changes to be reported in this submission.

Settlement of the July to October 1985 BIW strike will not affect ARLEIGH BURKE construction schedule. To date, there has been no cost impact reported in the Cost Performance Report.

Congress reduced the FY 85 lead ship funding by $74M.

FY 1986 advance procurement funding in the amount of $74M was provided for the FY 1987 ships.

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (#1337 Rev 1, dated 15 December 1983), threshold breaches.

9. Schedule:

a. Milestones --

		Development Estimate/ Approved Program	Current Estimate
(1)	Complete Concept Design	Dec 80	Dec 80
(2)	DNSARC I	Jun 81	Jun 81
(3)	Complete Preliminary Design	Mar 83	Mar 83
(4)	DSARC II	Dec 83	Dec 83
(5)	Complete Contract Design	Jun 84	Jun 84
(6)	Detail Design and DDG 51 Construction Contract Award	Apr 85	Apr 85
(7)	DSARC III	Aug 86	Aug 86
(8)	DDG 52/53/54 Contract Award	Nov 86	Nov 86
(9)	Lay DDG 51 Keel	Jan 88	Jan 88
(10)	Launch DDG 51	Sep 88	Sep 88

b. Previous Change Explanations -- None

c. Current Change Explanations -- None

d. References --

Development Estimate: DCP #1337 Rev 1, dated 15 December 1983.

Approved Program: DCP #1337 Rev 1, dated 15 December 1983.

DDG 51 Guided Missile Destroyer Class, December 31, 1985*

10. Technical/Operational Characteristics:

a. Technical --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(1)(U) Ship:		N/A	
a)(U) Length (Feet)	466/466		466
b)(U) Beam (Feet)	59/59		59
c)(U) Navigational Draft(Feet)	30.6/30.6		30.6
d)(U) Displacement (LT)	8,300/8,300		8,300
e)(U) Propulsion	LM 2500 Gas Turbine/ LM 2500 Gas Turbine		LM 2500 Gas Turbine
f)(U) Accommodations	339/339		341 (CH-1)
b. Operational --			
(1)(U) Ship:		N/A	
a)(U) Top Speed (Knots)	30+/30+		30+
(b)(1)			
c)(U) Armament			
1(U) Anti-Submarine Warfare			
(U) Sonar	SQS-53C/SQS-53C		SQS-53C
(U) Underwater Battery Fire Control System	ASWCS MK 116 Mod 7/ ASWCS MK 116 Mod 7		ASWCS MK 116 Mod 7
(U) Torpedo Tubes	2 MK 32/2 MK 32		2 MK 32
(U) ASROC	VLA/VLA		VLA
(U) Helo	SEAHAWK Landing & Refueling; LAMPS Electronics/ SEAHAWK Landing & Refueling; LAMPS Electronics		SEAHAWK Landing & Refueling; LAMPS Electronics
(U) Towed Sonar	SQR-19/SQR-19		SQR-19
2(U) Anti-Air Warfare			
(U) Launchers	MK 41 VLS/MK 41 VLS		MK 41 VLS
(U) Missiles	SM-2 MR/SM-2 MR		SM-2 MR
(U) Missile Fire Control System	3 MK 99 Illuminators/ 3 MK 99 Illuminators		3 MK 99 Illuminators
(U) Guns	2 MK 15 PHALANX/2 MK 15 PHALANX		2 MK 15 PHALANX

DDG 51 Guided Missile Destroyer Class, December 31, 1985*

Technical/Operational Characteristics (Cont'd):

b. Operational —	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
3(U) Anti-Surface/Strike Warfare			
(U) Guns	1 5" 54/1 5" 54		1 5" 54
(U) Gunfire Control System	MK 160 with SEAFIRE/ MK 160 with SEAFIRE		MK 160 with SEAFIRE
HARPOON	2 Quad Cannisters/ 2 Quad Cannisters		2 Quad Cannisters
Cruise Missile and Control System	TOMAHAWK/TOMAHAWK		TOMAHAWK
4(U) Electronic Warfare	SLQ-32(V-2),SRBOC/ SLQ-32(V-2),SRBOC/		SLQ-32(V-2), SRBOC
5(U) Radars			
(U) Surface	SPS-67/SPS-67		SPS-67
(U) 3D	SPY-1D/SPY-1D		SPY-1D

c. Previous Change Explanations — None.

d. Current Change Explanations —

(CH 1) Accommodations increased to 341.

e. References —

Development Estimate: DCP #1337 Rev 1 dated 15 December 1983.

Approved Program: DCP #1337 Rev 1 dated 15 December 1983.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost —	Development Estimate 1/	Changes	Current Estimate
Development (RDT&E)	919.4	-21.1	898.3
Procurement (SCN)	11,507.1	+354.0	11,861.1
Basic Ship Costs	(4,360.5)	(-554.9)	(3,805.6)
HM&E and Combat System Elements	(6,052.2)	(+1,155.6)	(7,207.8)
Other Costs	(705.9)	(-283.6)	(422.3)
OF/PD	(388.5)	(+23.2)	(411.7)
Contract Design	(0.0)	(+13.7)	(13.7)
Construction (MILCON)	27.9	-4.1	23.8
Total FY 84 Base-Year $	12,454.4	+328.8	12,783.2
Escalation	6,025.2	-2,332.1	3,693.1
Development (RDT&E)	(40.8)	(-8.2)	(32.6)
Procurement (SCN)	(5,977.5)	(-2,322.5)	(3,655.0)
MILCON	(6.9)	(-1.4)	(5.5)
Total Then-Year $	18,479.6	-2,003.3	16,476.3 2/

1/ SAR rebaselined to Development Estimate 30 June 1985.
2/ Excludes $49.3 million of FY 91 Advance Procurement for the FY 92 ships.

Program Acquisition Cost (Cont'd) (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
b. Quantities —			
Development (RDT&E)	-	-	-
Procurement	18	-	18
Total	18	-	18
c. Unit Cost —			
Procurement: (SCN)			
FY 84 Base-Year $	639.3	+19.7	659.0
Then-Year $	971.4	-109.4	862.0
Program:			
FY 84 Base-Year $	691.9	+18.3	710.2
Then-Year $	1026.6	-111.2	915.3

d. Approved Design to Cost Goal — The DDG 51 development estimate and approved threshold are based on the procurement plan shown in DCP #1337. The current estimate is the average unit sailaway cost computed on the 17 following ships in the current FYDP.

	(Average Unit Sailaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Approved Threshold
FY 84 Base-Year $	667.1/667.1	620.9	694.3
Then-Year $	1029.6/1029.6	818.5	1029.6

e. Foreign Military Sales — None

f. Nuclear Costs — None

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Jun 85 SAR)	UCR Baseline Estimate
a. Program Acquisition —			
(1) Cost	16,476.3	18,479.6	16,476.3
(2) Quantity	18	18	18
(3) Unit Cost	915.3	1,026.6	915.3
b. Current Procurement —	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	74.0	164.3	2,538.7
Less CY Adv Proc	-74.0	-164.3	-79.8
Plus PY Adv Proc	-	-	74.0
Less Contract Design	-	-	-10.9
Net Total	-	-	2,522.0
(2) Quantity	-	-	3
(3) Unit Cost	N/A	N/A	840.7

13. Cost Variance Analysis:
a. Summary — (Current (Then-Year) Dollars in Millions)

	RDT&E	SCN	MILCON	TOTAL
Development Estimate	960.2	17,484.6	34.8	18,479.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-5.5	-1,997.4	-0.9	-2,003.8
Quantity	-	-	-	-
Schedule	-	+129.7	-	+129.7
Engineering	-	-	-	-
Estimating	-23.8	-152.4	-	-176.2
Other	-	-	-	-
Support	-	+51.6	-4.6	+47.0
Subtotal	-29.3	-1,968.5	-5.5	-2,003.3
Total Changes	-29.3	-1,968.5	-5.5	-2,003.3
Current Estimate	930.9	15,516.1	29.3	16,476.3

(FY 1984 Constant (Base-Year) Dollars in Millions)

Development Estimate	919.4	11,507.1	27.9	12,454.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-21.1	+317.0	-	+295.9
Other	-	-	-	-
Support	-	+37.0	-4.1	+32.9
Subtotal	-21.1	+354.0	-4.1	+328.8
Total Changes	-21.1	+354.0	-4.1	+328.8
Current Estimate	898.3	11,861.1	23.8	12,783.2

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations —

RDT&E: NONE

SCN: NONE

MILCON: NONE

c. Current Change Explanations —

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Application of revised escalation and outlay rates (Economic)	N/A	-5.5
Revised program funding requirements and transfer of Contract Design to SCN (Estimating)	-21.1	-23.8
(2) SCN		
Application of revised escalation and outlay rates (Economic)	N/A	-1,997.4
Revised Procurement Profile from 2, 5, 5, 5 in (FY87-90) to 3, 3, 3, 3, 5 in (FY87-91) (Schedule)	—	+129.7
Revisions to procurement strategy reflecting revised profile and revised estimates for Government Furnished Equipment (Estimating)	+61.5	+114.0
Impact to program resulting from application of budget guidance and revised escalation rates during the budget review cycle (Estimating)	-135.1	-192.4
Impact to Base Year 84 End Costs due to adjustments of projected escalation requirements reflecting lower inflation indices (Estimating)	+455.5	N/A
Transfer from FY85 program directed by Congress in the FY86 budget (Estimating)	-64.9	-74.0
Outfitting and post delivery requirements for the revised procurement schedule and transfer of Contract Design to SCN (Support)	+37.0	+51.6

DDG 51 Guided Missile Destroyer Class, December 31, 1985*

13. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
(3) MILCON		
Application of revised escalation and outlay rates (Economic)	N/A	-0.9
Revised program funding requirements (Support)	-4.1	-4.6

d. References --

Development Estimate: - FY 1985 President's Budget Estimate, DDG 51 Ship Data Sheets

Current Estimate: - FY 1987 President's Budget Estimate, DDG 51 Ship Data Sheets
Includes the following Program Elements:
RDT&E,N: 63589N changed to 64307N, 64567N
SCN: PE 24222N/APPN 1611N

14. Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
684.6	-102.4	+314.2	+5.2	+78.8	+34.4	--	+11.8	+342.1	+1026.6

b. Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1026.6	-111.3	--	+7.2	--	-9.8	--	+2.6	-111.3	915.3

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

a. RDT&E —

Combat System Development	Initial Contract Price Target	Ceiling	Qty
RCA Government Systems Moorestown, N.J. N00024-84-5105, CPAF February 1984	$209.2	N/A	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$217.8	N/A	N/A	$217.8	$217.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ + 4.3	$ - 0.3
Cumulative Variances To Date (12/85)	$ + 1.4	$ - 0.3
Net Change	$ - 2.9	$ - 0.0

Explanation of Change: Cost variance results from the contractor's favorable performance. Schedule variance is not significant. Program manager's assessment remains at the estimated price and is within approved funding.

b. SCN —

Ship Construction (DDG 51)	Initial Contract Price Target	Ceiling	Qty
Bath Iron Works Bath, Maine N00024-85-C-2144, FPI April 1985	$322.0	$399.1	1

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$326.3	$404.8	1	$326.3	$422.1 1/

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ —	$ —
Cumulative Variances To Date (12/85)	$ + 0.1	$ - 1.0
Net Change	$ + 0.1	$ - 1.0

Explanation of Change: Cost and schedule variances are not significant.

1/ Includes Program Manager's best estimate for contract contingency items (quality incentive, performance incentive, and escalation) plus funded allowance for change orders.

DDG 51 Guided Missile Destroyer Class, December 31, 1985*

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

b. SCN —

AEGIS Weapon System (DDG 51 and CG 60,61,62) 1/	Initial Contract Price Target	Ceiling	Qty
RCA Government Systems N00024-85-5100 FPI Moorestown, NJ December 23, 1985	$372.4	$414.0	4

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$372.4	$414.0	4	$372.4	$372.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -	$ -
Cumulative Variances To Date (12/85)	$ -	$ -
Net Change	$ -	$ -

Explanation of Change: NONE

1/ This is a combined procurement contract for the DDG 51 and CG 47 class ships, and is reported in the SARs of each program.

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

a. Program Status —
(1) Percent Program Completed: 41.2% (7 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 10.9% ($1,788.4/$16,476.3)

b. Appropriation Summary —

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY80-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92-96)	Total
RDT&E	659.4	108.0	163.5	-	930.9
SCN	1,129.0	2,538.7	11,484.8	363.6	15,516.1
MILCON	-	-	29.3	-	29.3
Total	1,788.4	2,646.7	11,677.6	363.6	16,476.3

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

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1980				13.6			10.5	10.6
1981				41.4			35.3	10.6
1982				111.1			102.0	7.6
1983				156.4			150.7	4.9
1984				121.1			121.1	3.8
1985				130.8			138.4	3.6
1986				92.5			101.4	3.2
1987				94.8			108.0	4.1
1988				87.6			103.4	3.9
1989				35.8			43.6	3.4
1990				13.2			16.5	2.9
1991								
Subtotal				898.3			930.9	
Appropriation: SCN								
1984			-	-		79.0	79.0	3.6
1985	1		880.4	880.4	79.0		976.0	2.1
1986			-	-		74.0	74.0	4.1
1987	3		2020.6	2030.5	74.0	90.7	2538.7	4.1
1988	3		1854.2	1863.1	78.4	86.6	2385.4	3.9
1989	3		1902.4	1946.0	71.6	126.4	2554.3	3.4
1990	3		1835.2	1865.8	80.8	102.8	2489.8	2.9
1991	5		2942.9	3000.9	65.4	72.6	4055.3	2.3
1992	(b)(4)							
1993								
1994								
1995								
1996								
Subtota								

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

c. Annual Summary —

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: MILCON								
1988				10.3	-	-	12.5	3.9
1989				13.5	-	-	16.8	3.4
Subtotal				23.8	-	-	29.3	
Total				12,783.2			16,476.3	

d. Obligations and Expenditures —

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1980	10.5	10.5	10.5
1981	35.3	35.3	35.3
1982	102.0	102.0	102.0
1983	150.7	150.7	150.7
1984	121.1	121.1	121.1
1985	138.4	134.2	87.3
1986	101.4	17.3	1.2
1987	108.0	-	-
1988	103.4	-	-
1989	43.6	-	-
1990	16.5	-	-
1991	-	-	-
Subtotal	930.9	571.1	508.1

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: SCN			
1984	79.0	72.3	30.1
1985	976.0	606.8	38.5
1986	74.0	-	-
1987	2,538.7	-	-
1988	2,385.4	-	-
1989	2,554.3	-	-
1990	2,489.8	-	-
1991	4,055.3	-	-
1992	(b)(4)		
1993			
1994			
1995			
1996			
Subtotal			
Appropriation: MILCON			
1988	12.5	-	-
1989	16.8	-	-
Subtotal	29.3	-	-
Total	16,476.3	1,250.2	576.7

DDG 51 Guided Missile Destroyer Class, December 31, 1985*

17. Production Rate Data:

a. Annual Production Rates —

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1985	1	N/A	1	N/A
1986	0	N/A	0	N/A
1987	2	N/A	3	N/A
1988	5	N/A	3	N/A
1989	5	N/A	3	N/A
1990	5	N/A	3	N/A
1991		N/A	5	N/A
1992		N/A		N/A

b. Cost Variance — Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	12,783.2	N/A	N/A
(TY $)	N/A	N/A	16,476.3	N/A	N/A
PAUC (BY $)	N/A	N/A	710.2	N/A	N/A
(TY $)	N/A	N/A	915.3	N/A	N/A

c. Schedule Variance —

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	4/85	N/A	N/A
Duration (in Months)	N/A	N/A	123	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	7/95	N/A	N/A

d. Deliveries (Plan/Actual) —

	To Date
RDT&E	0/0
Procurement (SCN)	0/0

18. Operating and Support Costs: N/A

(3)
AF-85 KC-135R

SAR-85-064

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: KC-135R

AS OF DATE: December 31, 1985

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1. Designation and Nomenclature (Popular Name): KC-135R Modernization Program

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

C/KC-135 Reengine System Program Management Branch
C/KC-135 System Program Management Division
OC-ALC/MMSGE, Tinker AFB, OK 73145-5990

PM: Mr. Billy Roberts
Assigned: July 15, 1983
Autovon: 336-3064
Commercial: (405) 736-3064

4. Program Elements/Procurement Line Items:

RDT&E: 11142F (Shared Funding)

PROCUREMENT: 11142F APPN 3010 ICN C13500 (Shared Funding)

O&M (Installation): 72207F (Shared Funding)

5. Related Programs: None

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

SAF/PAS
86-160 - T

OASD(PA) DFOISR 86-T-0611

6. Mission and Description: The KC-135R is a modification to KC-135A strategic tanker aircraft being developed and procured to provide increased aerial refueling capabilities. Modification includes four fuel efficient turbofan CFM56/F108 engines, strengthened main landing gear and other system improvements. The reengined KC-135 is characterized by increased fuel off-load capability, improved fuel efficiency, enhanced takeoff performance, and reduced environmental impact compared to the KC-135A. This system replaces 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 June 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, Kansas and Edwards AFB, California 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 was flown. The KC-135R demonstrated satisfactory compliance with performance, flying qualifications, and propulsion specifications. In May 1984, Boeing Military Airplane Company was awarded a follow-on production contract for 30 shippable airframe kits. In July 1984, a contract for kit installation on one KC-135A airplane was awarded to Hayes Aircraft 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 PMRT from AFSC to AFLC for the airframe portion of the program occurred on 30 October 1984.

b. Significant Developments Since Last Report -- In August 1985, delivery of 27 KC-135R aircraft assigned to McConnell AFB, Kansas was completed. The second Main Operating Base was activated at Ellsworth AFB, South Dakota in September 1985. The FY85 contract for 43 airframe kits was awarded to Boeing Military Airplane Company in March 1985. The installation contract for FY86 was awarded to Boeing in October 1985 as a result of competition with Hayes Aircraft International. Thirty-six KC-135R aircraft have been delivered as of 31 December 1985.

The KC-135R satisfies the mission requirements.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 1 April 1981) threshold breaches.

9. Schedule:

a. Milestones --	Production Estimate/ Approved Program	Current Estimate
Program Initiation (Strategic Air Command Required Operational Capability (ROC 1-77)	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
Begin Full Scale Production (Milestone III)	Jul 81/Jul 81	Jul 81
Contract Award (First Production Lot)	Feb 82/Feb 82	Feb 82
First Flight (Certification Flight)	Aug 82/Aug 82	Aug 82
Start DT&E/OT&E	Sep 82/Sep 82	Sep 82
Complete DT&E/OT&E	May 84/May 84	May 84
First Delivery to SAC	Jun 84/Jun 84	Jun 84
IOC (First KC-135R Squadron Deployed)	Jun 85/Jun 85	Jun 85

b. Previous Change Explanations -- None

c. Current Change Explanations -- None

d. References--

Production Estimate: Program Management Directive (PMD) Number 7021(14)/ 11142F, 31 August 1981.

Approved Program: Program Management Directive (PMD) Number 7021(14)/ 11142F, 31 August 1981.

10. Technical/Operational Characteristics:

a. Technical --	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Max Gross Weight (lbs)	322,500/322,500	322,500	322,500
Fuel Load at Max Takeoff Gross Weight (lbs)	203,300/203,300	203,300	203,300
b. Operational --			
Critical Field Length (ft)	11,000/11,000	10,400	10,400
Takeoff Distance (ft)	9,000/9,000	8,100	8,100
Fuel Offload (2000 NM Radius) (lbs)	114,000/114,000	114,000	114,000

10. Technical/Operational Characteristics (Cont'd):

c. 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.

d. Current Change Explanations -- None

e. References --

Production Estimate: Decision Coordinating Paper (DCP), KC-135 Reengine Program, 1 April 1981 and Program Management Directive (PMD) Number 7021(14)/ 11142F, 31 August 1981.

Approved Program: Decision Coordinating Paper (DCP), KC-135 Reengine Program, 1 April 1981 and Program Management Directive (PMD) Number 7021(14)/ 11142F, 31 August 1981.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars):

a. Cost --	Production Estimate	Changes	Current Estimate
Development (RDT&E)	$ 91.6	$ -1.9	$ 89.7
Procurement	4941.5	-196.5	4745.0
Airframe Kits	(2033.0)	(-390.0)	(1643.0)
Engines	(2348.0)	(+195.0)	(2543.0)
Total Flaway	(4381.0)	(-195.0)	(4186.0)
Other Weapon System Costs	(208.0)	(-0.4)	(207.6)
Initial Spares	(352.5)	(-1.1)	(351.4)
O&M (Installation)	196.0	(-40.1)	155.9
Total FY81 Base-Year $	5229.1	(-238.5)	4990.6
Escalation	2600.1	(+6.0)	2606.1
Development (RDT&E)	(5.6)	(-0.6)	(5.0)
Procurement	(2515.2)	(+21.8)	(2537.0)
O&M (Installation)	(79.3)	(-15.2)	(64.1)
Total Then-Year $	7829.2	(-232.5)	7596.7
b. Quantities --			
Development (RDT&E)	-	-	-
Procurement	334	+61	395
Total	334	+61	395
c. Unit Costs --			
Procurement:			
FY81 Base-Year $	14.795	-2.782	12.013
Then-Year $	22.325	-3.890	18.435
Program:			
FY81 Base-Year $	15.656	-3.022	12.634
Then-Year $	23.441	-4.209	19.232

11. Program Acquisition Cost (Cont'd):

d. Approved Design to Cost Goal -- None

e. Foreign Military Sales -- Sales to date total eleven (11) for an estimated cost of $166,740,993 which includes two years of initial spares, French peculiar design changes and seven (7) installations.

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition--			
(1) Cost	7596.7	8584.3	7596.7
(2) Quantity	395	389	395
(3) Unit Cost	19.232	22.068	19.232
b. Current Procurement--	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	691.4	727.4	865.8
Less CY Adv Proc	-	-	-
Plus PY Adv Proc	-	-	-
Net Total	691.4	727.4	865.8
(2) Quantity	43	43	50
(3) Unit Cost	16.079	16.916	17.316

13. Cost Variance Analysis:

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

	RDT&E	PROC	O&M	TOTAL
Production Estimate	97.2	7456.7	275.3	7829.2
Previous Changes:				
Economic	-0.2	+ 89.9	- 3.4	+ 86.3
Quantity	--	+1137.4	+33.4	+1170.8
Schedule	--	+ 271.7	+ 7.0	+ 278.7
Engineering	--	--	--	--
Estimating	-2.3	- 710.4	-74.8	- 787.5
Other	--	--	--	--
Support	--	+ 6.8	--	+ 6.8
Subtotal	-2.5	+ 795.4	-37.8	+ 755.1
Current Changes:				
Economic	--	- 429.5	- 6.0	- 435.5
Quantity	--	+ 122.3	+ 4.0	+ 126.3
Schedule	--	+ 29.8	+ 0.6	+ 30.4
Engineering	--	--	--	--
Estimating	--	- 724.0	-16.1	- 740.1
Other	--	--	--	--
Support	--	+ 31.3	--	+ 31.3
Subtotal	0.0	- 970.1	-17.5	- 987.6
Total Changes	-2.5	- 174.7	-55.3	- 232.5
Current Estimate	94.7	7282.0	220.0	7596.7

(FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Production Estimate	91.6	4941.5	196.0	5229.1
Previous Changes:				
Quantity	--	+653.0	+23.1	+676.1
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-1.9	-478.6	-54.2	-534.7
Other	--	--	--	--
Support	--	- 15.9	--	- 15.9
Subtotal	-1.9	+158.5	-31.1	+125.5
Current Changes:				
Quantity	--	+ 71.1	+ 2.5	+ 73.6
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	-440.5	-11.5	-452.0
Other	--	--	--	--
Support	--	+ 14.4	--	+ 14.4
Subtotal	0.0	-355.0	- 9.0	-364.0
Total Changes	-1.9	-196.5	-40.1	-238.5
Current Estimate	89.7	4745.0	155.9	4990.6

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations --

RDT&E

Economic: revised economic escalation indices
Estimating: reduced management reserve to cover approved reprogrammings and comply with approved funding levels

Procurement

Economic: revised economic escalation indices
Quantity: increased quantity of modification kits from 334 to 392 based on lower than anticipated costs for the kits and installation; decreased quantity from 392 to 389 to enable a constant six per month outyear production schedule
Schedule: procurement program stretchout
Estimating: impact of revised economic escalation indices on current and prior years; decrease in kit price based on favorable firm fixed price contract proposals; estimating changes applicable to the kit reduction from 392 to 389; one-time change resulting from a correction to the methodology for computing inflation on programs with advance procurement funding; reduced estimate based on actual contract experience
Support: reduced spare engine and support costs based on lower kit costs and refinement of the estimate; reduction and rephasing of initial spares estimate; increase and rephasing of the peculiar support equipment and tech data estimates

O&M (Installation)

Economic: revised economic escalation indices
Quantity: increased installation costs associated with the increase in quantity of modification kits from 334 to 392; reduced installation costs associated with the decrease in quantity of modification kits from 392 to 389
Schedule: installation schedule stretchout associated with kit procurement stretchout
Estimating: removal of interim contract support costs from the SAR; refinement of estimate based on contract negotations; revised estimate of "Over and Above" contingency costs

c. Current Change Explanations --

	(Dollars in Millions) Base-Year $	Then-Year $

(1) RDT&E

None

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base-Year $	Then-Year $
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-429.5
Quantity increased by 6 aircraft modification kits based on the outyear procurement rate of 50 kits per year	+ 68.8	+118.3
o Addition of 6 aircraft modification kits (Quantity)	(+ 71.1)	(+122.3)
o Estimating changes applicable to the 6 aircraft modification kits since the baseline estimate (Estimating)	(- 2.3)	(- 4.0)
Schedule change resulting from a change in the peak procurement rate from 72 to 50 kits per year due to budget constraints (Schedule)	0.0	+ 29.8
Revised estimate based on actual contract experience (Estimating)	-453.5	-741.5
Adjustment for the impact of revised economic escalation indices on prior year flyaway costs (Estimating)	+ 5.7	+ 7.0
Refinement and rephasing of initial spares estimate (Support)	+ 17.8	+ 35.8
Refinement and rephasing of peculiar support equipment, training equipment and tech data (Support)	+ 5.5	+ 9.1
Adjustment for the impact of revised economic escalation indices on prior year support costs (Support)	+ 0.7	+ 0.9
Adjustments to refine the mix of previous support and estimating category changes primarily related to the impact of economic escalation on prior years	0.0	0.0
o Increase to Estimating category (Estimating)	(+ 9.6)	(+ 14.5)

13. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year $	Then-Year $
o Decrease to Support category (Support)	(- 9.6)	(- 14.5)
(2) O&M (Installation)		
Revised economic escalation indices (Economic)	N/A	- 6.0
Increased installation costs associated with procurement of the 6 additional aircraft modification kits	+ 1.8	+ 2.9
o Installation of 6 aircraft modification kits (Quantity)	(+ 2.5)	(+ 4.0)
o Estimating changes applicable to the installation of 6 aircraft modification kits since the baseline estimate (Estimating)	(- 0.7)	(- 1.1)
Installation schedule rephased (stretch-out) to accommodate the kit procurement schedule change (Schedule)	0.0	+ 0.6
Adjustment for the impact of revised economic escalation indices on prior years (Estimating)	+ 0.1	+ 0.1
Reduced installation cost estimate based on contract experience and competition (Estimating)	- 10.9	- 15.1

c. References --

Production Estimate: FY 1984 President's Budget, January 1983

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

Initial SAR/Production Estimate (PdE) to Current Estimate (CE)

PAUC (Initial SAR/PdE)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
23.441	-0.884	-0.336	+0.782	0.000	-3.867	0.000	+0.096	-4.209	19.232

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

a. RDT&E -- No active contracts

b. Procurement --

(1) Airframe Modification Kits
Boeing Military Airplane Co
Wichita, Kansas
F33657-82-C-2068, FFP,
Award: February 26, 1982
Definitized: N/A

Initial Contract Price

Target	Ceiling	Qty
213.9	N/A	9

Current Contract Price

Target	Ceiling	Qty
581.0	N/A	28

Estimated Price At Completion

Contractor	Program Manager
581.0	581.0

(2) Airframe Modification Kits
Boeing Military Airplane Co
Wichita, Kansas
F34601-84-C-1135, FFP,
Award: August 28, 1984
Definitized: N/A

Initial Contract Price

Target	Ceiling	Qty
187.6	N/A	30

Current Contract Price

Target	Ceiling	Qty
187.6	N/A	30

Estimated Price At Completion

Contractor	Program Manager
187.6	187.6

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

(3) Airframe Modification Kits
Boeing Military Airplane Co
Wichita, Kansas
F34601-85-C-0135, FFP,
Award: March 25, 1985
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
174.8	N/A	43

Current Contract Price		
Target	Ceiling	Qty
174.8	N/A	43

Estimated Price At Completion	
Contractor	Program Manager
174.8	174.8

(4) Engine
CFM International
Cincinnati, Ohio
F33657-84-C-2128, FFP,
Award: December 7, 1984
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
293.8	N/A	137

Current Contract Price		
Target	Ceiling	Qty
742.1	N/A	340

Estimated Price At Completion	
Contractor	Program Manager
742.1	742.1

c. O&M (Installation) --

(1) Installation (Production)
Boeing Military Airplane Co
Wichita, Kansas
F34601-84-C-1730, FFP,
Award: July 3, 1984
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
5.1	N/A	3

Current Contract Price		
Target	Ceiling	Qty
26.4	N/A	36

Estimated Price At Completion	
Contractor	Program Manager
26.4	26.4

(2) Installation (Production)
Boeing Military Airplane Co
Wichita, Kansas
F34601-85-C-3243, FFP,
Award: October 10, 1985
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
12.6	N/A	28

Current Contract Price		
Target	Ceiling	Qty
12.6	N/A	28

Estimated Price At Completion	
Contractor	Program Manager
12.6	12.6

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

d. Cost/Schedule Variances -- All contracts are firm fixed price (FFP). Cost performance reporting is not a contract requirement and, therefore, cost/schedule performance data is not available.

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

a. Program Status —

(1) Percent Program Completed: 55.6% (10 yrs/18 yrs)

(2) Percent Program Cost Appropriated: 38.0% ($2885.6/$7596.7)

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

Appropriation	Current & Prior Yrs (FY77-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Balance To Complete Beyond FYDP (FY92-94)	Total
RDT&E	94.7	-	-	-	94.7
Procurement	2735.7	865.8	3680.5	-	7282.0
O&M (Installation)	55.2	18.1	85.7	61.0	220.0
Total	2885.6	883.9	3766.2	61.0	7596.7

c. Annual Summary --

Fiscal Year	Qty	FY 81 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 1/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1977	-			2.6			1.9	6.8
1978	-			3.3			2.6	6.8
1979	-			8.2			7.0	8.4
1980	-			10.6			10.0	9.4
1981	-			15.5			16.2	11.9
1982	-			22.3			24.9	9.2
1983	-			21.8			25.5	4.9
1984	-			5.4			6.6	3.8
Subtotal	-			89.7			94.7	

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

c. Annual Summary --

Fiscal Year	Qty	FY 81 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 1/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1980		4.7	-	4.7	-	-	5.0	9.7
1981	1	47.9	19.7	93.2	22.2	-	108.9	11.9
1982	9	31.7	154.5	193.7	-	11.5	238.0	9.6
1983	19	11.4	238.2	352.7	-	10.7	463.4	9.0
1984	30	4.7	324.6	395.0	-	-	548.2	8.0
1985	43	1.5	429.7	470.5	-	-	680.8	4.1
1986	43	1.0	429.6	460.3	-	-	691.4	4.1
1987	50	-	512.4	557.5	-	-	865.8	4.1
1988	50	-	492.8	550.9	-	-	881.4	3.9
1989	50	-	498.5	562.0	-	-	922.2	3.4
1990	50	-	494.0	557.4	-	-	936.4	2.9
1991	50	-	489.1	547.1	-	-	940.5	2.3
Subtotal	395	102.9	4083.1	4745.0	22.2	22.2	7282.0	
Appropriation: O&M (Installation)								
1982	1			2.6			2.9	9.2
1983	-			2.1			2.4	4.9
1984	5			8.4			10.1	3.8
1985	28			18.3			22.8	3.6
1986	33			13.2			17.0	3.2
1987	32			13.5			18.1	4.1
1988	34			12.9			17.9	3.9
1989	45			14.1			20.2	3.4
1990	50			15.5			22.8	2.9
1991	50			16.4			24.8	2.3
1992	50			16.8			25.9	2.3
1993	50			16.6			26.2	2.3
1994	17			5.5			8.9	2.3
Subtotal	395			155.9			220.0	
Total	395			4990.6	22.2	22.2	7596.7	

1/ Since outlay rates are not shown, escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated 2/	Expended 2/
Appropriation: RDT&E			
1977	1.9	1.9	1.9
1978	2.6	2.6	2.6
1979	7.0	7.0	7.0
1980	10.0	10.0	10.0
1981	16.2	15.9	15.7
1982	24.9	24.3	24.3
1983	25.5	24.8	20.3
1984	6.6	5.9	3.5
Total	94.7	92.4	85.3
Appropriation: Procurement			
1980	5.0	5.0	5.0
1981	108.9	108.9	108.9
1982	238.0	222.0	215.3
1983	463.4	462.3	462.3
1984	548.2	548.2	510.3
1985	680.8	609.3	434.3
To Complete	5237.7	-	-
Total	7282.0	1955.7	1736.1
Appropriation: O&M (Installation)			
1982	2.9	2.9	2.9
1983	2.4	2.4	2.4
1984	10.1	10.1	10.1
1985	22.8	21.2	21.2
1986	17.0	16.1	2.1
To Complete	164.8	-	-
Total	220.0	52.7	38.7

2/ Reflects program office records as of 31 December 1985.

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1981	1	1	1	1
1982	9	9	9	9
1983	19	19	19	19
1984	31	31	30	30
1985	65	65	43	43
1986	65	65	43	43
1987	72	72	50	72
1988	72	72	50	72
1989			50	72
1990			50	34
1991			50	

b. Cost Variance -- Dollars in Millions

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY$)	5229.1	-238.5	4990.6	+ 25.5	4965.1
	(TY$)	7829.2	-232.5	7596.7	+ 19.0	7577.7
PAUC	(BY$)	15.656	-3.022	12.634	+0.064	12.570
	(TY$)	23.441	-4.209	19.232	+0.048	19.184

c. Schedule Variance --

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)*	6/84	-	6/84	-	6/84
Duration (in Months)	64	+54 mos	118	+33 mos	85
End Date (Mo/Yr)**	9/89	+54 mos	3/94	+33 mos	6/91

* First Delivery
** Last Delivery

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	N/A
Procurement	36/36

18. Operating and Support Costs: N/A

N-2 AMRAAM '

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

Program: AMRAAM (AIM-120A)

AS OF DATE: December 31, 1985**

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CLEARED
APR 01 1986

1. (U) Designation and Nomenclature: AIM-120A Advanced Medium Range Air-to-Air Missile (AMRAAM)

2. (U) DoD Component: United States Navy

3. (U) Responsible Office and Telephone Number:

AMRAAM Joint System Program Office
Armament Division
Eglin AFB, FL

Norbert W. Melnick, Capt, USN
Assigned: January 31, 1986
AV 872-2412; COMM (904) 882-2412

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

RDT&E,N:	64314N Proj W0981	(No shared funding)	
Procurement:	PE 26138M	ICN 2206	(APPN 1507)
	PE 24162N	ICN 2206	(APPN 1507)

5. (U) Related Programs: F-14, F-15, F-16, F/A-18, A6F, NATO Aircraft

6. (U) Mission and Description: The AMRAAM Program provides for the acquisition of the next generation all-weather, all-environment medium range air-to-air missile system in response to USAF, USN, and NATO operational requirements in the 1989-2005 time period. The system is designed so that AMRAAM can be employed within and beyond visual range, with or without an operational aircraft from NATO countries. Compared to the existing AIM-7 SPARROW which it replaces, AMRAAM design features provide increased firepower and combat utility/effectiveness while significantly reducing aircraft/aircrew vulnerability. Increased average velocity provides the capability to outshoot threat aircraft by increasing the separation between the launch aircraft and the target at AMRAAM intercept. Reduced miss distance, improved fusing, and increased warhead lethality combine to greatly enhance missile lethality. The active radar seeker provides a launch-and-maneuver capability for increased survivability and multiple target engagement on a single intercept. Improved clutter rejection

OASD(PA) DFOISR 86-F-0883

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

and inherent ECCM capability enhance the performance at low altitudes and in a countermeasure environment. Improved system reliability, maintainability, and logistic supportability increase overall operational availability and effectiveness.

7. (U) Program Highlights:

a. Significant Historical Developments: DSARC Milestone I validated the urgent requirement for AMRAAM. DSARC Milestone II (September 1982) allowed the program to continue Full-Scale Development (FSD) and delegated the production responsibility to the Air Force, provided the program thresholds were not breached. The FSD contract with two priced production lots was competitively awarded to Hughes Aircraft Company in December 1981. In July 1982, Raytheon was selected as the Follower contractor for eventual competitive production of AMRAAM. This planned competition between Hughes and Raytheon was one of the primary means of keeping the acquisition program cost down. In December 1983, it was determined that Hughes Aircraft Company could not meet the contract schedule for the initial contract deliveries for FSD. The Air Force elected not to proceed into production until sufficient progress was obtained to warrant the commitment of production funding. The prepriced production option was not exercised. On 28 January 1985, after the Air Force negotiated a reduced scope contract, and re-estimated the procurement cost, the Office of the Secretary of Defense directed that the FSD contracted program retain its full content and the Assistant Secretary of the Air Force for Research, Development, and Logistics to establish an OSD/multi-service Blue Ribbon committee to investigate alternative methods for reducing AMRAAM costs. In February 1985, the F-15 was established as the primary FSD integration aircraft and the lead aircraft for the Initial Operational Capability. The Joint System Program Office (JSPO) negotiated a revised FSD schedule complying with the direction to retain all elements of the original program. The Blue Ribbon Committee independently established that available producibility enhancement projects and management initiatives could significantly reduce the AMRAAM acquisition cost. In June 1985, the Secretary of Defense approved the revised AMRAAM Program which would incorporate a set of cost reduction measures that would allow the program to procure approximately 24,000 AMRAAM missiles at reduced cost. The projected cost of the revised program was $7.0 billion (FY84$). Through 30 December 1985, three FSD guided AMRAAM Air Vehicle Instrumented (AAVI) missiles had been successfully launched from F-15(1) and F-16(2) aircraft at WSMR, NM. These tests were 100 percent successful.

b. Significant Developments Since Last Report: The FY86 Authorization Bill requires a verification of the production program at $5,200,000,000 (FY84$) for the Air Force and $1,800,000,000 (FY84$) for the Navy and the FSD contract at $556,580,480 (TY$). Significant progress has been made in many areas of the cost reduction initiatives approved by the Secretary of Defense. Producibility Enhancement proposals have been received from Hughes Aircraft Company and Raytheon Company. A letter contract was issued to Raytheon Company, to qualify them as a producer. This contract initiates the last major contract activity necessary to establish a second source. AMRAAM reliability testing at the Naval Pacific Missile Test Center has begun.

AIM-120A is expected to meet mission requirements.

7. (U) Program Highlights (cont'd):

c. Changes Since "As Of" Date: None.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: Decision Coordinating Paper, 27 November 1985. No DCP thresholds are estimated to be breached.

9. (U) Schedule: Provided by Executive Service (Air Force).

10. (U) Technical/Operational Characteristics: Provided by Executive Service (Air Force).

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Nov 82 Development Estimate	Changes	Current Estimate
a. Cost:			
Development (RDT&E)	128.4	- 12.6	115.8
Procurement	1167.8	-122.5	1045.3
Air Vehicle	878.3	- 88.4	789.9
Total Flyaway	878.3	- 88.4	789.9
Other Weapon System Cost	91.2	- 1.7	89.5
Initial Spares	23.8	- 12.1	11.7
Other Procurements	174.5	- 20.3	154.2
Construction (MILCON)	--	--	--
Total FY78 Base-Year $	1296.2	-135.1	1161.1
Escalation	1955.2	-447.5	1507.7
Development	77.3	- 16.5	60.8
Procurement	1877.9	-431.0	1446.9
Construction (MILCON)	--	--	--
Total Then-Year $	3251.4	-582.6	2668.8
b. Quantities:			
Development	75	- 58	17
Procurement	7212	--	7212
Total	7287	- 58	7229
c. Unit Cost:			
Procurement:			
FY78 Base-Year $	.162	- .017	.145
Then-Year $	.422	- .077	.346
Program:			
FY78 Base-Year $	.178	- .017	.161
Then-year $	.446	- .077	.369

d. Approved Design-to-Cost Goal: Provided by Executive Service (Air Force).

e. Foreign Military Sales: None.

f. Nuclear Costs: None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: [Current (Then-Year) Dollars in Millions]

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition:			
(1) Cost	2668.8	3300.9	2668.8
(2) Quantity	7,229	7.257	7,229
(3) Unit Cost	.369	.455	.369
b. Current Procurement:	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	N/A	N/A	N/A
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	N/A	N/A	N/A
(2) Quantity	N/A	N/A	N/A
(3) Unit cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	205.7	3045.7	-	3251.4
Previous Changes:				
Economic	- .5	- 36.4	-	- 36.9
Schedule	- 19.1	-	-	- 19.1
Estimating	+ 51.1	+ 67.1	-	+ 118.2
Support	-	- 12.7	-	- 12.7
Subtotal	+ 31.5	+ 18.0	-	+ 49.5
Current Changes:				
Economic	- 4.1	- 375.0	-	- 379.1
Quantity	- 39.2	-	-	- 39.2
Schedule	-	- 323.0	-	- 323.0
Estimating	- 17.3	+ 141.5	-	+ 124.2
Support	-	- 15.0	-	- 15.0
Subtotal	- 60.6	- 571.5	-	- 632.1
Total Changes	- 29.1	- 553.5	-	- 582.6
Current Estimate	176.6	2492.2	-	2668.8

13. (U) Cost Variance Analysis (cont'd):

[FY78 Constant Dollars (Base Year) in Millions]

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	128.4	1167.8	-	1296.2
Previous Changes:				
Schedule	- 12.0	-	-	- 12.0
Estimating	+ 28.3	+ 21.5	-	+ 49.8
Support	-	- 4.6	-	- 4.6
Subtotal	+ 16.3	+ 16.9	-	+ 33.2
Current Changes:				
Quantity	- 18.7	-	-	- 18.7
Schedule	-	- 152.0	-	- 152.0
Estimating	- 10.2	+ 19.5	-	+ 9.3
Support	-	- 6.9	-	- 6.9
Subtotal	- 28.9	- 139.4	-	- 168.3
Total Changes	- 12.6	- 122.5	-	- 135.1
Current Estimate	+ 115.8	1045.3	-	1161.1

b. Previous Change Explanations:

RDT&E

Economic: Revised esclation indices

Schedule: Revised estimate due to reduction of evaluation missiles.

Estimating: Additional unique analysis for tradeoffs, shipboard use, aircraft integration, and variations.

Procurement

Economic: Revised escalation indices

Estimating: Inclusion of investment costs for missile warranties. higher recurring and manufacturing support costs, adjustments to differences in President's Budget and Dec 82 SAR.

Support: Re-estimate of initial spares support.

MILCON

None

13. (U) Cost Variance Analysis (cont'd):

c. Current Change Explanations:

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	0	- 4.1
Reduction of evaluation missiles. (Quantity)	- 18.7	- 39.2
Reductions in unique analysis for tradeoffs, shipboard use, aircraft integration, and variations. (Estimating)	- 10.2	- 17.3
(2) Procurement		
Revised Feb 86 economic escalation rates. (Economic)	N/A	- 375.0
Revised schedule to conform to current capped program. (Schedule)	- 152.0	- 323.0
Revised estimates to current schedule and to agree with President's Budget. (Estimating)	+ 19.5	+ 141.5
Re-estimate of initial spares support. (Support)	- 6.9	- 15.0

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR estimates to Current Baseline Estimate:

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
.446	--	--	--	--	--	--	--	0.0	.446

b. Current Baseline Estimate to Current Estimate:

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
.446	-.058	-.002	-.047	--	+.034	--	-.004	-.077	.369

15. (U) Contract Information: Provided by Executive Service (Air Force).

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

a. Program Status:

(1) Percent Program Completed: 47.4% (9/19)

(2) Percent Program Cost Appropriated: 3.7% ($103.5/2668.8)

b. Appropriation Summary:

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY77-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-96)	Total
RDT&E	103.5	19.0	54.1	-	176.6
Procurement	--	--	718.1	1774.1	2492.2
MILCON	--	--	--	--	--
Total	103.5	19.0	772.2	1774.1	2668.8

16. (U) Program Funding Summary (cont'd):

c. Annual Summary:

Fiscal Year	Qty	FY78 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		

Appropriation: RDT&E,N

1978	—	—	N/A	6.0	—	—	6.0	—
1979	—	—	N/A	16.3	—	—	18.3	8.4
1980	5	—	N/A	21.8	—	—	27.3	9.4
1981	—	—	N/A	17.4	—	—	24.2	11.9
1982	—	—	N/A	2.2	—	—	3.3	9.2
1983	—	—	N/A	2.8	—	—	4.3	4.9
1984	—	—	N/A	4.6	—	—	7.4	3.8
1985	—	—	N/A	4.7	—	—	7.9	3.6
1986	—	—	N/A	2.7	—	—	4.8	3.2
1987	—	—	N/A	10.4	—	—	19.0	4.1
1988	12	—	N/A	13.8	—	—	28.0	3.9
1989	—	—	N/A	7.3	—	—	14.4	3.4
1990	—	—	N/A	3.9	—	—	7.9	2.9
1991	—	—	N/A	1.9	—	—	3.8	2.3
Subtotal	17	—		115.8	—	—	176.6	

Appropriation: Weapons Procurement Navy

1988	—	4.6		6.0	3.0	—	12.7	3.9
1989	50	2.3	21.0	74.1	19.0	3.0	162.2	3.4
1990	400	6.1	56.4	106.7	36.1	19.0	239.3	2.9
1991	800	2.5	94.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1992	(b)(4) [redacted]							
1993								
1994								
1995								
1996								
Subtotal								
Total								

16. (U) Program Funding Summary (cont'd):

d. Obligations and Expenditures:

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1978	6.0	6.0	6.0
1979	18.3	18.3	18.3
1980	27.3	27.3	27.3
1981	24.2	24.2	24.2
1982	3.3	3.3	3.2
1983	4.3	4.3	4.1
1984	7.4	7.4	6.9
1985	7.9	7.8	7.4
1986	4.8	2.5	0.3
To Complete	73.1	N/A	N/A
Total	176.6	101.1	97.7

17. (U) Production Data: Provided by Executive Service (Air Force).

18. (U) Operating and Support Costs: N/A

(S)

~~SECRET~~

SAR-85-069

AF-3 AMRAAM

SELECTED ACQUISITION REPORT (RCS: DD-COMP(QA)623)

Program: AMRAAM (AIM-120A)

AS OF DATE: December 31, 1985

(U) INDEX

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

1. (U) Designation and Nomenclature: AIM-120A Advanced Medium Range Air-to-Air Missile (AMRAAM)

2. (U) DoD Component: U.S. Air Force

3. (U) Responsible Office and Telephone Number:

AMRAAM Joint System Program Office
Armament Division
Eglin AFB, FL 32542-500

Brigadier General Thomas H. Ferguson, Jr.
Assigned: 2 July 1984
AV 872-2307; COMM (904) 882-2307

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

RDT&E: PE643314F (No shared funding)
Procurement: APPN 3020 ICN MMRAD PE 271630) (No Shared Funding)

MILCON: None

5. (U) Related Programs: F-14, F-15, F-16, F/A-18

OASD(PA) DoD ISR 86-T-0600

~~CLASSIFIED by: AMRAAM SOG, 13 Sep 84~~
~~Declassify on: OADR~~

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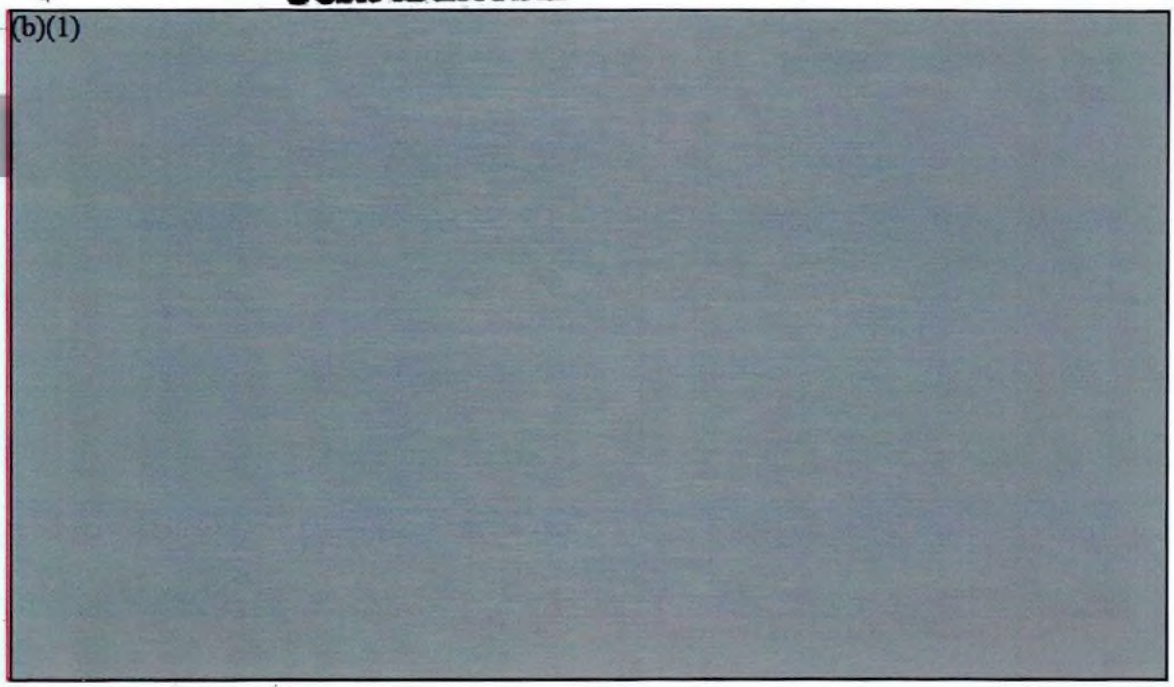
~~SECRET~~

(b)(1)



7. (U) Program Highlights:

a. Significant Historical Developments: DSARC Milestone I validated the urgent requirement for AMRAAM. DSARC Milestone II (September 1982) allowed the program to continue Full-Scale Development (FSD) and delegated the production responsibility to the Air Force, provided the program thresholds were not breached. The FSD contract with two priced production lots was competitively awarded to Hughes Aircraft Company in December 1981. In July 1982, Raytheon was selected as the Follower contractor for eventual competitive production of AMRAAM. This planned competition between Hughes and Raytheon was one of the primary means of keeping the acquisition program cost down. In December 1983, it was determined that Hughes Aircraft Company could not meet the contract schedule for the initial contract deliveries for FSD. The Air Force elected not to proceed into production until sufficient progress was obtained to warrant the commitment of production funding. The preprized production option was not exercised. On 28 January 1985, after the Air Force negotiated a reduced scope contract, and re-estimated the procurement cost, the Office of the Secretary of Defense directed that the FSD contracted program retain its full content and the Assistant Secretary of the Air Force for Research, Development, and Logistics to establish an OSD/multi-service Blue Ribbon committee to investigate alternative methods for reducing AMRAAM costs. In February 1985, the F-15 was established as the primary FSD integration aircraft and the lead aircraft for the Initial Operational Capability. The Joint System Program Office (JSPO) negotiated a revised FSD schedule complying with the direction to retain all elements of the original program. The Blue Ribbon Committee independently established that available producibility enhancement projects and management initiatives could significantly reduce the AMRAAM acquisition cost. In June 1985, the Secretary of Defense approved the revised AMRAAM Program which would incorporate a set of cost reduction measures that would allow the Air Force to procure 17,123 AMRAAM missiles at reduced cost. The projected cost of the revised program was $5.2 billion (FY84$). Through 30 September 1985 three FSD guided AMRAAM Air Vehicle Instrumented (AAVI) missiles had been successfully launched from F-15(1) and F-16(2) aircraft at WSMR, NM. These tests were 100 percent successful.

7. (U) Program Highlights (cont'd):

b. Significant Developments Since Last Report: The FY86 Authorization Bill requires a verification of the production program at $5,200,000,000 (FY84$) and the FSD contract at $556,580,480 (TY$). Significant progress has been made in many areas of the cost reduction initiatives approved by the Secretary of Defense. Producibility Enhancement proposals have been received from Hughes Aircraft Company and Raytheon Company. A letter contract was issued to Raytheon Company, to qualify them as a producer. This contract initiates the last major contract activity necessary to establish a second source. AMRAAM reliability testing at the Naval Pacific Missile Test Center has begun. AIM-120A is expected to meet mission requirements.

c. Changes Since "As Of" Date: SECDEF certified the production program at $5.2 billion (FY84 dollars) and FSD contract at $556,580,480 (then-year dollars).

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 27 November 1985) or SDDM (dated 25 October 1985) threshold breaches.

9. (U) Schedule:

a. Milestones:

	Development Estimate/ Approved Program	Current Estimate
Preliminary Design Review	Aug 82/Aug 82	Aug 82
DSARC II (SDDM)	Nov 82/Nov 82	Nov 82
AFSARC (Lot I Low Rate Initial Production)	2Q FY84/2Q FY87 (CH-2)	2Q FY87 (CH-2)
Exercise Production Long Lead Option I	Feb 84/NA (CH-2)	NA
Production Long Lead for Lot I	NA/Jul 86 (CH-2)	Aug 86 (CH-1)
First Production Option	Nov 84/NA (CH-2)	NA
Production Contract Full Go-Ahead for Lot I	NA/May 87 (CH-2)	May 87 (CH-1)
AFSARC Lot II Production	1Q FY85/NA (CH-2)	NA (CH-2)
DSARC (Lot III - Rate Production)	NA/2QFY89 (CH-2)	2QFY89 (CH-2)
IOC	4Q FY86/3Q FY89	3Q FY89

b. Previous Change Explanations:

Pre-priced options for Lots I and II expired July 1984 and were not negotiated. Milestones were updated to reflect the restructured Program. OSD Program Review approved revised schedules and decision milestones. Most milestones changed due to less than planned progress from the contractor during Full Scale Development (FSD) phase of the program and the congressional cut in FY86.

c. Current Change Explanations:

(CH-1) Adjusted to provide adequate administrative time between scheduled OSD program review and the resulting implementor.

(CH-2) Adjusted to reflect approved restructured program planning dates.

d. References:

Development Estimate: SDDM, dated 3 November 1982, #X22681.

Approved Program: Decision Coordinating Paper, 27 November 1985.
SDDM, dated, 10 June 1985
SDDM, dated, 25 October 1985

10. (U) Technical/Operational Characteristics:

a. (U) Technical	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(U) Weight (lbs)	327/350 (CH-1)		335 (CH-2)
(U) Length (in)	143/144.2 (CH-1)	143.9	143.9 (CH-2)
(U) Reliability 1/			
Ready Storage (hrs)	60,000/45,000 (CH-1)		45,000 (CH-2)
Availability (%)	86/82 (CH-1)		93 (CH-2)
Captive-Carry (MIRH-Type 1) (Hrs) 2/	600/450 (CH-1)		1,000 (CH-2)
Lot II Go-Ahead (Hrs) 3/	240/NA (CH-1)		NA (CH-2)

b. (U) Operational

(b)(1) [redacted]

1/ (U) Standard reliability teminology per AFR 80-5.
2/ (U) Mature missile values (90,000 operational flight hours).
3/ (U) MIRH (Types I, II, and VI). based on Captive Carry Reliability Program (CCRP) with FSD missiles.
4/ (U) Per Joint Service Operation Requirement (JSOR) conditions and definitions. Missile separation distance from launch aircraft at occurrence of missile target intercept. The P-Pole requirement for the AMRAAM is not a significant measure of operational performance since the missile's active seeker allows the aircraft to exercise a significant launch and maneuver without tracking missile to the target.
5/ (U) Non-maneuvering, co-speed, co-altitude target.
6/ (U) Ro, 2M cross-section, clear air.
HPRF - High Pulse Repetition Frequency.
MPRF - Medium Pulse Repetition Frequency.
7/ (U) Probability of K-Kill (Reference AMRAAM System Specification).
8/ (U) Miss distance in accordance with system specification.

(b)(1) [redacted]

c. (U) Previous Change Explanations: No changes

d. (U) Current Change Explanations:

(CH-1) Current estimate revised to reflect approved and required program as documented in Decision Coordinating Paper, 27 November 1985.

(CH-2) Current estimate revised to reflect results of FSD test and analysis.

e. (U) References:

Development Estimate: SDDM, 3 November 1982, X22681.

Approved Program: Decision Coordinating Paper, 27 November 1985.
SDDM, 10 June 1985
SDDM, 25 October 1985

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Nov 82 Development Estimate	Changes	Current Estimate
a. Cost:			
Development (RDT&E)	601.8	+ 17.6	619.4
Procurement	2863.8	+155.9	3019.7
Air Vehicle Flyaway	(2629.9)	(+244.2)	(2874.1)
Other Weapon System Cost	(172.8)	(- 71.7)	(101.1)
Initial Spares	(61.1)	(- 16.6)	(44.5)
Construction	--	--	--
Total: FY78 Base-Year $	3465.6	+173.5	3639.1
Escalation	4874.6	-781.3	4093.3
Development	(370.6)	(- 18.4)	(352.2)
Procurement	(4504.0)	(-762.9)	(3741.1)
Construction (MILCON)	--	--	--
Total Then-Year $	8340.2	-607.8	7732.4
b. Quantities:			
Development (RDT&E)	94	0	94
Procurement	17123	15*	17108
Total	17217	15*	17202

* Change in total program quantity of 15 missiles was made to be consistent with the Appropriations Bill which did not authorize procurement quantities in FY86, and the FY87 President's Budget which reduced the total procurement quantity by 15 missiles. Although the total missile quantity is reduced, there is no change in program scope or content. The equivalent of 15 missiles will be used for the accelerated qualification of a second source producer as directed by Congress. Raytheon will build 15 missile equivalents in FY86 for test purposes to qualify as an AMRAAM producer. These missiles are not being produced for the operational inventory. This is an administrative change only.

c. Unit Cost:			
Procurement:			
FY78 Base-Year $	.167	+ .010	.177
Then-Year $	.430	- .035	.395
Program:			
FY78 Base-Year $	.201	+ .011	.212
Then-year $	.484	- .034	.450

d. Approved Design to Cost Goal:

(Average Unit Flyaway Cost)

	Dev Estimate/ Appr Program	Current Estimate	Latest Appr Threshold
Qty: 17108			
Peak Rate: 250/mo			
FY78 Base-Year $	.154/.168	.168	.168
Then-Year $	.397/.377	.377	.377

11. (U) Program Acquisition Cost (cont'd):

e. Foreign Military Sales: None.

f. Nuclear Costs: None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: [Current (Then-Year) Dollars in Millions]

		Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a.	Program Acquisition:			
	(1) Cost	7732.4	9438.8	7732.4
	(2) Quantity	17,202	17,217	17,202
	(3) Unit Cost	.450	.548	.450
b.	Current Procurement:	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	209.0	438.5	756.8
	Less CY Adv Proc	59.4	65.9	89.9
	Plus PY Adv Proc	0	29.4	59.4
	Net Total	149.6	402.0	726.3
	(2) Quantity	N/A	90	260
	(3) Unit cost	N/A	4.467	2.793

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	972.4	7367.8	-	8340.2
Previous Changes:				
Economic	- 28.6	- 672.3	-	- 700.9
Quantity	-	-	-	-
Schedule	-	+ 288.2	-	+ 288.2
Engineering	+ 91.2	+ 170.3	-	+ 261.5
Estimating	+ 37.9	+ 647.2	-	+ 685.1
Other	-	-	-	-
Support	-	- 227.9	-	- 227.9
Subtotal	+ 100.5	+ 205.5	-	+ 306.0
Current Changes:				
Economic	- 3.7	- 811.8	-	- 815.5
Quantity	-	-	-	-
Schedule	-	+ 278.7	-	+ 278.7
Engineering	- 86.1	-	-	- 86.1
Estimating	- 11.5	- 332.8	-	- 344.3
Other	-	-	-	-
Support	-	+ 53.4	-	+ 53.4
Subtotal	- 101.3	- 812.5	-	- 913.8
Total Changes	- 0.8	- 607.0	-	- 607.8
Current Estimate	971.6	6760.8	-	7732.4

13. (U) Cost Variance Analysis (cont'd):

[FY78 Constant Dollars (Base Year) in Millions]

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	601.8	2863.8	-	3465.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	- 60.4	-	- 60.4
Engineering	+ 47.2	+ 64.3	-	+ 111.5
Estimating	+ 21.4	+ 267.4	-	+ 288.8
Other	-	-	-	-
Support	-	- 115.3	-	- 115.3
Subtotal	+ 68.6	+ 156.0	-	+ 224.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+ 66.2	-	+ 66.2
Engineering	- 44.9	-	-	- 44.9
Estimating	- 6.1	- 93.3	-	- 99.4
Other	-	-	-	-
Support	-	+ 27.0	-	+ 27.0
Subtotal	- 51.0	- .1	-	- 51.1
Total Changes	+ 17.6	+ 155.9	-	+ 173.5
Current Estimate	+ 619.4	3019.7	-	3639.1

b. Previous Change Explanations —

RDT&E

Economic: Revised economic escalation indices

Engineering: Addition of P^3I effort to address evolving threat; incorporated HAVE SPEAR

Estimating: Reduction of P^3I and flight test program to live within available funding; adjustment for impact of inflation change on current and prior years; continuation of HAVE SPEAR; elimination of HAVE SPEAR; refinement of the estimate

Procurement

Economic: Revised economic escalation indices

Schedule: Rephased 50 missiles from FY85 to FY94 as a result of congressional reduction of advance procurement; slowdown in procurement rate buildup; rephased production quantities in FY90 through FY93; production delay of one year

Engineering: Incorporated HAVE SPEAR; extension of HAVE SPEAR;

Estimating: Decreased ECO; rephased ECO; restored flight test program; adjustment for impact of inflation on current and prior years; adoption of ICA estimate; funds transferred from P^3I to RDT&E; increase in missile hardware costs; addition of warranty provisions; adjusted warranty factors; reduction based on additional producibility efforts; addition of funds to maintain TOA; refinement and rephasing of estimate; deletion of HAVE SPEAR

Support: Revised support requirements resulting from revised schedule; reestimate of spares; revised support cost estimate based on engineering estimate vice previous parametric estimate; incorporated contractor maintenance support and deferred depot until completion of production

13. (U) 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	- 3.7
Removal of Preplanned Product Improvement. (Engineering)	- 44.9	- 86.1
Reduction in government support to live within approved funding. (Estimating)	- 6.1	- 11.5
(2) Procurement		
Correction to the 31 Dec 84 SAR for Schedule change (rephased procurement buy schedule) and Estimating change (competition savings) that were combined and reported as a schedule change.	0.0	0.0
o Schedule category correction. (Schedule)	(+ 66.2)	(+ 278.7)
o Estimating category correction. (Estimating)	(- 66.2)	(- 278.7)
Adjustment to refine the mix of previous support and estimating categories primarily related to the impact of escalation changes on current and prior years.	0.0	0.0
o Amount to be added to support to balance to proper mix. (Support)	(+ 27.0)	(+ 53.4)
o Amount to be taken from estimating to balance to proper mix. (Estimating)	(- 27.0)	(- 53.4)
Revised economic escalation indices. (Economic)	N/A	- 811.8
Adjustment for prior year escalation. (Estimating)	+ 5.3	+ 10.6
Adjustment for Congressional transfer of advance procurement then-year $ funding from FY84 to FY86. (Estimating)	- 1.1	0.0
Realignment to offset the impact of revised escalation indices. (Estimating)	- 4.3	- 11.3

d. References:

Development Estimate: Decision Coordinating Paper, 27 November 1985

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR estimates to Current Baseline Estimate:

PAUC (Initial SAR	Changes								PAUC
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
.484	-.088	--	+.033	+.011	+.020	—	-.010	-.034	.450

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

a. RDT&E:

AMRAAM (AIM-120A):	Initial Contract Price Target	Ceiling	Qty
Hughes Aircraft Company Missiles Systems Group Canoga Park, CA F08635-82-C-0001, FPIF, (Award Fee) Award: 11 December 1981 Definitized: 11 December 198	398.1	526.5	94

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
417.1	556.4 (Ch-1)	94*	767.0	811.0 (Ch 2)

	Cost Variance	Schedule Variance
Previous Cumulative Variances (Jun 85)	-218.8	- 48.7
Cumulative Variances to Date (Sep 85)	-252.4	- 46.4
Net Change	- 33.6	+ 2.3

Explanation of Change: CPR data based on original FSD contract planning. Contractor CPRs are delinquent, awaiting resolution of cost performance reporting changes consistent with the restructured program. Development of the AMRAAM Air Vehicle continues to be the primary cost and schedule variance driver. Major sources of the variances are problems encountered in developing the Guidance Section, Missile Integration and Assembly, Tucson Factory Special Test Equipment, and the Modular Rail Launcher. Delays in hardware delivery for integration and increased manpower to recover schedule have resulted in variance increases. Impact on contract: Air Force costs to complete contract are limited to the ceiling price.

CH-1 Ceiling price updated to reflect latest contract modification.

CH-2 The estimated cost for contractor completion of FSD contract is $811.0M. Air Force cost to complete is limited to $556.4M ceiling price. The Air Force estimates that approximately 75 months will be required to complete the FSD Program through delivery of the final DT&E missile. (Actual FSD duration, to support test program, will extend 4 months beyond final missile delivery.)

* Only guided test vehicles are reported. Other contractor deliverables include special test vehicles (i.e., JTV, ACE, SCTV, and ITV) and Class V aircraft integration vehicles.

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

AMRAAM (AIM-120A):	Initial Contract Price Target	Ceiling	Qty
Raytheon Company	17.0	17.8	0

Lowell, MA
F08635-83-C-0105, FPIF,
Award: 8 December 1982
Definitized: 8 December 1982

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
17.5 (Ch 1)	18.3	0	17.5	17.5(Ch 1)

	Cost Variance	Schedule Variance
Previous Cumulative Variances (Jul 84)	- 0.3	- 1.3
Cumulative Variances to Date (Nov 85)	- 0.6	- 0.8
Net Change	- 0.3	+ 0.5

CH-1 Change in target and ceiling is the result of a $.480M fixed price addition.

Explanation of Change: Schedule variance is the result of early delays in receipt of technical drawings from Hughes Aircraft Company. Schedule variance trend is improving as data transfer is accelerating. Cost variance is due to unanticipated costs to verify the Procurement Data Package and extensive computer implementation for document control. No impact to the contract or program at completion.

b. Procurement:

Aoove Chassis Level STE 1/	Initial Contract Price Target	Ceiling	Qty
Raytheon Company	10.1	11.4	0

Lowell, MA
F08635-85-C-0133
Award: 8 July 1985
Definitized: 8 July 1985

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
10.1	11.4	0	10.1	10.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0	0
Cumulative Variances to Date	0	0
Net Change	0	0

Explanation of Change: N/A

Below Chassis Level STE 1/	Initial Contract Price Target	Ceiling	Qty
Raytheon Company	45.5	52.6	0

Lowell, MA
F08635-85-C-0084
Award: 8 July 1985
Definitized: 3 January 1986

1/ This is the first time these contracts have appeared in the SAR.

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

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
45.5	52.6	0	45.5	45.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0	0
Cumulative Variances to Date	0	0
Net Change	0	0

Explanation of Change: N/A

Qualification Lot	Initial Contract Price		
	Target	Ceiling	Qty
Raytheon Company Lowell, MA F08635-86-C-0002* Award: 4 November 1985 Definitized: N/A	TBD	TBD	0

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
TBD	TBD	0	TBD	TBD

* This is a letter contract for Raytheon's Qualification with an NTE of $110.9M. Contract definitization is planned for March 1986. First time in the SAR.

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

a. Program Status:

(1) Percent Program Completed: 50% (10/20)

(2) Percent Program Cost Appropriated: 15.9% ($1230.0/$7732.4)

b. Appropriation Summary:

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY77-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-96)	Total
RDT&E	919.5	39.1	13.0	-	971.6
Procurement	310.5	756.8	3418.1	2275.4	6760.8
MILCON	--	--	--	--	--
Total	1230.0	795.9	3431.1	2275.4	7732.4

16. (U) Program Funding Summary (cont'd):

c. Annual Summary:

Fiscal Year	Qty	FY78 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 1/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1977	—	—	N/A	5.0	—	—	4.8	—
1978	—	—	N/A	6.6	—	—	6.7	6.0
1979	—	—	N/A	14.3	—	—	16.1	8.4
1980	—	—	N/A	20.9	—	—	26.2	9.4
1981	—	—	N/A	16.5	—	—	22.9	11.9
1982	—	—	N/A	93.0	—	—	137.8	9.2
1983	—	—	N/A	135.2	—	—	209.5	4.9
1984	—	—	N/A	118.3	—	—	190.7	3.8
1985	—	—	N/A	122.1	—	—	203.5	3.6
1986	—	—	N/A	58.7	—	—	101.3	3.2
1987	—	—	N/A	21.8	—	—	39.1	4.1
1988	—	—	N/A	7.0	—	—	13.0	3.9
Subtotal	94*	—		619.4	—	—	971.6	

* Only Guided Test Vehicles are reported. Other contractor deliverables include Special Test Vehicles [i.e., Jettison Test Vehicles (JTV), AMRAAM Captive Equipment (ACE), Separation Control Test Vehicles (SCTV), Integration Test Vehicles (ITB)] and Class V aircraft integration test vehicles.

Appropriation: Procurement								
1984	—	15.4	—	15.4	—	—	28.4	8.0
1985	—	38.2	—	38.2	—	—	73.1	4.1
1986	*0	75.3	—	105.1	59.4	—	209.0	4.1
1987	260	86.1	250.3	367.6	89.9	59.4	756.8	4.1
1988	833	79.8	356.2	479.9	116.0	89.9	1018.3	3.9
1989	1950	32.5	394.3	450.7	122.5	116.0	981.6	3.4
1990	2600	33.5	338.4	379.2	98.4	122.5	845.2	2.9
1991	2200	13.4	242.3	251.2	63.6	98.4	573.0	2.3
*1992	1800	2.4	189.3	196.2	52.8	63.6	457.7	2.3
1993	1800	—	183.7	189.7	45.5	52.8	452.8	2.3
1994	1800	—	177.9	186.3	46.1	45.5	454.9	2.3
1995	1800	—	174.3	180.6	45.4	46.1	451.1	2.3
1996	2065	—	190.8	179.6	—	45.4	458.9	2.3
Subtotal	17108	376.6	2497.5	3019.7	739.6	739.6	6760.8	
Total	17202	376.6	2497.5	3639.1	739.6	739.6	7732.4	

* FY86 procurement funds will be used to qualify Raytheon as a second source producer, and to continue producibility enhancement, cost reduction initiatives. As a segment of the qualification program, Raytheon will build the equivalent of 15 missiles as qualification test hardware. The cost of these 15 missiles are included in the flyaway and procurement unit cost calculations.

1/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

16. (U) Program Funding Summary (cont'd):

d. Obligations and Expenditures:

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated 1/	Expended 1/
Appropriation: RDT&E			
1977	4.8	4.8	4.8
1978	6.7	6.7	6.7
1979	16.1	16.1	16.1
1980	26.2	26.2	26.2
1981	22.9	22.9	22.9
1982	137.8	137.8	137.3
1983	209.5	209.5	207.7
1984	190.7	190.7	166.2
1985	203.5	185.8	29.0
1986	101.3	4.3	.2
To Complete	52.1	N/A	N/A
Total	971.6	804.8	617.1
Appropriation: Procurement			
1984	28.4	25.6	0
1985	73.1	45.3	0
1986	209.0	0	0
To Complete	6450.3	N/A	N/A
Total	6760.8	70.9	0

17. (U) Production Rate Data:

a. Annual Production Rates:

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1985	271.5	N/A		N/A
1986	961.8	N/A		N/A
1987	2028.5	N/A	260.0	N/A
1988	2304.0	N/A	793.2	N/A
1989	1911.5	N/A	1814.4	N/A
1990	1800.0	N/A	2456.4	N/A
1991	1800.0	N/A	2400.0	N/A
1992	1800.0	N/A	2077.2	N/A
1993	1928.6	N/A	1800.0	N/A
1994	2513.0	N/A	1800.0	N/A
1995		N/A	1911.6	N/A
1996		N/A	2065.0	N/A

1/ Reflects program office records as of 31 December 1985.

17. (U) Production Rate Data (cont'd):

b. Cost Variance:

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	3639.1	N/A	N/A
(TY $)	N/A	N/A	7732.4	N/A	N/A
PAUC (BY $)	N/A	N/A	.212	N/A	N/A
(TY $)	N/A	N/A		N/A	N/A

c. Schedule Variance:

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	04/87	N/A	N/A
Duration (in Months)	N/A	N/A	108	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	04/96	N/A	N/A

d. Deliveries (Plan/Actual)--

	To Date
RDT&E	3/3
Procurement	0/0

18. (U) Operating and Support Costs: N/A

AF-81 IUS

SAR-85-061

SELECTED ACQUISITION REPORT (SCR: DD-COMP(Q&A)823)
PROGRAM: IUS

AS OF DATE: DECEMBER 31,1985

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1. **Designation and Nomenclature (Popular Name):** Inertial Upper Stage (IUS)

2. **DoD Component:** U.S. Air Force

3. **Responsible Office and Telephone Number:**
Upper Stages Program Office
Space Division
Los Angeles AFS, CA 90009
PM: Col Dennis E. Beebe
Assigned: January 31, 1985
AUTOVON: 833-1488
Commercial: (213) 643-1488

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DEPARTMENT OF DEFENSE
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4. **Program Elements/Procurement Line Items:**

RDT&E:	PE64411F	(Shared Funding)
	PE63411F	(Shared Funding)
	PE35171F	(Shared Funding)
PROCUREMENT:	APPN 3020	ICN MLASUP
MILCON:	PE12449F	(Shared Funding)

5. **Related Programs:**
Space Transportation System (STS - NASA), Complementary Expendable Launch Vehicles (CELV), Defense Satellite Communications System (DSCS), Defense Support Program (DSP), Tracking and Data Relay Satellite (TDRS - NASA), Air Force Special Projects (SP)

SAF/PAS

86-164 - T

OASD(PA) DFOISR 86-T-0555

6. **Mission and Description:**
The Inertial Upper Stage (IUS) is a two-stage, solid propellant, high altitude rocket booster. It can be used in conjunction with the Space Transportation System (Shuttle) or Titan launch vehicle. It is used to deploy payloads from low earth orbit to a higher energy mission orbit. These orbits are higher than the Space Shuttle or Titan rocket alone can provide. The primary users are NASA and DoD. The IUS replaced the Transtage as the primary upper stage vehicle.

7. **Program Highlights:**

a. Significant Historical Developments — In April 1972, the Inertial Upper Stage was born as the NASA concept of the "Space Tug". By October 1973, the Air Force had taken over responsibility of what was then called the "Interim Upper Stage" with the agreement that we would accommodate NASA requirements as needed.

The concept validation phase began in 1975 and resulted in selection of the solid rocket motor (SRM) concept for the now designated Inertial Upper Stage. It was agreed that the IUS would support DOD/NASA missions in the 1980 - 1986 time frame. In 1976 Boeing Aerospace Company won the competition to develop the IUS thus commencing the 18 month-long validation phase. During this time period, the IUS grew from the idea of adapting an existing stage to the concept of developing a new generic upper stage to accommodate improved reliability parameters and increased mission requirements.

The program moved into Full-Scale Development in 1978 with Boeing Aerospace Company as the prime contractor. Component and vehicle qualification testing was completed in mid 1982, ending with 26 consecutive successful solid rocket motor firings. The contract was let for nine vehicles with very heavy emphasis on reliability and system redundancy. At that time, poor cost and schedule analysis as well as inexperience in procuring high qualification piece parts led to significant cost overruns and therefore, two separate contract restructures. Two of those FSD vehicles have been launched. In October 1982 a 3871 lb. DSCS II/III satellite launched on Titan T34-D booster was completely successful. The second launch ,in April 1983, was a NASA TDRS-A satellite in the first IUS/Shuttle mission ever. Although the payload reached nominal mission orbit, technical problems that occurred during the flight initiated the 'IUS Anomaly Recovery Plan' and the third restructure of the FSD contract. Eventually, the problem was successfully recognized and resolved.

In 1983 the program entered into a follow-on production contract. The total quantity to be produced was reduced from 18 to 10 due to the transfer of some payloads to the Centaur Upper Stage. The procurement strategy was also changed to annual buy. Thus far two of those production vehicles have flown DOD payloads successfully to nominal mission altitudes from the Space Shuttle park orbit. On 6 Feb 84, the SECAF determined that the production quantity decrease from 18 to 10 vehicles would result in a Program Acquisition Unit Cost (PAUC) Breach, and notified Congress.

b. Significant Developments Since Last Report — Since the last SAR report was submitted, the IUS has successfully launched a number of classified payloads . The launch of a NASA Tracking and Data Relay Satellite was slipped from 20 Feb 85 to 22 Jan 86. In September the program began work on the second follow-on production and launch services contract to produce three IUS vehicles to be delivered in 1988 and 1989. The new contract also provides for launch services through 1990. Program has completed all DT&E and OT&E. The Inertial Upper Stage system is expected to satisfy mission requirements.

Program office expects to be 90% expended at some point throughout the year. Because of that, the program office expects that this will be the last annual SAR.

c. Changes Since "As of" Date — The IUS/TDRS mission scheduled to launch on 22 January 86 was slipped to 28 January because of weather. The Space Shuttle orbiter "Challenger" was destroyed moments after take-off and the NASA IUS and its payload were completely destroyed before deployment.

8. Decision Coordinating Paper (DCP) Threshold Breaches:
There are currently no DCP (dated 29 March 1978) threshold breaches.

9. Schedule:

a. Milestones —

	Development Estimate/ Approved Program	Current Estimate
DSARC II (Full Scale Dev.)	Mar 78/Mar 78	Mar 78
Development Contract Award	Mar 78/Mar 78	Mar 78
Engine Qualification Test		
(1) Titan Configured	Oct 82/Oct 82	Oct 82
(2) STS Configured	Jan 83/Jan 83	Jan 83
First Flight Vehicles		
(1) Titan Configured	Oct 82/Oct 82	Oct 82
(2) STS Configured	Mar 83/Mar 83	Mar 83
First Production Contract Award	Jan 83/Jan 83	Jan 83
Initial Launch Capability (ILC)*		
(1) Titan Configured	Oct 82/Oct 82	Oct 82
(2) STS Configured	Mar 83/Apr 83	Apr 83
Delivery of First Production Contract Vehicle	Nov 83/Jun 84	Jun 84

*ILC is defined as the first IUS launch of each configuration.

b. Previous Change Explanations — The initial launch of an STS configured IUS was delayed from March 1983 to April 1983 due to Shuttle related technical problems. The first production vehicle delivery was delayed 19 months until after the anomaly investigation and subsequent design changes.

c. Current Change Explanations — None. No current changes in approved program or current estimate.

9. Schedule (Cont'd):

d. References —
Development Estimate: PMD R-S 5068(26), 2 December 1982, Space Transportation System; R-S 7123(10), 21 June 1982, Space Launch Support.
Approved Program: PMD R-S 5068(27), 22 February 1983; R-S 7123(13), 19 December 1983.

10. Technical/Operational Characteristics:

a. Technical	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Reliability (%)			
(1) Titan 34D	96/96	100	99.3
(2) Space Shuttle	96/96	67 (Ch-1)	98.5
Accuracies			
(1) GSO Position (NM)	+/-92/ +/-92	+/-28.0 (Ch-2)	+/-91 (Ch-3)
(2) GSO Velocity (ft/s)	+/-78/ +/-78	+/- 7.8 (Ch-2)	+/-38 (Ch-3)
(3) GSO Inclination (Degrees)	+/-0.12/ +/-0.12	+/-.02 (Ch-2)	+/-0.10 (Ch-3)

b. Operational	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Payload Wt. to Geosynch. Orbit (GSO) from the Space Shuttle (lb.)	5,000/5000	5,133 (Ch-4)	5,002
Payload Wt. to GSO from Titan (lb.)	4,000/4,000	3,871	3,853

c. Previous Change Explanations —
(1): Payload Wt. to GSO for the STS and Titan changed from 5000 to 5089 and from 4000 to 4008 respectively, due to an extendable exit on the stage solid rocket motor that increases thrust, and weight reduction engineering changes.
(2): Reliability for the Titan and the STS changed from 96 to 99.3 and 96 to 98.5 respectively, reflect maximum use of high reliability piece parts, stringent test requirements, and redundancy. In addition, all probable single point failures have been eliminated.
(3): Position, velocity and inclination changed from +/-92, 78 and 0.12 to +/-58, 58 and 0.055 respectively, due to the use of sophisticated gamma guidance techniques.
(4): The estimated payload weight to GSO from the Space Shuttle changed from 5089 pounds to 5002 pounds. There are two causes: 1. SRM-1 and SRM-2 specific impulses are approximately 0.5% lower than predicted (accounting for about 45 pounds). 2. Vehicle weight increased due to the IUS anomaly fix (accounts for about 40 pounds).

10. Technical/Operational Characteristics (Cont'd):

c. Previous Change Explanations (Cont'd) —

(5): The estimated payload weight to GSO on the Titan 34D changed from 4000 to 3924 to reflect the maximum predicted satellite payload weight. The SRM-1 and SRM-2 specific impulse change (see (1) above) accounts for about 35 pounds. The current estimate of 3853 pounds will still accommodate all payload requirements.

d. Current Change Explanations —

(Ch-1): This figure represents the average success of the shuttle missions thus far. Two-thirds of the missions have been said to be 100% successful.
(Ch-2): These figures represent the best to date parameters of the Space Shuttle. They differ from those listed in the Dec 84 SAR which represented Titan missions instead.
(Ch-3): The Current Estimate changes from the Dec 84 SAR were the result of including the shuttle mission parameters in the calculations.
(Ch-4): This is the heaviest payload launched from the shuttle to date. There were no launches from the Space Shuttle in 1984. Therefore, no payload weight was listed in the Dec 84 SAR.

e. References —
Development Estimate: PMD R-S 5068(26), 2 December 1982, Space Transportation System; R-S 7123(10), 21 June 1982, Space Launch Support.

Approved Program: PMD R-S 5068(27), 22 February, 1983; R-S 7123(13) 19 December, 1983.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost —			
Development (RDT&E)	$424.2	$ -4.3	$419.9
Procurement	533.6	-262.0	271.6
Flyaway	(437.0)	(-250.6)	(186.4)
Other	(96.6)	(-11.4)	(85.2)
Initial Spares	(-)	(-)	(-)
Construction (MILCON)	5.2	-0.6	4.6
Total FY 75 Base-Year $	963.0	-266.9	696.1
Escalation	1049.3	-479.7	569.6
Development (RDT&E)	(269.0)	(-10.3)	(258.7)
Procurement	(777.2)	(-469.0)	(308.2)
Construction (MILCON)	(3.1)	(-0.4)	(2.7)
Total Then-Year $	$2012.3	$-746.6	$1265.7
b. Quantities —			
Development (RDT&E)	1	-	1
Procurement	17	-10	7
Total	18	-10	8
c. Unit Cost —			
Procurement:			
FY 75 Base-Year $	$31.388	$+7.412	$38.800
Then-Year $	77.106	+5.723	82.829
Program:			
FY 75 Base-Year $	53.500	+33.513	87.013
Then-Year $	$111.794	$+46.419	$158.213

d. Approved Design to Cost Goal — None

e. Foreign Military Sales — None

f. Nuclear Costs — None

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate Dec 84 SAR	UCR Baseline Estimate Dec 85 SAR
a. Program Acquisition —			
(1) Cost	1265.7	1443.7	1265.7
(2) Quantity	8	8	8
(3) Unit Cost	158.213	180.463	158.213
b. Current Procurement —	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	96.9	232.4	5.6
Less CY Adv Proc	-	-	-
Plus PY Adv Proc	72.4	72.6	-
Net Total	169.3	305.0	5.6
(2) Quantity	3	3	0
(3) Unit Cost	56.433	101.667	N/A

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	693.2	1310.8	8.3	2012.3
Previous Changes:				
Economic	-1.6	+8.2	-	+6.6
Quantity	-	-673.3	-	-673.3
Schedule	-	-	-	-
Engineering	-	+3.6	-	+3.6
Estimating	-29.9	+38.1	-1.0	+7.2
Other	-	-	-	-
Support	-	+87.3	-	+87.3
Subtotal	-31.5	-536.1	-1.0	-568.6
Current Changes:				
Economic	-	-18.4	-	-18.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+8.8	-56.5	-	-47.7
Other	-	-	-	-
Support	+8.1	-120.0	-	-111.9
Subtotal	+16.9	-194.9	-	-178.0
Total Changes	-14.6	-731.0	-1.0	-746.6
Current Estimate	678.6	579.8	7.3	1265.7

13. Cost Variance Analysis (Cont'd)

(FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	424.2	533.6	5.2	963.0
Previous Changes:				
Quantity	-	-241.4	-	-241.4
Schedule	-	-	-	-
Engineering	-	+1.5	-	+1.5
Estimating	-11.5	+17.6	-0.6	+5.5
Other	-	-	-	-
Support	-	+32.5	-	+32.5
Subtotal	-11.5	-189.8	-0.6	-201.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+4.0	-28.3	-	-24.3
Other	-	-	-	-
Support	+3.2	-43.9	-	-40.7
Subtotal	+7.2	-72.2	-	-65.0
Total Changes	-4.3	-262.0	-0.6	-266.9
Current Estimate	419.9	271.6	4.6	696.1

b. Previous Change Explanations —

RDT&E

Economic: Revised economic escalation indices.

Estimating: Changes to absorb the impact of revised economic rates in prior years. Launch mission model changes caused launches to be spread over more years than planned. Elimination of performance improvements to increase the IUS payload throw weight. Design changes due to on-orbit anomaly experienced in April 1983.

Procurement

Economic: Revised economic escalation indices.

Quantity: Deletion of ten vehicles.

Engineering: Engineering changes associated with ten deleted vehicles

Estimating: Changed from multi-year to annual buy strategy. Engineering changes to second stage motors relating to on-orbit anomaly experienced in April 1983. Estimating changes associated with two deleted vehicles. Changed to an annual buy strategy. Cancellation of an STS to Titan Mod Kit. Reduction of production closeout. Contractor reduced the unit cost of IUS vehicles to be more competitive with Centaur.

13. Cost Variance Analysis (Cont'd)

Support: Support change associated with Quantity change. Federally funded Research Center support for extra years launches.

MILCON

Estimating: Adjustment for prior year actuals.

c. Current Change Explanations —

(Dollars in Millions)

	Base-Year $	Then-Year $
(1) RDT&E		
Overestimated development activity associated with the IUS-1 anomaly (Estimating)	-3.5	-7.6
Additional analysis of first flight after anomaly. (Estimating)	+2.0	+4.2
Additional tasks associated with integrating IUS-4, 6, and 8 to a CELV. (Estimating)	+5.5	+12.2
Additional 2 years of technical effort (1991 and 1992) (Support)	+3.2	+8.1
(2) Procurement		
Revised Jan 86 economic escalation indices (Economic)	N/A	-18.4
Adjustment for prior year escalation (Estimating)	+2.9	+6.5
Decrease in IUS production costs due to favorable negotiations on Production and Launch Support Contract. (Estimating)	-39.5	-96.2
Deleted IUS Titan-to-Shuttle conversion kits (Estimating)	-20.7	-50.0
Solid Rocket Motor replacement eliminated as a requirement. (Estimating)	-4.5	-11.0
Reduced close-out costs to reflect actuals. (Estimating)	-7.3	-19.9

13. Cost Variance Analysis (Cont'd)

c. Current Change Explanations (Cont'd)—

(Dollars in Millions)

	Base-Year $	Then-Year $
(2) Procurement (Cont'd)		
Zero balance adjustment from Estimating to Support in order to balance out the overall Support cost change delta.	0.0	0.0
Estimating category adjustment (Estimating)	(+48.8)	(+114.1)
Support category adjustment (Support)	(-48.8)	(-114.1)
Reduced IUS technical effort in FY 85-90 to a level consistant with an "Operational Program" (Support)	-7.7	-19.4
Additional 2 years of technical effort in FY91 and FY92. (Support)	+3.4	+10.0
Additional year of Aerospace (FCRC) support (Support)	+1.2	+3.5

(3) MILCON
No current changes.

d. References —
Development Estimate: President's FY 84 Budget.

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

Initial SAR/Development Estimate to Current Estimate

PAUC (Init. SAR/ DEV Estim)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
111.794	-1.475	+55.582	-	+0.456	-5.063	-	-3.075	+46.419	158.213

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

a. RDT&E — No RDT&E Contracts

b. Procurement —

IUS Vehicle:
Boeing Aerospace Company, Seattle, WA
F04701-82-C-0110, FPIF
Award: July 30, 1980
Definitized: January 27, 1983

Initial Contract Price		
Target	Ceiling	Qty
138.9	138.6	6

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
341.2(Ch-1)	360.4(Ch-2)	6 1/	271.7(Ch-3)	274.5(Ch-3)

Changes Since Previous Report:

Ch-1: 100K decrease from last year. No impact to contract or schedule.

Ch-2: 200K increase from last year. No impact to contract or schedule.

Ch-3: Deletion of various programmatic requirements. The most significant of which is the deletion of the IUS Titan-to-Shuttle conversion kits

1/ Of the six vehicles on contract, five are program office funded and one is user funded.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	+7.5	-4.2
Cumulative Variances To Date (12/31/85)	-0.5	-7.9
Net Change	-8.0	-3.7

Explanation of Change:

Cost Variance - More engineering changes than anticipated, particularly with the computer solder joints.

Schedule Variance - Decision to scrap exit cones associated with the nozzles for "FL-11" and "FL-14". That schedule has moved to the right.

No impact on contract or program.

+ = Favorable - = Unfavorable

15. Contract Information (Cont'd): (Then Year Dollars in Millions)

b. Procurement (Cont'd) —

IUS Vehicle:
Boeing Aerospace Company, Seattle, WA
F04701-85-C-0101, FPIF/AF/MI 2/

Initial Contract Price		
Target	Ceiling	Qty
350.0	416.5	3

Award: July 3, 1985
Definitized: September 11, 1985

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
350.8	374.6	3 3/	348.8	348.7

2/ Note: This is the first time this contract has appeared in the SAR.

3/ Note: The contract price as listed here should not be used in computing a unit price for the IUS. Over half of this figure represents Launch Support which is budgeted for in O&M.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0	0
Cumulative Variances To Date (11/28/85)	+1.4	+0.3
Net Change	+1.4	+0.3

Explanation of Changes:
Cost Variance - Miscalculation of overhead and material rates. This problem will be reconciled in subsequent CPR's and the variances will go to zero.
Schedule Variance - Miscalculation of overhead and material rates. This problem will be reconciled in subsequent CPR's and the variances will go to zero

c. MILCON — No MILCON contracts.

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

a. Program Status —

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

(2) Percent Program Cost Appropriated: 94.1% ($ 1191.5/$ 1265.7)

b. Appropriation Summary —

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY76-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	645.9	9.7	18.9	4.1	678.6
Procurement	538.3	5.6	28.9	7.0	579.8
MILCON	7.3	-	-	-	7.3
Total	1191.5	15.3	47.8	11.1	1265.7

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

c. Annual Summary —

Fiscal Year	Qty	FY 75 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) A/
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1976				4.5			4.9	7.0
1977				21.9			25.7	7.4
1978				55.0			69.8	7.0
1979				74.7			103.3	8.4
1980				64.2			98.8	9.4
1981				63.4			108.0	11.9
1982				24.1			43.9	9.2
1983				60.8			115.9	4.9
1984				18.1			35.8	3.8
1985				16.1			33.0	3.6
1986				3.1			6.8	3.2
1987				4.4			9.7	4.1
1988				3.2			7.2	3.9
1989				1.6			3.8	3.4
1990				1.6			3.9	2.9
1991				1.6			4.0	2.3
1992				1.6			4.1	2.3
Subtotal	1			419.9			678.6	
Appropriation: Procurement								
1978			—	0.7			1.0	7.0
1979			14.4	35.6			54.6	8.7
1980			12.6	24.0			41.9	9.7
1981			—	8.8			16.8	11.9
1982	2		32.6	38.4			78.4	9.6
1983	2		33.9	38.7			84.1	9.0
1984			4.8	37.3			84.8	8.0
1985			33.9	33.9	72.4		79.8	4.1
1986	3		39.4	39.4		72.4	96.9	4.1
1987			2.2	2.2			5.6	4.1
1988			2.7	2.7			7.3	3.9
1989			3.2	3.2			8.9	3.4
1990			2.2	2.2			6.2	2.9
1991			2.2	2.2			6.5	2.3
1992			2.3	2.3			7.0	2.3
Subtotal	7		186.4	271.6	72.4	72.4	579.8	

A/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

c. Annual Summary —

Fiscal Year	Qty	FY 75 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) A/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: MILCON								
1979				4.6			7.3	9.6
Subtotal				4.6			7.3	
Total	8			696.1	72.4	72.4	1265.7	

d. Obligations and Expenditures —

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated B/	Expended B/
Appropriation: RDT&E			
1976	4.9	4.9	4.9
1977	25.7	25.7	25.7
1978	69.8	69.8	69.8
1979	103.3	103.3	103.3
1980	98.8	98.8	98.8
1981	108.0	108.0	108.0
1982	43.9	43.9	43.6
1983	115.9	114.6	102.5
1984	35.8	35.3	21.4
1985	33.0	30.6	28.6
1986	6.8	2.6	-
To Complete	32.7	N/A	N/A
Total	678.6	637.5	606.6

A/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.
B/ Obligated and expended amounts are based on program office records as of 31 Dec 85..

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

d. Obligations and Expenditures —

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated A/	Expended A/
Appropriation: Procurement			
1978	1.0	1.0	1.0
1979	54.6	54.6	54.6
1980	41.9	41.9	34.7
1981	16.8	16.8	16.8
1982	78.4	77.2	68.0
1983	84.1	79.5	61.2
1984	84.8	43.0	27.6
1985	79.8	75.2	1.8
1986	96.9	40.6	-
To Complete	41.5	N/A	N/A
Total	579.8	429.8	265.7
Appropriation: MILCON			
1979	7.3	7.3	7.3
To Complete	-	N/A	N/A
Total	7.3	7.3	7.3

A/ Obligated and expended amounts are based on program office records as of 31 Dec 85

17. Production Rate Data:

a. Annual Production Rates —

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate B/	Production Estimate	Current C/	Maximum Economic
1982	N/A	3	3	3
1983	N/A	4	3	3
1984	N/A	-	-	-
1985	N/A	-		-
1986	N/A	3	4	4
1987	N/A	3	-	-
1988	N/A	-	-	-
1989	N/A	6	-	-

B/ - Meaningful data is not available.

C/ - Funded quantity does not include user funded vehicles. Assumed del. pd. = 8mo.

17. Production Rate Data (Cont'd):

b. Cost Variance -- Dollars in Millions.

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	963.0	-266.9	696.1	-	696.1
(TY $)	2012.3	-746.6	1265.7	-	1265.7
PAUC (BY $)	53.500	+33.513	87.013	-	87.013
(TY $)	111.794	+46.419	158.213	-	158.213

c. Schedule Variance --

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr) 1/	2/82	N/A	6/82	N/A	6/82
Duration (in Months)	92	+13	105	-	105
End Date (Mo/Yr) 2/	9/89	N/A	2/91	N/A	2/91

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	1/1
Procurement	5/4

1/ Date of signing of first production contract.
2/ Date of last delivery.

18. Operating and Support Costs: N/A

AF-26 LANTIRN

SAR-85-076

LANTIRN, December 31, 1985

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

PROGRAM: LANTIRN

AS OF DATE: December 31, 1985

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1. Designation/Nomenclature (Popular Name): Low Altitude Navigation and Targeting Infrared System for Night (LANTIRN)

2. DOD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

Strike System Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433

PM: Col J. Fain
Assigned: 6 Aug 84
AUTOVON: 785-7273
(513) 255-7273

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. Program Elements/Procurement Line Items:

RDT&E: PE 63249F - Non-shared Funding
PE 64249F - Non-shared Funding
PROCUREMENT: PE 27249F - Non-shared Funding

5. Related Programs: Infrared Maverick
F-16 Aircraft
F-15E Aircraft
Additional Aircraft TBD

OASD(PA) DEPSIR 86-I-0590

SAF/PAS
86-159 - T

. Mission and Description: The LANTIRN program was initiated in August 1979 to develop a system to allow low altitude navigation and manual terrain following at night and under weather, as well as automating target acquisition and weapon delivery tasks to allow a higher probability of successful single pass attack. The LANTIRN system is composed of a wide field of view raster Head-Up Display (HUD) and an externally mounted Fire Control System (FCS) consisting of a Navigation Pod and a Targeting Pod. Both the HUD and FCS contracts were awarded competitively in 1980, July and September respectively. The first FSD HUD was delivered in February 1982, and the first FSD Navigation Pod was delivered in February 1983 with an FSD Targeting Pod following in June 1983. Direction was given in July 1984 to integrate the LANTIRN system on the F-15E aircraft.

LANTIRN is an integrated system. The HUD displays wide field of view infrared video imagery and terrain following cues. The Navigation Pod provides infrared video to the HUD for night navigation and contains Ku band terrain following radar. The Targeting Pod has the capability to track targets, automatically cue the AGM-65D IR Maverick missile to the target and interface with the aircraft to accomplish automatic AGM-65 delivery upon pilot consent. It also contains a laser designator/ranger for delivery of laser guided ordnance. The Targeting Pod has been designed with growth provisions for an automatic target recognizer.

7. Program Highlights:

a. Significant Historical Developments--Direction from HQ USAF for the LANTIRN Full Scale Development (FSD) program was issued in December 1979. The Request for Proposal was issued in February 1980 with a competitive source selection following from April-September 1980. Marconi Avionics Ltd. was awarded the Head-Up Display contract in July 1980. Martin Marietta Corporation was awarded the Fire Control System contract in September 1980. In 1984, the program was restructured to match the revised President's Budget for FY85, 86, and 87. Recognizing that the Targeting Pod would require more development work and testing before production, the Air Force allowed a one-year delay for Targeting Pod production in the restructure. During 1983 and 1984, the Navigation Pod successfully completed fifteen months of flight testing at Edwards AFB and two months flying over Canada, in a weather/terrain environment similar to Western Europe. The ability to fly very low at night and attack targets was fully demonstrated.

b. Significant Developments Since Last Report--In February 1985, the Navigation Pod received AFSARC III production approval. The production contract was awarded to Martin Marietta on 1 April 1985. A highly successful AFSARC update report on IOT&E deficiencies/fixes took place in September. As a result, the first production option was exercised for an additional seven Navigation Pods and four sets of intermediate level support equipment in December 1985.

The Targeting Pod successfully accomplished DT&E flight testing at Edwards AFB, CA accumulating over 530 operating flying hours. Currently the Targeting Pod is on track for a May 1986 AFSARC III production decision.

In July 1985 the program received direction to transfer the HUD portion of the system to the F-16 Program Office, where it will be supplied as contractor furnished equipment.

The LANTIRN system is expected to satisfy the mission requirement.

c. Changes Since "As Of" Date--The Targeting Pod deployed for IOT&E flight testing at the Ft Lewis test range in Washington State on 17 January 1986. The first IOT&E sortie was flown 20 January.

8. Decision Coordinating Paper Threshold Breaches: There are currently no DCP threshold breaches.

9. Schedule:

a. Milestones--

	DEVELOPMENT EST./ APPROVED PROGRAM	CURRENT ESTIMATE	
1. Program Initiation (PMD)	Dec 79/Dec 79	Dec 79	
2. Contract Award (HUD)	Jul 80/Jul 80	Jul 80	
3. Contract Award (FCS)	Sep 80/Sep 80	Sep 80	
4. FCS Program Restructure	Sep 81/Sep 81	Sep 81	
5. HUD F-16 Flight Test Complete	Dec 82/Dec 82	Dec 82	
6. HUD A-10 Flight Test Complete	Dec 82/Dec 82	Dec 82	
7. HUD F-16 Production Decision	Jan 83/Jan 83	Dec 84	
8. HUD A-10 Production Decision	May 83/May 83		(CH-1)
9. First FSD Navigation Pod Delivery	Feb 83/Feb 83	Feb 83	
10. First FSD Targeting Pod Delivery	Jul 83/Jul 83	Jul 83	
11. Auto Target Recognizer	Oct 84/Oct 84	Oct 84	
12. Adv Dev Tech Eval		N/A	
13. Competitive Targeting Pod Fly Off	Dec 84/Dec 84	N/A	
14. FCS F-16 Flight Test Complete	Dec 84/Dec 84	Mar 86	(CH-2)
15. Navigation Pod		Sep 85	
16. Targeting Pod		Mar 86	(CH-2)
17. Production Decision	Feb 85/Feb 85		
18. Navigation Pod		Mar 85	(CH-3)
19. Targeting Pod		May 86	(CH-4)
20. FCS F-15E Flight Test Complete	May 88/May 88	Aug 88	
21. FCS A-10 Flight Test Complete	Sep 87/Sep 87		(CH-1)
22. First FCS Production Delivery	Aug 87/TBD		
23. Navigation Pod		Apr 87	(CH-5)
24. Targeting Pod		TBD	
25. IOC	TBD/TBD		
26. Navigation Pod		FY89	(CH-5)
27. Targeting Pod		TBD	

b. Previous Change Explanations:

HUD F-16 Production Decision was delayed from Jan 83 to Feb 85 to reflect actual need, then changed to Dec 84. F-16 flight testing extended to allow additional time for flight test improvements. The August 1984 restructure delayed Targeting Pod program 1 year. F-15E was added to program scope. A-10 aircraft program changed to meet 1991 TAC IOC.

c. Current Change Explanations:

(CH-1) A-10 Aircraft requirement has been deleted. Prior dates were July 88 for 8 and Dec 89 for 21.

(CH-2) Additional time was required for flight test improvements. Prior date was Dec 85 for 14 and 16.

(CH-3) Date of actual production decision. Prior date was Feb 85.

(CH-4) To accommodate completion of IOT&E. Prior date was Feb 86.

(CH-5) Changed from TBD to current estimate to reflect contractual commitment. Prior date was TBD for 23 and 26.

d. References: DEVELOPMENT ESTIMATE: First Secretary of the Air Force Review, 18 Nov 82. Original PMD R-Q0023(1)/63249F, 21 Dec 79.
APPROVED PROGRAM ESTIMATE: Latest Secretary of the Air Force Review, 19 Dec 85. Current PMD R-P0023(11)/63249F/64249F/27249F, 4 Feb 85.

10. Technical/Operational Characteristics:

a. Technical	DEV EST/ APPR PROG	DEM * PERF	CURR EST
HUD			
Transmissivity (Percent) A/	70/65/70/65	70/65	70/65
Display Contrast (Ratio)	1.20/1.20	1.38	1.38
MTBF			
Mature Requirement			
A-10	250/250		250
F-16	250/250		250
Field Projections			
Interim Goal (End of DT&E/IOT&E)	31/31	40	40
Mature Requirement (10,000 Hours)	125/125		125
Weight (Lb)			
A-10	95/95	95	95
F-16	82/82	80	80
FCS			
Maximum Total Weight (lbs)	985/985	978	990 (CH-1)
Maximum Total AC Power (kilovolt amperes)	10.8/10.8	10.8	10.7
MTBF			
FCS:			
Mature Requirement	50/50		50
Field Projection			
Interim Threshold (end DT&E/IOT&E)	9/9		9
Mature Requirement (10,000 hrs)	34/34		34
Navigation Pod:			
Lab Lower Test Limit-Mature Reqmt	73/73		73
Field Projection			
Interim Threshold (end DT&E/IOT&E)	13.2/13.2	11.2	11.2
Mature Requirement (10,000 hrs)	50/50		50
Targeting Pod:			
Lab Lower Test Limit-Mature Rqmt	159/159		159
Field Projection			
Interim Threshold (end DT&E/IOT&E)	28.5/28.5		26.3 (CH-2)
Mature Threshold (10,000 hrs)	108/108		108

* Average Values

	Development Estimate	Demonstrated* Performance	Current Estimate
b. Operational			
HUD			
Total Field of View (Degrees)			
Horizontal	25/25	30	30
Vertical	20/20	20	20
Instantaneous Field of View (Horizontal)	25/25	30	30
FCS			
Terrain Following Altitude (Ft Manual)	200/200	200	200
Automatic IR Maverick Handoffs per pass	1/1	1 (CH-3)	1

c. Previous Change Explanations:
Automatic Target Recognizer deleted. Minor changes to HUD technical characteristics. FCS MTBF modified to reflect field projection. HUD weight revised to measured value. HUD MTBF revised to reflect impact of DT&E/IOT&E performance. Navigation and Targeting Pod reliability data was added as a result of separating rocurement of these two pods.

d. Current Change Explanations:

CH-1 Additional weight allowed in specification for F-15E integration. Prior estimate was 978.

CH-2 Targeting Pod reliability growth curve restructured in March 1985. Prior estimate was 28.5.

CH-3 Reflects demonstrated performance. Prior performance was blank.

e. References: DEVELOPMENT ESTIMATE: First Secretary of the Air Force Review, 18 Nov 82. Original PMD R-Q0023(1)/63249F, 21 Dec 79.
APPROVED PROGRAM ESTIMATE: Latest Secretary of the Air Force Review, 19 Dec 85. Current PMD R-P0023(11)/63249F/64249F/27249F, 4 Feb 85.

* Average Values

11. Program Acquisition Cost (Current Estimate in Millions of Dollars):

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	420.4	- 13.9	406.5
Procurement	1681.7	+284.0	1965.7
Pod Sets	(1297.9)	(+277.4)	(1575.3)
Total Flyaway	(1297.9)	(+277.4)	(1575.3)
Other Weapon System Cost	(311.7)	(+ 7.9)	(319.6)
Initial Spares & Repair Parts	(72.1)	(- 1.3)	(70.8)
Construction (MILCON)	--	--	--
Total FY80 Base-Year $	$2102.1	$+270.1	$2372.2
Escalation	1721.1	+ 6.7	1727.8
Development (RDT&E)	(128.5)	( )	(128.5)
Procurement	(1592.6)	(+ 6.7)	(1599.3)
Construction (MILCON)	--	--	--
Total Then-Year $	$3823.2	$+276.8	$4100.0
b. Quantities --			
Development (RDT&E)	12 *	--	12
Procurement	1316 *	+ 84	1400
Total	1328 *	+ 84	1412
c. Unit Cost --			
Procurement:			
FY80 Base-Year $	$1.278	$+.126	$1.404
Then-Year $	2.488	+.058	2.546
Program:			
FY80 Base-Year $	$1.583	$+.097	$1.680
Then Year $	2.879 *	+.025	2.904

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

e. Foreign Military Sales -- None.

f. Nuclear Costs -- None.

* Due to the LANTIRN program restructuring, the production of navigation and targeting pods are no longer coupled as pod sets. Beginning in FY86, the unit of quantity will be individual pods rather than pod sets.

2. Program Acquisition/Current Procurement Unit Cost Summary:
(Current [Then-Year] Dollars in Millions)

	CURRENT YEAR		BUDGET YEAR
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	4100.0	4074.6	4100.0
(2) Quantity	1412	1412	1412
(3) Unit Cost	2.904	2.886	2.904
b. Current Procurement --	(FY86)	(FY86)	(FY87)
(1) Cost	423.9	436.4	786.1
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	423.9	436.4	786.1
(2) Quantity	9	9	150
(3) Unit Cost	47.100	48.489	5.241

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	548.9	3274.3	—	3823.2
Previous Changes:				
Economic	-7.3	-28.6	—	-35.9
Quantity	—	+71.4	—	+71.4
Schedule	+28.5	+ 9.6	—	+38.1
Engineering	-32.7	—	—	-32.7
Estimating	+20.7	+189.7	—	+210.4
Other	—	—	—	—
Support	+18.0	-17.9	—	+0.1
Subtotal	+27.2	+224.2	—	+251.4
Current Changes:				
Economic	- 3.2	-171.1	—	-174.3
Quantity	—	—	—	—
Schedule	—	-5.3	—	-5.3
Engineering	-35.0	—	—	-35.0
Estimating	- 2.9	+215.7	—	+212.8
Other	—	—	—	—
Support	—	+27.2	—	+27.2
Subtotal	-41.1	+66.5	—	+25.4
Total Changes	-13.9	+290.7	—	+276.8
Current Estimate	535.0	3565.0	—	4100.0

13. Cost Variance Analysis (Cont'd):

FY 1980 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	420.4	1681.7	--	2102.1
Previous Changes:				
Quantity	--	+35.4	--	+35.4
Schedule	+19.8	--	--	+19.8
Engineering	-28.4	--	--	-28.4
Estimating	+10.7	+125.3	--	+136.0
Other	--	--	--	--
Support	+9.3	-10.5	--	-1.2
Subtotal	+11.4	+150.2	--	+161.6
Current Changes:				
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	-20.6	--	--	-20.6
Estimating	- 4.7	+116.7	--	+112.0
Other	--	--	--	--
Support	--	+17.1	--	+17.1
Subtotal	-25.3	+133.8	--	+108.5
Total Changes	-13.9	+284.0	--	+270.1
Current Estimate	406.5	+1965.7	--	+2372.2

b. Previous Change Explanations --

RDT&E

Economic: Revised OSD inflation/escalation indices.

Schedule: A-10 slipped to out years to compensate for FY84 program reductions.

Engineering: Funding and technology for the ATR deleted from the program.

Estimating: Program restructure due to FY84 congressional cuts and increased test requirements. Also adjusted for changes in prior year escalation indices.

Support: Support equipment program restructured to reflect $30M FY84 congressional cut.

b. Previous Change Explanations —

Procurement

Economic:	Revised OSD inflation/escalation indices.
Quantity:	Change in the number of pod sets from 658 to 700 (1316 pods to 1400 pods).
Schedule:	Target Pod production start date delayed by one year. Total buy schedule extended one year.
Estimating:	Adjustment for prior year escalation.
Support:	Added 4 Support Equipment and revised initial spares in FY83 SAR. Subsequently, SE sets have been reduced from 40 to 29 based on user requirements.

MILCON - None.

c. Current Change Explanations

RDT&E	BY 80	TY
Revised economic escalation indices (Economic)	N/A	-3.2
A-10 Aircraft removed from program (Engineering)	-20.6	-35.0
Corrected error from 31 Dec 84 SAR (Estimating)	-2.5	N/A
Adjustment for prior year escalation (Estimating)	+.7	+.9
Reestimate of program based on more current information (Estimating)	-2.9	-3.8

Procurement		
Revised economic escalation indices (Economic)	N/A	-171.1
Moved production up from FYs 90-91 to FYs 88-89 (Schedule)	N/A	-5.3
Corrected error from 31 Dec 84 SAR (Estimating)	+2.5	N/A
Adjustment for prior year escalation (Estimating)	+9.9	+16.5
Include additional R&M/Warranty requirements (Estimating)	+120.1	+223.9
Reestimate of support equipment based on more current information (Support)	+1.3	+2.5
Adjustments to refine the mix of previous support and estimating category changes primarily related to the impact of economic escalation on prior years	0.0	0.0
o Decrease to Estimating category (Estimating)	(-15.8)	(-24.7)
o Increase to Support category (Support)	(+15.8)	(+24.7)

d. References
Development Estimate - President's FY 84 Budget, Jan 83

Note: The USAF cap is in base-year 1980 dollars implemented via then-year dollar firm fixed price contracts for nearly the entire R&D and production efforts. As changes in inflation indices are applied to the fixed then-year dollars, slight changes in base-year dollars result. Prior base-year amount of $2263.7 increased to $2372.2 solely due to changes in OSD inflation indices.

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

a. Initial SAR Estimate to Current Estimate --

PAUC Initial SAR Estimate	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.879 *	-.149	-.120	+.023	-.048	+.300	---	+.019	+.025	2.904

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

a. RDT&E --

Pods:	Initial Contract Price Target	Ceiling	Qty
Martin-Marietta Corporation P.O. Box 5837 Orlando, FL 32855 Contract F33657-80-C-0441 Award: FFP, September 1980 (Fire Control System)	$94.0	N/A	12

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$329.8 (CH-1)	N/A	12 Pods	$329.8	$329.8 (CH-1)

CH-1 - The Current Contract Price and the Estimated Price at Completion have changed from $287.2 to $329.8 because of increased scope of the contract, additional testing and F15E aircraft integration.

b. Procurement --

Pods:	Initial Contract Price Target	Ceiling	Qty
Martin-Marietta Corporation P.O. Box 5837 Orlando, FL 32855 Contract F33657-84-C-0004 Award: FFP, April 1985 (Pod Prod & SE)	$417.7	N/A	9 Pods 4 SE

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$417.7	N/A	9 Pods 4 SE	$417.7	$417.7

* Due to the LANTIRN program restructuring, the production of navigation and targeting pods are no longer coupled as pod sets. Beginning in FY86, the unit of quantity will be individual pods rather than pod sets.

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

a. Program Status --

(1) Percent Program Completed: 61.5% (8 Yrs/13 Yrs)

(2) Percent Program Cost Appropriated: 24.0% (984.4/4100.0)

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

Appropriation	Current & Prior Yrs	Budget Year	Balance FYDP	To Complete Beyond FYDP	Total
	(FY79-86)	(FY87)	(FY88-91)	(N/A)	
RDT&E	464.5	40.1	30.4	--	535.0
Procurement	519.9	786.1	2259.0	--	3565.0
MILCON	0	0	0	--	0
Total	984.4	826.2	2289.4	--	4100.0

Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty Nav/Tgt	FY 80 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)*
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1979				11.2			10.6	8.4
1980	6/6			30.0			31.7	9.4
1981				35.4			41.4	11.9
1982				68.9			86.1	9.2
1983				76.4			99.8	4.9
1984				42.1			57.3	3.8
1985				69.6			97.8	3.6
1986				27.3			39.8	3.2
1987				26.5			40.1	4.1
1988				13.0			20.4	3.9
1989				3.0			4.8	3.4
1990				2.2			3.7	2.9
1991				.9			1.5	2.3
SUBTOTAL	6/6			406.5			535.0	

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty Nav/Tgt	FY 80 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)*
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1981		.8		.8			1.0	11.9
1982		3.6		3.6			5.0	9.6
1983								
1984								
1985	2/0	29.8	25.3	56.0			90.0	4.1
1986	7/2	101.3	95.9	253.2			423.9	4.1
1987	143/7	106.8	227.5	450.0			786.1	4.1
1988	169/81	36.8	261.0	435.4			790.7	3.9
1989	240/231	7.4	308.1	387.2			727.1	3.4
1990	139/240	4.8	256.9	268.2			519.2	2.9
1991	0/139	1.9	107.4	111.3			222.0	2.3
SUBTOTAL	700/700	293.2	1282.1	1965.7			3565.0	
TOTAL	706/706	293.2	1282.1	2372.2			4100.0	

*Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

Appropriation: MILCON -- N/A

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Appropriation: RDT&E

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated*	Expended*
1979	10.6	10.6	10.6
1980	31.7	31.7	31.7
1981	41.4	41.4	41.4
1982	86.1	86.1	86.1
1983	99.8	99.8	95.8
1984	57.3	57.3	52.0
1985	97.8	95.2	56.6
1986	39.8	17.6	.2
To Complete	70.5	N/A	N/A
TOTAL	535.0	439.7	374.4

Appropriation: Procurement

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated*	Expended*
1981	1.0	1.0	1.0
1982	5.0	5.0	3.9
1983	N/A	N/A	N/A
1984	N/A	N/A	N/A
1985	90.0	87.4	24.6
1986	423.9	330.4	-0-
To Complete	3045.1	N/A	N/A
TOTAL	3565.0	423.8	29.5

* Reflects program office records as of 31 Jan 86.

17. Production Rate Data:

a. Annual Production Rates (NAV/TGT)

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1987	2/2	2/0	2/0	2/0
1988	14/14	7/2	7/2	7/2
1989	142/142	107/7	107/7	107/7
1990	376/376	203/81	203/81	203/81
1991	384/384	240/231	240/231	240/231
1992	522/522	238/240	238/240	238/240
1993	N/A	N/A /238	N/A /238	N/A /238

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
PAC (BY $)	2372.2	0	2372.2	0	2372.2
(TY $)	4100.0	0	4100.0	0	4100.0
PAUC (BY $)	1.680	0	1.680	0	1.680
(TY $)	2.904	0	2.904	0	2.904

17. Production Rate (Cont'd):

c. Schedule Variance --

Item	Production Estimate (Nav/Tgt)	Variance (CE less PdE)	Current Estimate (Nav/Tgt)	Variance (CE less Max)	Maximum (Nav/Tgt)
Start Date (Mo/Yr)	4/85 5/86		4/85 5/86		4/85 5/86
Duration (In Months)	91/90	0	91/90	0	91/90
End Date (Mo/Yr)	9/92 9/93		9/92 9/93		9/92 9/93

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	6/6
Procurement	0/0

18. Operating and Support Costs -- N/A

N-1 A-6E/F

SAR-85-097

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SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823) (U)
PROGRAM: A-6E/A-6F

AS OF DATE: 31 December 1985*

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1. (U) DESIGNATION/NOMENCLATURE (POPULAR NAME):
A-6E/A-6F ATTACK LONG RANGE, ALL WEATHER, DARKNESS, INTRUDER

2. (U) DOD COMPONENT: U.S. NAVY

3. (U) RESPONSIBLE OFFICE AND TELEPHONE NUMBER:
NAVAL AIR SYSTEMS COMMAND
WASHINGTON, DC 20361
PROGRAM MANAGER: CAPT R. R. BUEHLER
ASSIGNED: 13 SEPT 1984
TELEPHONE: Autovon 222-8083

4. (U) PROGRAM ELEMENTS:
RDT&E: 63257N, 24134N
PROCUREMENT: 24134N, 26112M APPN: 1506 ICN 0112
0115
MILCON: 24696N

5. (U) RELATED PROGRAMS: EA-6, F-14 and E-2

6. (U) MISSION AND DESCRIPTION

(U) Mission: The A-6E mission is the destruction, in all weather conditions and during darkness, of both moving and fixed sea and land targets, especially at low-level and in direct support of ground operations.

(U) Description: The A-6E is the Navy's only all weather attack aircraft. It incorporates avionics including a microminiaturized digital computer, a solid state weapon release system, a single integrated track and search radar, a Carrier Airborne Inertial Navigation System (CAINS) and a Communication, Navigation and Identification System (CNI). The A-6E is powered by two (2) J52-P-8B engines. An added capability, Target Recognition Attack Multisensor

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Declassify on: OADR

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OASD(PA) BOISE 8 a.m. 09/8

(TRAM), has been procured since FY 1976. This major subsystem of the A-6E is procured under a multiyear production contract and includes an infrared sensor, laser ranger/designator and laser receiver. It provides for delivery of laser guided weapons and increased night surveillance and identification capability. The aircraft is a long range, twin-jet, carrier-based, attack aircraft capable of very accurate navigation and delivery of nuclear and non-nuclear weapons from its 5 external store stations. Beginning in FY 1988 the A-6F will commence production. The A-6F will be an improved version of the A-6E which incorporates improvements in reliability, performance, and survivability through improved avionics, propulsion, and minor airframe changes. It will maintain all the capabilities of the A-6E, but incorporate the following improvements: a high resolution radar for improved standoff targeting, higher thrust engines, modern digital avionics, and minor airframe changes. Limited production begins in FY 1988 with full production scheduled for FY 1990.

7. (U) PROGRAM HIGHLIGHTS:

a. (U) Significant Historical Developments -- In 1984 an upgraded version of the A-6E, identified as the A-6F was approved. The A-6F is an improved version of the A-6E which incorporates improvements in reliability, performance, and survivability through improved avionics, propulsion, and survivability. It maintains all the capabilities of the A-6E, but incorporates the following improvements; a high resolution radar for improved standoff targeting, higher thrust engines, modern digital avionics, and minor airframes changes. Limited production begins in FY88 with full production scheduled for FY90. Based upon current projections the A-6F is expected to fulfill all mission requirements.

b. (U) Significant Developments Since Last Report -- Boeing Military Airplane Company, Seattle, Washington, was awarded a contract to provide the Navy a new composite material wing for installation into existing A-6E aircraft and new A-6E and A-6F aircraft produced by Grumman Aerospace Corporation beginning with the Navy's FY87 buy. The contract is firm fixed price throughout and is structured in a series of options, designed to be exercised at certain program milestones. The program is structured into these basic categories of work: (1) Design, Fabrication and Qualification (DFQ) to develop and prove, through hardware testing, adequacy of the design; (2) production to fabricate and assemble wing kits, and (3) installation of some of those wing kits into existing A-6E aircraft. The contract was competitively procured by an invitation for bids in which two were received and will result in a more reliable and maintainable A-6 replacement wing with a service life of 8,800 hours, an improvement of 4800 hours over the FY86 wing warranty.

Initial funding for this replacement wing was received by the Navy via a $240 million FY85 Supplemental Appropriations Bill which was composed of both FY85 and prior Fiscal Year aircraft procurement funding.

Delivery of the prototype wings is scheduled to begin in April 1987 while production wings are scheduled for the November 1987 through the October 1988 timeframe.

c. (U) Changes since "as of" date: None

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8. (U) DECISION COORDINATING PAPER (DCP) THRESHOLD BREACHES: None

9. (U) SCHEDULE:

a. MILESTONES	PRODUCTION ESTIMATE/ APPROVED PROGRAM	CURRENT ESTIMATE
(U) A-6E		
Contract Executed (Prototype)	Aug 69	Aug 69
First Flight (Prototype A/C)	Mar 70	Mar 70
NPE (begin/end)	Apr/May 71	Apr/May 71
First Production Contract Executed	Dec 70	Dec 70
First Flight (Production A/C)	Jul 71	Jul 71
Acceptance Flight Production A/C	Sep 71	Sep 71
BIS (begin/end)	Sep 71/Jan 72	Sep 71/Jan 72
Fleet Introduction - LANT, CRAW	Dec 71	Dec 71
Navy Support Date	Sep 71	Sep 71
First Deployment	Sep 72	Sep 72
(U) A-6E TRAM		
Development Contract	Jun 72	Jun 72
Design Completion	May 73	May 73
Pilot Production Deliveries (begin/end) 1/	Apr 76	Apr 76
IOT&E Completion	Jun 76	Jun 76
Production Go-Ahead (Limited)	Jul 76	Jul 76
Production Go-Ahead (Full)	Nov 79	Nov 79
First Aircraft Delivery - Full TRAM	Sep 79	Sep 79
IOC	Dec 79	Dec 79
	DEVELOPMENT ESTIMATE	
(U) A-6F		
(U) Development Contract	Jul 84	Jul 84
(U) Limited Production 2/	1988	1988
(U) Full Production	1990	1990

(b)(1) [redacted]

1/ Three FY-1974 Production Aircraft
2/ Beginning Oct 1989 and Ending in July 1990

b. (U) Previous Change Explanation: NONE

c. (U) Current Change Explanation: NONE

d. (U) REFERENCES: Production Estimate:
A-6E - OSD PBD of 1 Dec 1970
A-6F - SECNAV memo of 6 July 1983
Current Estimate: FY 1987 President's Budget

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10. (U) TECHNICAL/OPERATIONAL CHARACTERISTICS:

a. (U) Technical/Operational

	PRODUCTION ESTIMATE	DEMONSTRATED PERFORMANCE	CURRENT ESTIMATE
A-6E			
Long Range Strike			
Store Del			
4-300 Gal Tanks			
+1 MK 43			
Takeoff Weight	53,863 lb.	53,863 lb.	53,863 lb.
Length/Span	54'7"/53'0"	54'7"/53'0"	54'7"/53'0"
Height/Height Folded	16'3"/21'11"	16'3"/21'11"	16'3"/21'11"
Engine No./Type	2/J-52-P-8A/B	2/J-52-P-8A/B	2/J-52-P-8A/B
Crew	2	2	2
Combat Speed/Alt	563 kts/SL	563 kts/SL	563 kts/SL
Combat Ceiling	41,000'	41,000'	41,000'
Rad/Mission Time	864 nm/4.82 hrs	864 nm/4.82 hrs	864 nm/4.82 hrs
Spd Max @ SL Stores Retained	563 Kts	563 Kts	563 Kts
Close Support			
4 MK 56 Mines			
+1-300 Gal Tanks			
Takeoff Weight	54,759 lb.	54,759 lb.	54,759 lb.
Length/Span	54'7"/53'0	54'7"/53'0	54'7"/53'0
Height/Height Folded	16'3"/21'11"	16'3"/21'11"	16'3"/21'11"
Engine No./Type	2/J-52-P-8A/B	2/J-52-P-8A/B	2/J-52-P-8A/B
Crew	2	2	2
Combat Speed/Alt	429 kts/15,000	429 kts/15,000	429 kts/15,000
Combat Ceiling	26,000	26,000	26,000
Rad/Mission Time	461 nm/3.1 hrs	461 nm/3.1 hrs	461 nm/3.1 hrs
Spd Max @ SL Stores Retained	407 kts	407 kts	407 kts
Close Support			
30 MK 81 SNAKEYES			
Takeoff Weight	52,520 lb.	52,520 lb.	52,520 lb.
Length/Span	54'7"/53'0"	54'7"/53'0"	54'7"/53'0"
Height/Height Folded	16'3"/21'11"	16'3"/21'11"	16'3"/21'11"
Engine No./Type	2/J-52-P-8A/B	2/J-52-P-8A/B	2/J-52-P-8A/B
Crew	2	2	2
Combat Speed/Alt	502 kts/5000'	502 kts/5000'	502 kts/5000'
Combat Ceiling	37,500'	37,500'	37,500'
Rad/Mission Time	383 nm/2.09 hrs	383 nm/2.09 hrs	383 nm/2.09 hrs
Spd Max @ SL Stores Retained	504 kts	504 kts	504 kts

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10. (U) TECHNICAL/OPERATIONAL CHARACTERISTICS (Cont'd):

	DEVELOPMENT ESTIMATE	DEMONSTRATED PERFORMANCE	CURRENT ESTIMATE
(U) A-6F			
Long Range Strike			
3-300 Gal Tanks			
2 MK 84 LDGP			
2 Sidewinder			
Takeoff Weight	58,260	TBD	59,275
Length/Span	54'7"/53'0"	TBD	54'7"/53'0"
Height/Height Folded	16'3"/21'11"	TBD	16'3"/21'11"
Engine No./Type	2/GE 404-400D	2/GE 404-400D	2/GE 404-400D
Crew	2	2	2
Combat Speed/Alt	563/SL	TBD	563/SL
Combat Ceiling	38,740	TBD	38,740
Mission Radius	610 nm	TBD	604 nm
Spd Max @ SL Stores Retained	563 kts	TBD	555 kts
Anti Ship Strike			
1-300 Gal Tank			
2 HARM			
2 HARPOON			
2 Sidewinder			
Takeoff Weight	53,899	TBD	53,976
Length/Span	54'7"/53'0"	TBD	54'7"/53'0"
Height/Height Folded	16'3"/21'11"	TBD	16'3"/21'11"
Engine No./Type	2/GE 404-400D	2/GE 404-400D	2/GE 404-400D
Crew	2	2	2
Combat Speed/Alt	563/SL	TBD	563/SL
Combat Ceiling	36,750	TBD	36,750
Mission Radius	655 nm	TBD	653 nm
Spd Max @ SL Stores Retained	407 kts	TBD	507 kts
CAS			
22 MK 82 LDGP			
2 Sidewinder			
Takeoff Weight	60,754	TBD	59,833
Length/Span	54'7"/53'0"	TBD	54'7"/53'0"
Height/Height Folded	16'3"/21'11"	TBD	16'3"/21'11"
Engine No./Type	2/GE 404-400D	2/GE 404-400D	2/GE 404-400D
Crew	2	2	2
Combat Speed/Alt	563/SL	TBD	563/SL
Combat Ceiling	31,000	TBD	31,000
Mission Radius	215 nm	TBD	240 nm
Spd Max @ SL Stores Retained	504 kts	TBD	504 kts

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b. (U) Explanation of Previous Changes: None

c. (U) Explanation of Current Changes: FSED Contract and specification definitization refined design gross weight and performance guarantees. In particular, take off weight for both long range strike and anti-ship strike increased because of configuration changes listed in the weight and balance status report (CDM-A6-85-L-946 of 18 Dec 1985 for contract N00019-84-C-0098). The increase in weight decreased Mission Radius and SPD MAX @ SL Stores Retained. The development estimate for SPD. MAX @ SL stores retained for anti-ship strike should have been 507 kts. (407 kts. was a typing error). The decrease in CAS Takeoff Weight was due to the change from thermal coated to non-thermal coated bombs. Therefore, mission radius increased.

d. (U) REFERENCES: Production Estimate:
OSDPBD of 1 December 1970
SECNAV Memo of 6 July 1983
Current Estimate: FY87 President's Budget

11. (U) PROGRAM ACQUISITION COST (Current Estimate in Millions of Dollars)

	PRODUCTION ESTIMATE	CHANGES	CURRENT ESTIMATE
a. (U) Cost --			
Development (RDT&E)	142.4	+600.9	743.3
Procurement	2,957.3	+6,467.2	9,424.5
Airframe	(1,205.0)	(+2,467.4)	(3,672.4)
Engine	(208.0)	(+519.8)	(727.8)
Avionics	(446.3)	(+2,023.0)	(2,469.3)
Total Flyaway	(1,859.3)	(+5,010.2)	(6,869.5)
Other Wpn Sys Cost	(838.7)	(+1,180.5)	(2,019.2)
Initial Spares	(259.3)	(+276.5)	(535.8)
Construction (MILCON)	1.4	+11.1	12.5
Total FY84 Base-Year $	3,101.1	+7,079.2	10,180.3
Escalation	123.3	-12.6	110.7
Development (RDT&E)	(6.6)	(+34.0)	(40.6)
Procurement	(116.7)	(-47.3)	(69.4)
Contruction (MILCON)	(0)	(+.7)	(.7)
Total Then-Year $	3,224.4	+7,066.6	10,291.0
b. (U) Quantities --			
Development (RDT&E)	0	0	0
Procurement	173	+172	345
Total	173	+172	345
c. (U) Unit Cost --			
Procurement:			
FY84 Base-Year $	17.094	+10.223	27.317
Then-Year $	17.769	+9.750	27.519
Program:			
FY84 Base-Year $	17.925	+11.583	29.508
Then-Year $	18.638	+11.191	29.829

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

e. (U) Foreign Military Sales -- N/A

f. (U) Nuclear Costs -- N/A

12. (U) PROGRAM ACQUISITION/CURRENT PROCUREMENT AND COST SUMMARY:
(Current (Then Year) Dollars in Millions)

	CURRENT YEAR		BUDGET YEAR
	SAR CURRENT ESTIMATE	UCR BASELINE ESTIMATE	UCR BASELINE ESTIMATE
a. (U) Program Acquisition --			
(1) Cost	10,291.0	6,706.0	10,291.0
(2) Quantity	345	221	345
(3) Unit Cost	29.829	30.344	29.829
b. (U) Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	301.1	224.0	390.1
Less CY ADV. Proc.	-20.1	-11.6	-80.0
Plus PY ADV. Proc.	+11.3	+11.3	+75.1
Net Total	292.3	223.7	385.2
(2) Quantity	11	6	11
(3) Unit Cost	26.573	37.3	35.013

13. (U) COST VARIANCE ANALYSIS:

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

	RDT&E	PROC	MILCON	TOTAL
DEVELOPMENT ESTIMATE	149.0	3,074.0	1.4	3,224.4
PREVIOUS CHANGES:				
ECONOMIC	+71.7	+723.8	+2.3	+797.8
QUANTITY	-	+1,797.0	-	+1797.0
SCHEDULE	-	-	-	-
ENGINEERING	+583.8	-	-	+583.8
ESTIMATING	-71.7	-723.8	-2.3	-797.8
OTHER	-	-	-	-
SUPPORT	-	+1100.8	-	+1100.8
SUBTOTAL	+583.8	+2,897.8	-07	+3,481.6
CURRENT CHANGES:				
ECONOMIC	-78.7	-992.1	-	-1,070.8
QUANTITY	-	+1,259.3	-	+1,259.3
SCHEDULE	-	-	-	-
ENGINEERING	+58.1	-	-	+58.1
ESTIMATING	+71.7	+1,912.9	+11.8	+1,996 4
OTHER	-	-	-	-
SUPPORT	-	+1,342.0	-	+1,342.0
SUBTOTAL	+51.1	+3,522.1	+11.8	+3,585.0
TOTAL CHANGES	+634.9	+6,419.9	+11.8	+7,066.6
CURRENT ESTIMATES	783.9	9,493.9	13.2	10,291.0

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13. (U) COST VARIANCE ANALYSIS: (CONT'D)

(FY 84 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
DEVELOPMENT ESTIMATE	142.4	2,957.3	1.4	3,101.1
PREVIOUS CHANGES				
ECONOMIC	-	-	-	-
QUANTITY	-	+1,340.9	-	+1,340.9
SCHEDULE	-	-	-	-
ENGINEERING	+512.9	-	-	+512.9
ESTIMATING	-	-	-	-
OTHER	-	-	-	-
SUPPORT	-	+816.5	-	+816.5
SUBTOTAL	+512.9	+2,157.4	-	+2,670.3
CURRENT CHANGES				
ECONOMIC	-	-	-	-
QUANTITY	-	+1,599.2	-	+1,599.2
SCHEDULE	-	-	-	-
ENGINEERING	+88.0	-	-	+88.0
ESTIMATING	-	+2,012.3	+11.1	+2,023.4
OTHER	-	-	-	-
SUPPORT	-	+698.3	-	+698.3
SUBTOTAL	+88.0	+4,309.8	+11.1	+4,408.9
TOTAL CHANGES	+600.9	+6,467.2	+11.1	+7,079.2
CURRENT ESTIMATES	743.3	9,424.5	12.5	10,180.3

b. (U) Previous Change Explanations

NOTE: Computation of economic under procurement utilizing published procedures would be -13.1 in lieu of +723.8

RDT&E

Engineering: Congress approved development of an upgraded A-6E aircraft (A-6F)

Economic: Revised escalation indices

Estimating: Refinement of estimates based upon approval of A-6F aircraft.

Procurement

Economic: Revised escalation indices

Quantity: 12 additional A-6E and 36 A-6F aircraft approved for production.

Estimating: Refinement of estimates based upon approval of A-6F aircraft.

Support: Primarily due to additional support added for new production aircraft (A-6F). Also includes refinement of A-6E support requirements.

Milcon:

Economic: Revised escalation indices

Estimating: Refinement of estimates based upon approval of A-6F aircraft.

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c. (U) Current Change Explanation

	($ in millions) BASE YEAR	THEN YEAR
RDT&E		
Increase to fully fund A-6F firm-fixed price contracts and to complete full scale development		
Engineering	+88.0	+58.1
Economic	N/A	-78.7
Estimating	0	+71.7
Procurement		
Addition of 124 aircraft (10 A-6E's and 114 A-6F's) and related support, offset by general Congressional inflation reduction and reprogrammings		
Economic	N/A	(-992.1)
Quantity	(+1,599.2)	(+1,259.3)
Estimating	(+2,012.3)	(+1,912.9)
Support	(+698.3)	(+1,342.0)
MILCON		
Additon of trainer facilities at NAS Whidbey Island and NAS Oceana		
Estimating	+11.1	+11.8

NOTE: Total changes for this submission were computed using published procedures. Previous changes were computed using information available at that time. Future submissions will follow published procedures.

d. (U) References -- Production Estimate: SECNAV memo of 6 July 1983
Current Estimate: FY87 President's Budget

14. (U) PROGRAM ACQUISITION UNIT COST (PAUC) HISTORY: (Millions of then-year dollars)

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

PAUC (INITIAL SAR EST)	ECON	QTY	SCH	CHANGES ENG	EST	SPT	OTHER	TOTAL	PAUC (CURRENT EST)
18.638	-.791	-.433	-	+1.861	+3.474	+7.080	-	+11.191	29.829

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15. (U) CONTRACT INFORMATION: (Then-Year Dollars in Millions)

a. (U) RDT&E

A-6F Full Scale Development
Grumman Aerospace, Bethpage, NY
N00019-84-C-0098 (NTE/FFP)
Award: 31 July 1984

Initial Contract Price		
Target	Ceiling	Qty
397.8	N/A	-

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
397.8	N/A	-	397.8	397.8 (in 1990)

Not to exceed/fixed price contract for A-6F modification. Current Limit of Government Liability is $178,300,000 through March FY86.

Previous Cumulative Variances -- None
Cumulative Variance to Date -- None

Explanation of Change: Previous program manager's estimate should have read 397.8 in lieu of 397.0.

Autotracker
Grumman Aerospace, Bethpage, NY
N00019-85-C-0024 (CPIF)
Award: 14 February 1985

Initial Contract Price		
Target	Ceiling	Qty
21.2	N/A	-

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
21.2	N/A	-	21.2	21.2

Previous Cumulative Variances -- None
Cumulative Variance to Date -- None

Explanation of Change: None.

System Weapons Integration Program (SWIP)
Grumman Aerospace, Bethpage, NY
N00019-84-C-0100 (CPFF)
Award: 14 February 1985

Initial Contract Price		
Target	Ceiling	Qty
23.5	N/A	-

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
23.7	N/A	-	23.7	23.7

Previous Cumulative Variances -- None
Cumulative Variance to Date -- None

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15. (U) CONTRACT INFORMATION (Cont'd):

Explanation of Change: Two avionics interface sets were added.

b. (U) Procurement

Airframe	Initial Contract Price		
Grumman Aerospace, Bethpage, NY	Target	Ceiling	Qty
N00019-83-C-0022 (FFP)	88.0	N/A	6
Award: 14 March 1984			

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
77.7	N/A	6	77.7	77.7

Previous Cumulative Variance -- None
Cumulative Variance to Date -- None

Explanation of Change: Original target of 88.0 was estimated price. 77.7 is FFP negotiated price.

Engine (FY85)	Initial Contract Price		
United Tech (P&W), Palm Beach Fla.	Target	Ceiling	Qty
N00019-83-C-0299 (FFP)	13.1	N/A	12
Award: 1 January 1985			

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
13.1	N/A	12	13.1	13.1

Previous Cumulative Variances -- None
Cumulative Variance to Date -- None

Explanation of Change: None.

TRAM System	Initial Contract Price		
Hughes Aircraft, Culver City, CA	Target	Ceiling	Qty
N00019-C-84-0047 (FFP/MYP)	192.9	N/A	165
Award: February 1984			

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
192.9	N/A	165	192.9	192.9

Previous Cumulative Variances -- None
Cumulative Variance to Date -- None

Explanation of Change: None.

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16. (U) PROGRAM FUNDING SUMMARY: (Current Estimate in Millions of Dollars)

a. (U) Program Status --
(1) Percent Program Completed: 72% (18 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 34.4% ($3,543.9/$10,291.0)

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

Appropriation	Current & Prior Yrs (FY69-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92-93)	Total
RDT&E	432.6	157.1	194.2	-	783.9
Procurement	3,109.9	390.1	3,637.2	2,356.7	9,493.9
MILCON	1.4			11.8	13.2
Total	3,543.9	547.2	3,831.4	2,368.5	10,291.0

c. (U) Annual Summary --

Fiscal Year	Qty	FY84 Base-Year Dollars: Flyaway Nonrec	FY84 Base-Year Dollars: Flyaway Rec	FY84 Base-Year Dollars: Total	Then-Year Dollars: Advance Proc Debit	Then-Year Dollars: Advance Proc Credit	Then-Year Dollars: Total	Escl Rate (%)
Appropriation: APN/Procurement								
1969	-		15.2	15.2	5.3	-	5.3	3.2
1970	12		163.3	227.6	2.2	5.3	82.8	4.0
1971	12		185.1	334.1	3.2	2.2	126.7	4.6
1972	12		143.5	263.8	-	3.2	104.8	3.9
1973	21		224.1	360.3	1.6	-	157.9	4.2
1974	13		194.0	293.8	3.5	1.6	134.9	5.8
1975	12		165.5	278.6	5.3	3.5	135.0	8.8
1976	11	14.7	193.5	326.8	12.4	5.3	168.9	6.6
1977	6		139.1	148.1	9.6	12.4	84.9	3.8
1978	12		220.0	289.1	20.3	9.6	181.7	6.8
1979	12	1.1	206.4	232.5	-	20.3	163.5	8.7
1980	6		126.4	195.8	-	-	153.6	11.8
1981	12		221.0	300.0	11.8	-	262.1	11.6
1982	12	2.5	230.7	291.1	7.6	11.8	276.5	14.3
1983	8	2.6	157.0	220.2	11.0	7.6	219.2	9.0
1984	6	17.0	131.4	225.0	10.2	11.0	240.6	8.0
1985	6	9.6	123.6	279.1	66.3	10.2	310.5	4.1
1986	11	9.1	202.3	260.6	20.1	11.3	301.1	4.1
1987	11	39.9	262.3	326.1	80.0	75.1	390.1	4.1
1988	12	47.8	401.7	649.7	113.5	80.0	801.1	3.9
1989	18	18.6	502.3	670.7	142.1	113.5	849.0	3.4
1990	24	20.4	591.0	749.2	138.0	142.1	970.6	2.9
1991	24	23.9	558.7	766.9	187.8	138.0	1016.4	2.3
1992	36	.8	766.2	946.5	196.4	187.8	1283.5	2.3
1993	36	0	745.2	773.7	0	196.4	1073.2	2.3
TOTAL	345	208.0	6869.5	9424.5	1048.2	1048.2	9493.9	

AS OF DATE: 31 December 1985

16. PROGRAM FUNDING SUMMARY (CONT'D): (Current Estimate in Millions of Dollars)

c. (U) Annual Summary (Cont'd) --

Fiscal Year	Qty	FY84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1972		5.5				2.4		4.6
1973		12.0				5.6		4.4
1974		22.7				11.5		8.0
1975		21.8				12.0		10.9
1976		10.5				6.1		6.6
1977		3.0				1.9		2.6
1978		4.3				2.9		6.8
1979		9.9				7.3		8.4
1980		3.8				3.1		10.6
1981		-				-		10.6
1982		-				-		7.6
1983		8.3				8.2		4.9
1984		22.4				22.9		3.8
1985		85.2				90.2		3.6
1986		235.6				258.5		3.2
1987		137.9				157.1		4.1
1988		75.2				88.7		3.9
1989		39.8				48.2		3.4
1990		22.6				28.2		2.9
1991		22.8				29.1		2.3
Total		743.3				783.9		N/A
Appropriation: MILCON								
1975		1.0				.5		18.9
1978		.7				.4		8.0
1979		.8				.5		9.6
1992		5.4				5.6		2.3
1993		4.6				6.2		2.3
Total		12.5				13.2		N/A

AS OF DATE: 31 December 1985

d. (U) Obligations and Expenditures --

Then-Year Dollars (Current Estimate in Millions)

Fiscal Year	Total	Obligated	Expended
	Appropriation: APN/Procurement		
1969	5.3	5.3	5.3
1970	82.8	82.6	82.6
1971	126.7	126.7	126.7
1972	104.8	104.8	105.3
1973	157.9	157.9	155.4
1974	134.9	134.9	134.5
1975	135.0	135.0	134.4
1976	168.9	168.9	165.1
1977	84.9	84.9	84.7
1978	181.9	181.8	181.6
1979	163.5	161.9	163.7
1980	153.6	153.3	152.3
1981	262.1	262.1	255.5
1982	276.5	275.5	261.8
1983	219.2	219.9	190.1
1984	240.6	184.2	108.6
1985	310.4	219.1	28.1
1986	301.1	-	-
To Complete	6383.8	N/A	N/A
Total	9493.9	2617.6	2314.2
	Appropriation: RDT&E		
1972	2.4	2.4	2.4
1973	5.6	5.6	5.6
1974	11.5	11.5	11.5
1975	12.0	12.0	12.0
1976	6.1	6.1	6.1
1977	1.9	1.9	1.9
1978	2.9	2.9	2.9
1979	7.3	7.3	7.3
1980	3.1	3.1	3.1
1981	-	-	-
1982	-	-	-
1983	8.2	8.3	7.9
1984	22.9	22.8	22.3
1985	90.2	85.1	57.9
1986	258.5	175.0	72.7
To Complete	351.3	N/A	N/A
Total	783.9	354.1	220.5

AS OF DATE: 31 December 1985

Appropriation: MILCON

1975	.5	.5	.5
1978	.4	.4	.4
1979	.5	.5	.5
To Complete	11.8	N/A	N/A
Total	13.2	1.4	1.4

17. (U) PRODUCTION RATE DATA:

a. (U) Annual Production Rates --

Production Rates (Quantity/Year)

Fiscal Year	Development Est	Production Est	Current Est	Maximum* Economic
1984	-	6	6	72
1985	-	6	6	72
1986	-	0	11	72
1987	-	0	11	72
1988	-	0	12	72
1989	-	0	18	72
1990	-	0	24	72
1991	-	0	24	72
1992	-	0	36	72
1993	-	0	36	72

* The maximum production rate is not currently attainable due to the actual production of the EA-6B at the rate of 12 per year.

b. (U) Cost Variance -- Dollars in Millions

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	3,101.1	+7,079.2	10,180.3	-	10,180.3
	(TY $)	3,224.4	+7,066.6	10,291.0	-	10,291.0
PAUC	(BY $)	17.925	+11.583	29.508	-	29.508
	(TY $)	18.638	+11.191	29.829	-	29.829

AS OF DATE: 31 December 1985

c. (U) Schedule Variance --

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum*
Start Date	Sep 83	N/A	Oct 86	N/A	Oct 86
Duration	45	27	72	45	27
End Date	Aug 87	N/A	Oct 95	N/A	Dec 88

* Note: Subject to limitations set forth above under "Annual Production Rates".

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

	To Date
RDT&E	0/0
Procurement	163/163

18. (U) Operating and Support (O&S) Costs:

Not Applicable

AF-15 EJS

~~SECRET~~

SAR-85-107

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: ENHANCED JTIDS SYSTEM (EJS)

AS OF DATE: December 31, 1985

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

1. Designation and Nomenclature (Popular Name): Advanced Communication Systems, Enhanced JTIDS System (EJS)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

Airborne Voice Communication Program Office
Electronic Systems Division
Hanscom AFB, MA 01731-5000

Colonel Rodney Sayles
Assigned: 31 Dec 1985
AUTOVON 478-4952
Commercial Phone: (617)861-4952

4. Program Elements/Procurement Line Items:

RDT&E: 27423F Project 2939 (Shared Funding)

5. Related Programs: Joint Tactical Information Distribution Systems (JTIDS)
Single Channel Ground Airborne Radio System (SINCGARS-V)
HAVE QUICK II

THIS PAGE IS UNCLASSIFIED

Classified by: ~~ESD Enhanced JTIDS Security Classification Guide, 22 Dec 83~~ OASD(PA) DFOISR 86-A-0602
Declas on: OADR

SAF/PES

~~SECRET~~

6. Mission and Description: The EJS program is developing a high anti-jam (AJ) voice communication system to protect critical tactical air/air and ground/air voice communications against the long-term jamming threat. To achieve its higher level of jam-resistance, EJS will employ a Time Division Multiple Access (TDMA)-like architecture in an alternate frequency band. It will reduce the likelihood of interference to other friendly transmissions and will place an extra burden on enemy jammers to operate in an additional frequency band. EJS does not replace an existing system.

7. Program Highlights:

a. Significant Historical Developments--

The requirement for a jam resistant, secure-voice system was documented and validated in the TAF Required Operational Capability(ROC) 321-75 and a CORONET CLEAR Study published in July 1976.

In April 1976 HQ USAF directed AFSC to initiate development of the Jam-Resistant Secure Voice Communication System (SEEK TALK). A Full Scale Development (FSD) effort, managed by Electronic Systems Division (ESD), was initiated in January 1981. A two contractor competition was maintained for Phase I of Full Scale Engineering Development up to Critical Design Review (CDR). In February 1982 Hazeltine was awarded a fixed price contract for the balance of FSD.

SEEK TALK Full Scale Development was subsequently redirected during 1982 as a result of the Tri Service Anti-Jam Architecture Working Group's (AJAWG) findings with respect to planned anti-jam voice, data and IFF systems. The June 1982 AFSARC and July 1982 DSARC-level reviews provided program guidance to proceed with detailed program definition of Modified SEEK TALK and directed a Modular Anti-Jam Integrated Communications (MAJIC) Study. Congress terminated the SEEK TALK program in August 1982. The December 1982 AFSARC and January 1983 DSARC-level reviews of the results of the MAJIC study prompted redirection of the Hazeltine effort under the name of the HAVE CLEAR Program.

A subsequent DSARC-level review held in March 1983 resulted in Secretary of Defense Decision Memorandum (SDDM) 9 May 1983, giving the Air Force approval to proceed with full scale development of the Enhanced JTIDS Program (EJS).

A successful Critical Design Review was completed in June 1984. An OSD Action Memo dated 27 July 1984 resulted in a revised system design to include a Time Division Multiple Access (TDMA) JTIDS capability in L-Band, an alternate frequency band and a maintenance concept emphasizing direct on-equipment. In March 1985 the EJS Program conducted a follow-on Design Review addendum to the June 1984 Critical Design Review.

The PMD 4029(3)/27423F/2939 dated 14 May 1985 increased the number of operator positions from 4735 to 6273 due to the addition of 1538 Military Airlift Command aircraft, supports a new production schedule with more emphasis on production platforms and also redefined IOC to be 48 A-10s and 20 GRC-206s.

b. Significant Developments Since Last Report--

A new Program Office cost estimate was completed in November 1985 as well as an Independent Cost Analysis effort to support the EJS DSARC II Milestone originally planned for November 1985. The DSARC was subsequently cancelled.

In August 1985, the Air Force deferred production of the EJS program and eliminated all procurement (3010 & 3080) and Operations and Maintenance (3400) funds, and reduced Research and Development (3600) funds by $128.0M. Following the major funding reductions, the EJS Program Office presented a series of briefings during November and December 1985 to HQ TAC, HQ AFSC, HQ USAF, SAF/AL, AND OSD/C3I on the EJS Aquisition Strategy.

OSD cancelled the EJS Program during its review of the FY 1987 President's Budget. Therefore, this will be the last EJS SAR.

c. Changes since 31 December 1985: None

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated December 1985), or SDDM (dated 27 July 1984) threshold breaches.

9. Schedule:

a. Milestones:	PLANNING ESTIMATE/ APPROVED PROGRAM	CURRENT ESTIMATE
Full Scale Engineering Development	May 83/May 83	May 83
Critical Design Review	Jun 84/Jun 84	Jun 84
Milestone II Decision	Nov 84/(Ch-1)	(Ch-1)
Long Lead Release	Apr 87/(Ch-1)	(Ch-1)
Limited Production Start (Low Rate Initial Production)	Dec 87/(Ch-1)	(Ch-1)
Production Decision	Mar 88/(Ch-1)	(Ch-1)
Initial Terminal Deliveries	Jun 88/(Ch-1)	(Ch-1)
Initial Operational Capability	Mar 89/(Ch-1)	(Ch-1)
Development Test & Evaluation (Complete)	Nov 87/(Ch-1)	(Ch-1)
Initial Operational Test & Evaluation (Complete)	Feb 88/(Ch-1)	(Ch-1)
Complete FSD	Jul 88/(Ch-1)	(Ch-1)
Full Operational Capability	Sep 97/(Ch-1)	(Ch-1)

b. Previous Change Explanations--

A summary of all previous current estimate changes follows:

	INITIAL SAR Dec 83	1/ SAR Dec 84	2/ SAR June 85
Milestone II Decision	Nov 84	Oct 85	Nov 85
Long Lead Release	--	Apr 87	Apr 87
Limited Production Start	Dec 87	Apr 88	Aug 88
Production Decision	Mar 88	Apr 88	Aug 88
Initial Terminal Deliveries	Jun 88	Nov 88	Apr 89
Initial Operational Capability	Mar 89	Jun 89	Aug 90
Development Test & Evaluation	--	Nov 87	Jan 88
Initial Operational Test & Eval	--	Feb 88	Apr 88
Complete FSD		Jul 88	Jul 88
Full Operational Capability	--	Sep 97	Sep 97

1/ OSD redirection via SDDM 27 July 1984 resulted in schedule changes from December 1983 baseline SAR to the December 1984 SAR. Additional milestones not included in the December 1983 baseline SAR were identified in the December 1984 SAR. Redirection resulted in increased technical complexity.

2/ Schedule changes resulted from Program Management Directive 4029(3)/27423F/2939, 14 May 1985 from the December 1984 SAR to the June 1985 SAR. PMD redefined IOC and supported a new production schedule with emphasis on in-line production platforms.

c. Current Change Explanations--
(Ch-1) OSD cancelled the EJS Program during its review of the FY 1987 President's Budget.

d. References--
Planning Estimate: Secretary of Defense Decision Memorandum, 27 July 1984, and PMD #4029(2)/27423F/2939, 12 September 1984.
Approved Program: FY 1987 President's Budget

10. Technical/Operational Characteristics:

	PLANNING ESTIMATE/ APPROVED PROGRAM	DEMONSTRATED PERFORMANCE	CURRENT ESTIMATE	
a. Technical:				
(1) Tactical Airborne Set (TAS)(5 LRU)				
Reliability (Design MTBF-Hrs)	733.0/733.0	NA	733.0	(Ch-1)
Maintainability (O/I) Level Mean Corrective Time (MCT)-Hrs	0.2/1.0/0.2/1.0	NA	0.2/1.0	(Ch-1)
Weight (Installed Total Lbs.)	121.0/121.0	NA	121.0	(Ch-1)
Volume (Installed Total CU FT)	1.43/1.43	NA	1.43	(Ch-1)
Prime Power (Transmit - WATTS)	850.0/850.0	NA	850.0	(Ch-1)
(2) Tactical Airborne Set (TAS) (4 LRU) (No longer EJS mission requirement)				
(3) Ground Command/Control Transportable Set (GC^2TS)*				
Reliability (Design MTBF-Hrs)	2085.0/2085.0	NA	2085.0	(Ch-1)
Maintainability (O/I) Level MCT-Hrs	0.2/1.0/0.2/1.0	NA	0.2/1.0	(Ch-1)
Weight (Installed Total-Lbs)	333.0/333.0	NA	333.0	(Ch-1)
Volume (Installed Total-CuFt)	4.28/4.28	NA	4.28	(Ch-1)
Prime Power (Transmit-WATTS)	1550.0/1550.0	NA	1550.0	(Ch-1)

	PLANNING ESTIMATE/ APPROVED PROGRAM	DEMONSTRATED PERFORMANCE	CURRENT ESTIMATE
(4) (U) Ground Command/Control Mobile Set (GC^2MS)			
Reliability (Design MTBF-Hrs)	1000.0/1000.0	NA	1000.0
Maintainability (O/I) Level MCT-Hrs	0.2/1.0/0.2/1.0	NA	0.2/1.0 (Ch-1)
Weight (Installed Total Lbs)	169.0/169.0	NA	169.0 (Ch-1)
Volume (Installed Total CuFt)	1.93/1.93	NA	1.93 (Ch-1)
Prime Power (Transmit - WATTS)	850.0/850.0	NA	850.0 (Ch-1)
(5) (U) Airborne C^2 Set Eight Channel*			
Reliability (Design MTBF-Hrs)	1400.0/1400.0	NA	1400.0
Maintainability (O/I) Level MCT-Hrs	0.2/1.0/0.2/1.0	NA	0.2/1.0
Weight (Installed Total Lbs)	557.0/557.0	NA	557.0
Volume (Installed Total CuFt)	4.43/4.43	NA	4.43
Prime Power (Transmit - WATTS)	3106.0/3106.0	NA	3106.0
(6) (U) Master Time Distribution System			
Reliability (Design MTBF-Hrs)	1275.0/1275.0	NA	1275.0 (Ch-1)
Maintainability (O/I) Level MCT-Hrs	0.2/1.0/0.2/1.0	NA	0.2/1.0 (Ch-1)
Weight (Installed Total Lbs)	340.0/340.0	NA	340.0 (Ch-1)
Volume (Installed Total CuFt)	18.4/18.4	NA	18.4
Prime Power (Transmit - WATTS)	850.0/850.0	NA	850.0
h. (U) Operational:			
(U) Conferencing (TAS Only) Number of Conferees	3/3	NA	3
(U) Bit Error, Rate	10% 1st signal/10% 15% 2nd signal/15% 20% 3rd signal/20%	NA NA NA	10% 1st signal 15% 2nd signal 20% 3rd signal
(U) Intelligibility			
Diagnostic Rhyme Test (DRT)	80%/80%	NA	80%
Diagnostic Acceptability Measure (DAM)	45%/45%	NA	45% (Ch-1)
(U) Acquisition/Coverage			
Probability of Acquisition (Within 300 msec local and 450 msec wide)	.995/.995	NA	.995 (Ch-1)

(b)(1)

* (U) Multi-operator position radio for use on GC^2IS and Airborne C^2 platforms is not yet on contract for design and development. Study efforts are currently underway to investigate various electrical/mechanical packaging alternatives. Development effort expected to begin in FY 1987.

c. (U) Previous Change Explanations--

A summary of all previous current estimate changes follows (no demonstrated performance has been reported to date):

EJS, December 31, 1985

	Initial SAR Dec 83	1/ SAR Dec 84	2/ SAR June 85
(ref)a. Technical:			
(1) Tactical Airborne Set (TAS) (5 LRU)			
Reliability (Design MTBF-Hrs)	733.0	550.0	570.0
Maintainability (O/I) Level Mean Corrective Time (MCT)-Hrs	0.2/1.0	.3/NA	0.3/NA
Weight (Installed Total Lbs.)	121.0	137.0	137.0
Volume (Installed Total CU FT)	1.43	1.35	1.35
Prime Power (Transmit - WATTS)	850.0	1130.0	1130.0
(2) Tactical Airborne Set (TAS) (No longer EJS mission requirement) (4 LRU) Characteristics were dropped in the 31 December 1984 SAR.			
(3) Ground Command/Control Transportable Set (GC^2TS)*			
Reliability (Design MTBF-Hrs)	2085.0	1221.0	1500.0
Maintainability (O/I) Level MCT-Hrs	.2/1.0	.3/NA	.3/NA
Weight (Installed Total-Lbs)	333.0	219.0	180.0
Volume (Installed Total-CuFt)	4.28	1.89	1.89
Prime Power (Transmit-WATTS)	1550.0	900.0	1200.0
(4) Ground Command/Control Mobile Set (GC^2MS)			
Maintainability (O/I) Level MCT-Hrs	.2/1.0	.3/NA	.3/NA
Weight (Installed Total Lbs)	169.0	176.0	173.0
Volume (Installed Total CuFt)	1.93	1.84	1.79
Prime Power (Transmit - WATTS)	850.0	790.0	1060.0
(5) Airborne C^2Set Eight Channel Maintainability (O/I) Level MCT-Hrs	0.2/1.0	0.2/NA	0.2/NA
(6) Master Time Distribution System			
Reliability (Design MTBF-Hrs)	1275.0	1465.0	1465.0
Maintainability (O/I) Level MCT-Hrs	0.2/1.0	0.3/NA	0.3/NA
Weight (Installed Total Lbs)	340.0	219.0	219.0
(ref)b. Operational:			
Intelligibility Diagnostic Acceptability Measure	45%	45%	32%

1/ & 2/ Changes between the December 1983 SAR and the December 1984 SAR are based on OSD redirection via SDDM, 27 July 1984. The redirection resulted in increased technical complexity and subsequent changes to operational characteristics. However, the technical and operational characteristic values reported in the December 1984 SAR were derived from engineering estimates based on discussions between ESD and the contractor. The figures reported in the June 1985 SAR are based on actual values negotiated with the contractor in February 1985 and placed on contract in March 1985.

d. Current Change Explanations--

(Ch-1) Returned to original planning estimate values. OSD cancelled the EJS Program during its review of the FY 1987 President's Budget.

e. References--

Planning Estimate: Secretary of Defense Memorandum, 27 July 1984, Subject: Enhanced JTIDS System.

Approved Program : FY 1987 President's Budget.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Planning Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	412.9	-260.0	152.9
Procurement	1608.4	-1608.4	0.0
Total Flyaway	(1158.2)	(-1158.2)	0.0
Other Weapon System Cost	(353.6)	(-353.6)	0.0
Initial Spares	(96.6)	(-96.6)	0.0
O&M (Installation)	208.8	-208.8	0.0
Total FY83 Base Year $	2230.1	-2077.2	152.9
Escalation	1048.7	-1033.5	15.2
Development (RDT&E)	(82.5)	(-67.3)	15.2
Procurement	(861.9)	(-861.9)	0.0
O&M (Installation)	(104.3)	(-104.3)	0.0
Total Then-Year $	3278.8	-3110.7	168.1
b. Quantities (Operator Positions) --			
Development (RDT&E)	17	-17	0
Procurement	4826	-4826	0
Total	4843	-4843	0
c. Unit Cost --			
Procurement:			
FY 83 Base-Year $	.333	NA	NA
Then Year $	.512	NA	NA
Program:			
FY 83 Base-Year $	.460	NA	NA
Then Year $	.677	NA	NA

d. Approved Design to Cost Goal -- None.

e. Foreign Military Sales -- None.

f. Nuclear Gosts -- None.

12. Program Acquisition/Current Procurement Unit Cost Summary:

(Current (Then Year) Dollars in Millions)

	SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition —			
(1) Cost	$168.1	$3,564.9	$168.1
(2) Quantity (Ops. Positions)	0	4752	0
(3) Unit Cost (Ops. Positions)	NA	.750	NA

b. Current Procurement — No procurement program.

13. Cost Variance Analysis:

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

	DEV 3600	PROC 3010	PROC 3080	O&M 3400	TOTAL
Planning Estimate	495.4	2027.8	442.5	313.1	3278.8
Previous Changes:					
Economic	-8.5	-3.3	-10.0	-9.7	-31.5
Quantity	+17.1	-19.4	+1.6	-0.5	-1.2
Schedule	-	+13.1	-3.9	-6.5	+2.7
Engineering	+78.2	+11.4	+23.9	-9.5	+104.0
Estimating	-	+44.8	+50.1	-3.5	+ 91.4
Other	-	-	-	-	-
Support	-	+93.3	+27.4	-	+120.7
Subtotal	+86.8	+139.9	+89.1	-29.7	+286.1
Current Changes:					
Economic	+4.8	+3.3	+10.0	+9.7	+27.8
Quantity	-341.5	-1452.9	-312.6	-312.6	-2419.6
Schedule		-13.1	+3.9	+6.5	-2.7
Engineering	-78.2	-11.4	-23.9	+9.5	-104.0
Estimating	+.8	-44.8	-50.1	+3.5	-90.6
Other	-	-	-	-	-
Support	-	-648.8	-158.9	-	-807.7
Subtotal	-414.1	-2167.7	-531.6	-283.4	-3396.8
Total Changes	-327.3	-2027.8	-442.5	-313.1	-3110.7
Current Estimate	168.1	0	0	0	168.1

13. Cost Variance Analysis (Cont'd):

(FY 1983 (Base Year) Constant Dollars in Millions)

	RDT&E 3600	PROC 3010	PROC 3080	O&M 3400	TOTAL
Planning Estimate	412.9	1287.8	320.6	208.8	2230.1
Previous Changes:					
Economic	-	-	-	-	-
Quantity	+12.6	-9.8	+1.2	-0.2	+3.8
Schedule	-	+5.6	-4.4	-	+1.2
Engineering	+62.0	+11.6	+18.1	-6.5	+85.2
Estimating	-	+27.7	+36.8	-5.3	+59.2
Other	-	-	-	-	-
Support	-	+73.8	+19.7	-	+93.5
Subtotal	+74.6	+108.9	+71.4	-12.0	+242.9
Current Changes:					
Economic	-	-	-	-	-
Quantity	-273.3	-923.7	-225.9	-208.6	-1631.5
Schedule		-5.6	+4.4		-1.2
Engineering	-62.0	-11.6	-18.1	+6.5	-85.2
Estimating	+.7	-27.7	-36.8	+5.3	-58.5
Other	-	-	-	-	-
Support	-	-428.1	-115.6		-543.7
Subtotal	-334.6	-1396.7	-392.0	-196.8	-2320.1
Total Changes	-260.0	-1287.8	-320.6	-208.8	-2077.2
Current Estimate	152.9	0	0	0	152.9

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations —

RDT&E (3600)

Economic: Revised escalation indices.

Engineering: Incorporation of JTIDS TDMA signal architecture and deletion of contract work on GC^{2}TS and the special OV-10 version..

Quantity: Addition of ten units for the Leader Follower program.

Procurement (3010)

Economic: Revised escalation indices

Quantity: Reduction in E-3 quantities and addition of 2 new platforms.

Schedule: Advancement of airborne platform schedule on learning curve.

Engineering: Increased B-Kit unit cost due to OSD redirection.

Estimating: Increased integration factors as a result of design changes.

Support: Increased spares factor per AFLC direction and data costs per sufficiency review comments.

13. Cost Variance Analysis (Cont'd)

Procurement (3080)

Economic: Revised escalation indices
Quantity: Addition of 6 TGIF platforms
Schedule: Delay of ground platform schedule on learning curve.
Engineering: Increases in B-Kit unit cost due to OSD redirection.
Estimating: Increased integration factors as a result of design changes.
Support: Increased spares factor per AFLC direction and data costs per sufficiency review comments.

O&M (Installation Labor)(3400)

Economic: Revised escalation indices.
Quantity: Reduction in E-3 quantities and addition of new platforms
Schedule: Advancement of installation schedule
Engineering: Reduction of installation costs on AC^2 platforms due to decreases in complexity of equipment configurations.
Estimating: Reduction of installation costs due to more detailed installation cost estimates by AFLC system managers.

c. Current Change Explanations --

(Dollars in Millions)

	Base Year $	Then Year $
(1) RDT&E		
Revised economic escalation indices (Economic)	--	-6.4
Adjustment for current and prior year escalation change (Estimating)	+0.7	+0.8
Cancellation of all future RDT&E costs due to cancellation of future RDT&E funding.	-335.3	-408.5
Cancellation of RDT&E Costs for 27 operator positions (Quantity)	(-273.3)	(-341.5)
Engineering changes applicable to RDT&E costs (Engineering)	(-62.0)	(- 78.2)
Economic adjustment associated with cancellation of all RDT&E costs (Economic)	(NA)	(+ 11.2)

	Base Year $	Then Year $
(2) Procurement (3010)		
Revised economic escalation indicies (Economic)	--	-148.4
Cancellation of all airborne operator positions due to cancellation of all aircraft procurement funding	-1396.7	-2019.3
Cancellation of flyaway costs for 3540 operator positions (Quantity)	(-923.7)	(-1452.9)
Schedule changes applicable to cancelled airborne operator positions (Schedule)	(-5.6)	(-13.1)
Engineering changes applicable to cancelled airborne operator) positions (Engineering)	(-11.6)	(-11.4)
Estimating changes applicable to cancelled airborne operator positions (Estimating)	(-27.7)	(-44.8)
Support changes associated with the cancelled airborne operator positions (Support)	(-428.1)	(-648.8)
Economic adjustment associated with cancellation of all airborne operator positons (Economic)	NA	(+151.7)
(3) Procurement (3080)		
Revised economic escalation indices (Economic)	--	-18.3
Cancellation of all ground operator positions due to cancellation of all other procurement funding.	-392.0	-513.3
Cancellation of flyaway costs for 1195 operator positions (Quantity)	(-225.9)	(-312.6)
Schedule changes applicable to cancelled ground operator positions (Schedule)	(+4.4)	(+3.9)
Engineering changes applicable to cancelled ground operator positions (Engineering)	(-18.1)	(-23.9)

	Base Year $	Then Year $
Estimating changes applicable to cancelled ground operator positions (Estimating)	(-36.8)	(-50.1)
Support costs associated with the cancelled ground operator positions (Support)	(-115.6)	(-158.9)
Economic adjustment associated with cancellation of all ground operator positions (Economic)	(NA)	(+28.3)

(4) O&M (Installation Labor)(3400)

Revised economic escalation indicies (Economic)	--	-14.7
Cancellation of all O&M installation costs due to cancellation of procurement program and O&M funding.	-196.8	-268.7
Cancellation of installation costs for all operator positions (4762) (Quantity)	(-208.6)	(-312.6)
Schedule changes applicable to O&M installation costs (Schedule)	--	(+ 6.5)
Engineering changes applicable to O&M installation costs (Engineering)	(+ 6.5)	(+ 9.5)
Estimating changes applicable to O&M installation costs (Estimating)	(+ 5.3)	(+ 3.5)
Economic adjustment associated with cancellation of all O&M installation costs (Economic)	(NA)	(+ 24.4)

d. Reference-- Planning Estimate: FY 1985 President's Budget, January 1984

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

Initial SAR/Planning Estimate (PE) to Current Estimate (CE)

PAUC (Init. SAR/ Planning Estimate)	Changes								PAUC (Current Estimate)
	Econ	QTY	Sch	Eng	Est	Other	Spt	Total	
.677	NA	NA	NA	NA	NA	NA	NA	NA	NA

EJS, December 31, 1985

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

a. RDT&E

Radios	Initial Contract Price Target	Ceiling	Qty
Hazeltine Corp., Greenlawn, NY. F19628-82-C-0031, FPIF, Award: 25 Feb 82 Definitized: 25 Feb 82	$44.7	$47.9	17

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$120.5	$134.8	17 (Ch-1)	$122.0	$125.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.95M	$ -2.56M
Cumulative Variances To Date (29 Nov 85)	$-4.67	$-11.54
Net Change	$-2.72	$- 8.98

Explanation of Changes:

(Ch-1) R&D quantity decreased to no longer reflect Leader Follower Program

The primary drivers causing schedule and cost variances, which are reflected in increased Program Manager's Estimated Price At Completion, are as follows:

- Delays in hybrid designs and resultant delays in subcontractor development of hybrid models have caused slippages in schedules in Spread Spectrum Receiver Exciter Unit (SSREU), Radio Frequency Power Amplifier Unit (RFPAU) and Tactical Airborne Segment Operational Control Functional Area Ultra High Frequency Radio (TAS OCFA UHFR) Control Unit equipments. Recovery expected to begin January 1986.

- System definition and design effort in the software area have impacted software coding activity.

- Delayed receipt of Singer Kearfott Interference Protection Feature (IPF) brassboards impact RFPAU development.

- Master Timing Distribution Subsystem (MTDS) equipment delays are primarily due to late release of timing control cabinet spec control drawings.

- Line Replaceable Unit and Shop Replaceable Unit design changes in module partitioning.

Effect on the program has been Engineering Model and Mil Unit schedule delays requiring work around plans to recover schedule loss. Program Office is closely monitoring the recovery progress. There is no impact from the current cost variance.

16. Program Funding - Summary

a. Program Status --
(1) Percent Program Completed: 100.0% (4 yrs/4 yrs)
(2) Percent Program Cost Appropriated: 100.0% ($168.1/$168.1)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY 83-86)	Budget Year (FY87)	Balance To Complete FYDP (FY 88-91)	Beyond FYDP	Total
RDT&E (3600)	168.1	0.0	0.0	0.0	168.1
Total	168.1	0.0	0.0	0.0	168.1

c. Annual Summary --

Fiscal Year	Qty	FY83 Base-Year Dollars			Then-Year Dollars			1/ Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1983				9.7			9.9	4.9
1984				29.9			31.7	3.8
1985				55.2			60.5	3.6
1986				58.1			66.0	3.2
Total	0			152.9			168.1	

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated 2/	Expended 2/
Appropriation: RDT&E			
1983	9.9	9.9	9.9
1984	31.7	31.7	30.0
1985	60.5	60.4	24.7
1986	66.0	12.5	0.6
To Complete	N/A	N/A	N/A
Total	168.1	114.5	65.2

2/ Based on program office records as of 16 January 1986.

17. Production Rate Data: N/A

18. Operating and Support Costs: N/A

A-1 ADDS

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85-019

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: Army Data Distribution System (ADDS)

AS OF DATE: December 31, 1985

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1. Designation/Nomenclature (Popular Name): Not Assigned/Army Data Distribution System (ADDS) (Position Location Reporting System/Joint Tactical Information Distribution System Hybrid (PJH))

2. DOD Component: U.S. Army

3. Responsible Office and Telephone Number:

Project Manager
PLRS/TIDS
Ft Monmouth, NJ 07703-5216

PM: LTC (P) JOHN S. DUFF
Assigned: 1 Dec 85
AUTOVON: 992-4251
Commercial: (201) 532-4251

4. Program Elements/Procurement Line Items:

RDT&E: 63713A Project D370 (No Shared Funding)

Procurement: BU1400, AZ3503, T06200, T06400, T01600, BA970A, TA0500, T06300

MILCON: APPN 2035

No SECURITY Objection to PUBLIC RELEASE
18 MAR 1986
SECURITY REVIEW, OACSI, HQDA

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86-0713
CLEARED AS AMENDED
FOR OPEN PUBLICATION
MAR 20 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. Related Programs: Position Location Reporting System (PLRS) and Joint Tactical Information Distribution System (JTIDS).

6. Mission and Description: The Army Data Distribution System (ADDS), also known as PLRS/JTIDS Hybrid (PJH), will selectively product improve components of the Position Location Reporting System (PLRS), and integrate hardware developed by the Joint Tactical Information Distribution System (JTIDS). By taking advantage of the advanced development of these two projects, the Army will produce an integrated and synergistic system to satisfy the Army's stated requirement for near-real-time, secure, jam resistant data communications. The ADDS will support data communications requirements in the five functional areas of maneuver control, fire support, air defense, intelligence/electronic warfare and combat service support.

7. Program Highlights:

a. Significant Historical Developments - On 8 August 1979 the Under Secretary of Defense for Research and Engineering approved the Report of the Ad Hoc Working Group on the PLRS/JTIDS Hybrid (PJH) and Division Area Communications Concept (DACC) and authorized the Army to proceed with development of the PJH. The PJH development program will modify, combine, and integrate components of two systems (PLRS & JTIDS) presently under development. It will be possible to produce an integrated and synergistic system to satisfy the Army's stated data distribution requirements and overcome existing deficiencies earlier than would otherwise be possible.

b. Significant Developments Since Last Report - Work on Phase 3/4 continued to make satisfactory progress during FY85 consistent with planning estimates. Phase 5 contract was awarded April 8, 1985 as a Mod to the Phase 3/4 contract. On October 1, 1985 the DT/OT II testing of the JTIDS Class 2 terminals started. The JTIDS Class 2M Full Scale Development contract was awarded December 31, 1985 to Singer Kearfott Division. ADDS Developmental/Operational test and evaluation is in the planning phase. Active testing will begin September 1987. ADDS requirements went from 16 divisions to 18 divisions and 5 Corps per letter, TRADOC, (ATCD-CT) Subj: Revised O&O Plan for PLRS/JTIDS dated 31 Aug 84.

The ADDS system is expected to satisfy the mission requirement.

c. Changes Since "As Of" Date - The funding Summary in this SAR is the result of a cost estimating excursion performed on the validated BCE for 16 Divisions. Procurement objective is to estimate the cost of an 18 Divisions and 5 Corps. Information presented in this SAR may be revised upon conclusion of the validated cost estimate for the 18 Division 5 Corps procurement.

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP or SDDM (dated August 8, 1979) threshold breaches.

9. Schedule:

a. Milestones 1/	Planning Estimate/ Approved Program	Current Estimate
Phase 1	Dec 80/Dec 80	Aug 81 (Ch-1)
Phase 2	Feb 82/Feb 82	Jul 82 (Ch-2)
Phase 3/4 Contract Award	Mar 82/Mar 82	Mar 82
ASARC Program Review	Sep 84/Sep 84	Not Req'd (Ch-3)
Phase 5 Contract Award	Sep 84/Sep 84	Apr 85
MDR IIIA	Feb 86/Feb 86	Jul 86 (Ch-4)
MDR IIIB	Sep 87/Sep 87	Jul 88 (Ch-4)
DT Start	Aug 87/Aug 87	Sep 87 (Ch-4)
OT Start	Aug 87/Aug 87	Jan 88 (Ch-4)
Type Classification Approved	Sep 87/Sep 87	Jul 88 (Ch-4)
Initial Production (P^3I) Contract Award	FY86/FY86	Aug 86
First Unit Equipped (FUE)	FY88/FY88	4Q FY88
Full Scale Prod Award		Jul 88 (Ch-5)

b. Previous Change Explanations - Under ASARC Program Review, Phase 5 award, MDR IIIB and Type classification delays resulted from Army efforts to review total data distribution requirements, prepare program support documentation consistent with these requirements, and proceed with an ADDS program designed to satisfy these requirements.

1/ Definition of Phases:

Phase 1 - System definition and concept evaluation was completed in 1981.

Phase 2 - Verifies the interoperability of PLRS and JTIDS. Completed in 1982.

Phase 3/4 - Establishes an interface capability and the design of the Net Control Station (NCS), Enhanced PLRS User Unit (EPUU), EPUU Interface Unit, and the JTIDS Class 2/2M Terminal. Provides a mini prototype system for contract or Engineering Development Tests.

Phase 5 - Completes the development of a division level system for developmental/operational testing.

c. Current Change Explanations:

(Ch-1) Phase 1 was completed in Aug 81 (vs Dec 80). This is the date of the Final Report with the DD 250 Payment Form from the contractor.

(Ch-2) Phase 2 was completed Jul 82 not Jun 82 as stated for the Current Estimate in the previous Dec 84 SAR.

(Ch-3) The ASARC Program Review scheduled for Apr 85 (Dec 84 SAR) was cancelled following a service review of the total Army battlefield data distribution requirement. The scope and result of this review negated the need for an additional assessment of the ADDS Program.

(Ch-4) Program was on hold pending issuance Under Secretary of the Army Memo, Subj: PJH dtd 4 Mar 85, announced the decision to move forward with PJH program.

(CH-5) Milestone is added to correlate with the ADDS Acquisition strategy and to differentiate the Production effort associated with bottoms up production from modification of existing PLRS equipment (P^3I).

d. References:

Planning Estimate: SDDM, dated 8 Aug 79.

Approved Program: SDDM, dated 8 Aug 79.

10. Technical/Operational Characteristics:

a. Technical	Plan Estimate/ Approved Program	Demo Perf	Current Estimate
Size (Length x Width x Height)			
NCS (S-280)	12'x73"x7'/12'x73"x7'		12'x7.5'x7.5'(Ch-1)
Downsized NCS (S-250)	7'x6.5'x6'/7'x6.5'x6'		7'x6.5'x6'
EPUU	10.1"10.7"x4"/10.1"x10.7"x4"		10.1"x10.7"x4"
JTIDS Class 2 Terminal	22"x19"x24"/22"x19"x24"		22"x19"x24"
JTIDS Class 2M Terminal			15"x10"x23"(Ch-2)
Weight (lbs)			
NCS (S-280)	6200/6200		6200
Downsized NCS (S-250)	2300/2300		2300
EPUU	17/17		17
JTIDS Class 2 Terminal	213/213		233 (Ch-3)
JTIDS Class 2M Terminal			105 (Ch-2)

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10. Technical/Operational Characteristics (Con't):

	Plan Estimate/ Approved Program	Demo Perf	Current Est
Power Requirements (NCS)			
Voltage (AC)	208/208		208
Frequency	60/60		60
Phase	3/3		3
Frequency Band (MHZ)	420-450/420-450 960-1215/960-1215		420-450 960-1215
Power Requirements (EPUU)			
Voltage (DC)	20-28/20-28		20-28
Frequency	NA/NA		NA
Phase	NA/NA		NA
Frequency Band (MHZ)	420-450/420-450		420-450
Power Requirements (JTIDS)			
Voltage (AC)	120-208/120-208		120-208
Frequency	50-60-400/50-60-400		50-60-400
Phase	3/3		3
Frequency Band (MHZ)	960-1215/960-1215		960-1215
b. Operational			
MTBF (Hrs)			
NCS	100/100		100
EPUU	500/500		500
Class 2 Terminal	120/120		120
MTTR (Min)			
NCS	35/35		35
EPUU	35/35		35
Class 2 Terminal	30/30		30
Time Slots/Sec			
EPUU	512/512		512
Class 2 Terminal	128/128		128
Bits/Slot			
EPUU	75/75		75
Class 2 Terminal	225/225		225

10. Technical/Operational Characteristics (Con't):

	Plan Estimate/ Approved Program	Demo Perf	Current Est
Data Rate (KBS)			
EPUU	1.2/1.2		1.2
Class 2/2M Terminal	238/238		238
Channels			
EPUU	8/8		8
Class 2/2M Terminal	128/128		128

c. Previous Change Explanations - None.

d. Current Change Explanations -
(Ch-1) Current Estimate reflects performance characteristics in the MSRS, dated July 1985.
(Ch-2) Current Estimate reflects size and weight for JTIDS Class 2M Terminal per MSRS, dated July 1985.
(Ch-3) Correcting an error - ICD's weight was omitted in Dec 84 SAR.

e. References -
Planning Estimate: SDDM, dated 8 August 1979.
Approved Program: SDDM, dated 8 August 1979

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Planning Estimate	Changes	Current Estimate
a. Cost --			
Development(RDT&E) 1/	$175.3	+37.0	212.3
Procurement	1806.2	+21.0	1827.2
NCS	(229.7)	+63.8	(293.5)
Other Components	(1270.6)	-107.3	(1163.3)
Total Flyaway	(1500.3)	-43.5	(1456.8)
Other Wpn Sys Cost	(121.3)	+72.8	(194.1)
Initial Spares	(184.6)	-8.3	(176.3)
Construction(MILCON)	-	-	-
Total: Constant FY 1983 $	1981.5	+58.0	2039.5
Escalation	1056.7	-331.5	725.2
Development(RDT&E)	(13.7)	+6.8	(20.5)
Procurement	(1043.0)	-338.3	(704.7)
Construction	-	-	-
Total Program Cost (Then-Year)	3038.2	-273.5	2764.7

1/ R&D Planning Estimate was adjusted in Dec 84 SAR to reflect true FY83 base year dollars.

11. Program Acquisition Cost (Cond't): (Current Estimate in Millions of Dollars

	Planning Estimate	Changes	Current Estimate
b. Quantities --			
Development(RDT&E)	3	-	3
Procurement	85	+32	117
Total	88	+32	120
c. Unit Cost --			
Procurement: 2/			
Constant FY 1983 $	21.2	-5.6	15.6
Current (Then-Year) $	33.5	-11.9	21.6
Program:			
Constant FY 1983 $	22.5	-5.5	17.0
Current (Then-Year) $	34.5	-11.5	23.0

2/ Initial SAR did not show procurement unit cost for ADDS Representative Network.

d. Approved Design to Cost Goal -- None established for this program.

e. Foreign Military Sales - - None

f. Nuclear Costs - - None

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	2764.7	2770.9	2764.7
(2) Quantity	120	88	120
(3) Unit Cost 1/	23.0	31.5	23.0

1/ The unit of measure for the program unit cost is the Representative ADDS Network which is the NCS.

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12. Program Acquisition/Current Procurement Unit Cost Summary (Cont'd):
(Current (Then-Year) Dollars in Millions)

B. Current Procurement -- Not applicable due to year to year changes in the mix of hardware components being purchased under this program.

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	189.0	2849.2	-	3038.2
Previous Changes:				
Economic	-3.2	-246.5	-	-249.7
Quantity				
Schedule		-	-	
Engineering	+6.6			+6.6
Estimating	-8.4	-15.8	-	-24.2
Other				
Support				
Subtotal	-5.0	-262.3	-	-267.3
Current Changes:				
Economic	-1.2	-148.7	-	-149.9
Quantity		+473.9	-	+473.9
Schedule				
Engineering	+49.2	-339.2	-	-290.0
Estimating	+.8	-41.0	-	-40.2
Other				
Support				
Subtotal	+48.8	-55.0	-	-6.2
Total Changes	+43.8	-317.3	-	-273.5
Current Estimate	232.8	2531.9	-	2764.7

13. Cost Variance Analysis (Cont'd):

(FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	175.3	1806.2	-	1981.5
Previous Changes:				
Quantity				
Schedule				
Engineering	+5.0	-	-	+5.0
Estimating	-9.3	-25.2	-	-34.5
Other			-	
Support				
Subtotal	-4.3	-25.2	-	-29.5
Current Changes:				
Quantity		+320.7	-	+320.7
Schedule				
Engineering	+40.6	-244.9	-	-204.3
Estimating	+.7	-29.6	-	-28.9
Other				
Support				
Subtotal	+41.3	+46.2	-	+87.5
Total Changes	+37.0	+21.0	-	+58.0
Current Estimate	212.3	1827.2	-	2039.5

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Engineering: Increase in estimate for technology insertion (downsizing and VHSIC).

Estimating: These dollars were included in both ADDS and JTIDS SAR's. Dollars should not have been reported in the initial ADDS SAR.

Procurement

Economic: Revised escalation indices.

Estimating: Operations & Maintenance Army was incorrectly included in procurement costs in the initial SAR.
Updated Baseline Cost Estimate to reflect the data from PLRS Production Contract.

MILCON: NA

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base-Year $	Then-Year $
(1) RDT&E		
Application of revised Jan 86 economic escalation rates. (Economic)	NA	-1.2
New work - NCS Downsizing, Very High Speed Integrated Circuits (VHSIC) Insertion and Development of Enhanced PLRS Test Set (EPTS) (Engineering)	40.6	49.2
Phase 5 contract was awarded, concurrent with Phase 3/4, additional funds to maintain concurrency of Phase 3/4/5 contractual effort (Estimating)	0.7	0.8
(2) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	NA	-148.7
Change to NCS Downsizing (Engineering)	-37.4	-51.8
Change to JTIDS Class 2M (Engineering)	-207.5	-287.4
Excluding ASIOE which was erroneously reported in Dec 84 SAR. (Estimating)	-29.6	-41.0
Equipping of 5 Corps and 2 additional Divisions. (+ 32 units) (Quantity)	320.7	473.9
(3) MILCON	NA	NA

d. References -- SDDM, dated 8 Aug 79.

14. Program Acquisition Unit Cost (PAUC) History:

Planning Estimate to Current Baseline Estimate --

PAUC (Planning Estimate)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
34.525	-3.330	-5.257	-	-2.362	-0.537	-	-	-11.486	23.039

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

a. RDT&E

PJH System:
Hughes Aircraft Co.
Ground Systems Group
Sante Fe Springs, CA
DAAB07-82-C-J096, CPFF
Award: March 31, 1982
Definitized: March 31, 1982

Initial Contract Price		
Target	Ceiling	Qty
$36.6	NA	3

Current Contract Price		
Target	Ceiling	Qty
$117.5	NA	3

Estimated Price At Completion	
Contractor	Project Manager
(b)(4)	

AS AMENDED

	Cost Variance	Schedule Variance
Previous Cumulative Variances (10/84)	-4.0	-1.5
Cumulative Variances To Date (10/85)	-4.4	-4.1
Net Change	-0.4	-2.6

Explanation of Change: The unfavorable variances were caused by problems in software development which are delaying the final software test. Good progress has been made in firmware unit integration. Shortages of 25 line items and lack of PLRS Common Modules are severely impeding the assembly and test of the POD hardware. The 1985 replan of the Net Management task has, however, reduced the cost variance significantly. The remainder of the variance is due to the Interface Unit, SDU Development, and Prototype Development tasks. The Project Manager is forecasting a $3.0M cost overrun on Phase 3/4.

JTIDS/PJH HIU:

Singer Kearfott Division
Little Falls, NJ
DAAB07-83-C-J045, CPFF
Award: July 29, 1983
Definitized: July 29, 1983

Initial Contract Price		
Target	Ceiling	Qty
$11.6	NA	22

Current Contract Price		
Target	Ceiling	Qty
$23.4	NA	20

Estimated Price At Completion	
Contractor	Project Manager
$24.3	$24.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances (10/84)	$-1.96	$-2.4
Cumulative Variances To Date (10/85)	-1.33	-1.1
Net Change	$ .63	$ 1.3

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

Explanation of Change: The unfavorable variances were caused by unanticipated design costs that have occured in the HIU hardware and software tasks; delays in delivery of HIU/shelters, and increased efforts on modification of the local memory Shop Replaceable Units (SRUs). The Project Manager has reduced efforts on contract tasks to eliminate cost and schedule variances which will result in savings of approximately $1.1M.

b. Procurement - NA.

c. MILCON - NA.

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

a. Program Status --

(1) Percent Program Completed: 42.9% (6 yrs/14 yrs)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 7.0% ($192.4/$2764.7)
(Funds Appropriated To Date in Millions/
Total Program Funding in Millions)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY81-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92)	Total
RDT&E	151.3	42.1	39.4	-	232.8
Procurement	41.1	111.8	869.9	1509.1	2531.9
MILCON	-	-	-	-	-
Total	192.4	153.9	909.3	1509.1	2764.7

16. PROGRAM FUNDING SUMMARY (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty 1/	FY83 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total			Total	
		Nonrec	Rec					
APPROPRIATION: RDT&E								
1981				17.8			15.8	N/A
1982				18.1			17.3	N/A
1983				33.3			34.1	N/A
1984				21.6			22.9	3.8
1985				21.7			23.9	3.6
1986				32.7			37.3	3.2
1987				35.5			42.1	4.1
1988				18.4			22.6	3.9
1989				9.4			11.9	3.4
1990				3.8			4.9	2.9
Subtotal	3			212.3			232.8	N/A
APPROPRIATION: Procurement (OPA)								
1986				34.5			41.1	3.2
1987				90.8			111.8	4.1
1988				147.3			186.8	3.9
1989				111.8			145.4	3.4
1990				171.2			228.0	2.9
1991				200.8			273.6	2.3
1992				236.6			329.7	2.3
1993				252.2			359.6	2.3
1994				276.3			402.5	2.3
1995				244.8			364.4	2.3
Subtotal	117			1766.3			2442.9	N/A
APPROPRIATION: Procurement (APA)								
1987				0			0	N/A
1988				5.6			7.4	3.9
1989				3.3			4.5	3.4
1990				6.4			9.0	2.9
1991				10.6			15.2	2.3
1992				8.8			12.8	2.3
1993				8.8			13.1	2.3
1994				8.8			13.5	2.3
1995				8.6			13.5	2.3
Subtotal	0			60.9			89.0	N/A
Total	120			2039.5			2764.7	

1/ Because measurement is based on an equivalent network and the year to year mix of components will vary it is not appropriate to report unit procurement of ADDS components.

17. Production Rate Data: Because measurement is based on an equivalent network and the year to year mix of components will vary it is not appropriate to report production rate data for ADDS components.

18. Operating and Support Costs: N/A

N-24 MK-50 TORPEDO

SAR-85-043

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SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: MK 50 TORPEDO

AS OF DATE: December 31, 1985*

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1. (U) Designation and Nomenclature (Popular Name): Torpedo, MK 50 (MK 50 Torpedo)

2. (U) DoD Component: Department of the Navy

3. (U) Responsible Office and Telephone Number:

MK 50 Torpedo Program Office,
Naval Sea Systems Command
Washington, D.C. 20362

CAPT R. M. Wellborn, Jr. USN
Assigned: May 1979
AV 222-0710; COMM (202) 692-0710

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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

RDT&E: PE 63610N
PE 64610N Project S0199
PROCUREMENT: PE 24229N
PE 24271N
APPN: 1507 ICN 3118
MILCON: PE 72096N

5. (U) Related Programs: Vertical Launch ASROC; ASW Standoff Weapon; LAMPS MK III; P-3C; SH-2F; SH-3; ASW Ship In-Service Programs.

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Classified by OPNAVINST 5513.5A Encl (71)
L.D. 05A-71
Declassify on: OADR

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OASD(PA) DPOISR 86-M-0876

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(b)(1)

[redacted]

7. (U) Program Highlights:

(b)(1)

[redacted]

b. (U) Significant Developments Since Last Report—The program continued and completed the first 29 months of a planned 59 month full-scale development effort. In-water testing of the tactical computer logic algorithms using the development model torpedo (100S series) continued. Fabrication of four prototype forebodies and three afterbodies (200 series) continued with the first two forebodies completing acceptance test and delivery. Fabrication of the prototype lot (200A) has started. Specific accomplishments during FY 85 are:

Continued in-water testing of tactical logic and torpedo dynamic performance.
Finalized warhead design.
Demonstrated lethality of the warhead design.
Completed full-scale warhead test series.
Delivered first and second prototype forebodies.
Completed full up dynomometer testings of afterbody prototype.
Prototype forebody operational on the hybrid simulator.
Two industry briefings have been held for prospective second source prime contractors.
RFP for second source issued.
Fabrication of prototype lot (200A) torpedoes begun.
Software PDR for the first 200 series released completed.

The MK 50 Torpedo is meeting all mission requirements.

c. Changes since "As Of" Date—None.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated March 15, 1984), or SDDM (dated March 15, 1984) threshold breaches.

9. (U) Schedule:

a. (U) Milestones—

	Development Estimate/ Approved Program	Current Estimate
(U) DSARC I	Jul 79/Jul 79	Jul 79
(U) DSARC II	Jan 84/Jan 84	Jan 84
(U) FSD Contract Award	Aug 83/Aug 83	Sept 83
(U) Critical Design Review	Apr 86/Apr 86	Jun 86 (Ch-1)
(U) Milestone IIIA	Apr 87/Apr 87	Dec 86 (Ch-2)
(U) OT II Completed	Dec 88/Dec 88	Jul 88
(U) Milestone IIIB	Apr 89/Apr 89	Oct 88

(b)(1)

b. (U) Previous Change Explanations—DSARC II was one month late due to the requirement for additional in-water testing required to demonstrate terminal homing.

c. (U) Current Change Explanations —

(Ch-1) Late release of Level 3 drawings; from Apr 86 to Jun 86.

(Ch-2) Schedule delay in software development; from Oct 86 to Dec 86.

d. (U) References—

Development Estimate: SDDM, dated March 15, 1984, subject "MK 50 Torpedo (Full Scale Development Approval)."

Approved Program: FY 1987 President's Budget

10. (U) Technical/Operational Characteristics: Thresholds 1/ for the Advanced Lightweight Torpedo (Torpedo MK 50) Program were approved during the DSARC Milestone II review in January 1984.

a. (U) TECHNICAL

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
1. (U) Acoustic Acquisition Range (yds) 50% Probability of Acquisition			
(a) Active Mode, Long Pulse 2/ Water Depth (Ft) / Target Depth (Ft) / Notes			
(b)(1)			

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a. (U) TECHNICAL (Cont.)

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(b)(1)			

2. (U) Terminal Homing (Short and/or medium pulse)

(U) CONDITIONS OF PERFORMANCE MEASUREMENT

(b)(1)	

3. Warhead 11/

(b)(1)	

4. Depth (ft)

(b)(1)	

MK 50 Torpedo, December 31, 1985*

a. (S) TECHNICAL (Cont.)

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
5 (U) Power			
(b)(1)			
6 (U) Dimensions 12/			
a. Maximum length (in.)	115.5/115.5	111.5 *	115.5
b. Maximum weight (lb.)	798/798	771.2	771.2 (Ch-6)
c. Maximum diameter (in.)	12.75/12.75	12.75	12.75

* Without Air Launch Accessories

b. (S) OPERATIONAL

1 (U) PROBABILITY OF HIT 13-19/

	Search Undir.	Search Dir.	Search Undir.	Search Dir.
SCENARIOS				
(b)(1)				
2 (U) RELIABILITY				
(b)(1)				
c (U) Acceptance rate for storage breakout 22/	.90/.90		-	.95
d (U) Auxiliary equipment (MTBF) (Hrs)	175/175		-	175

	Dev. Estimate/ Appr. Program	Demonstrated Performance	Current Estimate
3. (U) MAINTAINABILITY			
a. (U) Organizational	No internal access Assembly & disassembly of accessories only.	-	No internal access Assembly & disassembly of accessories only.
b. (U) IMA Torpedo Turn-around Time max.	16 hrs with 100 man-hours	-	16 hrs with 100 man-hours

Notes: 1/ (U) It is the policy of the Department of the Navy to specify performance values in terms of thresholds only.

(b)(1)

3/ (U) Predicted range for isothermal water, absorption coefficient 4 dB/Kyd.

4/ (U) Sea state 3 or less.

(b)(1)

8/ (U) Target radiated level higher than DCP specification. Current estimate shows calculated value (based on demonstrated performance) when target radiated level is reduced.

9/ (U) Local normal is defined as the perpendicular to the plane tangent to the hull at the point of impact.

10/ (U) Total solid angle not to exceed 40° from local normal.

(b)(1)

12/ (U) Maximum length and weight are measured with air launch accessories less nose cap.

(b)(1)

14/ (U) Reliability is not included in P_H because OPNAVINST 3960.10A calls for measuring reliability as an independent factor.

(b)(1)

20/ (U) Includes performance of torpedo, flight accessories and any crew preparation required.

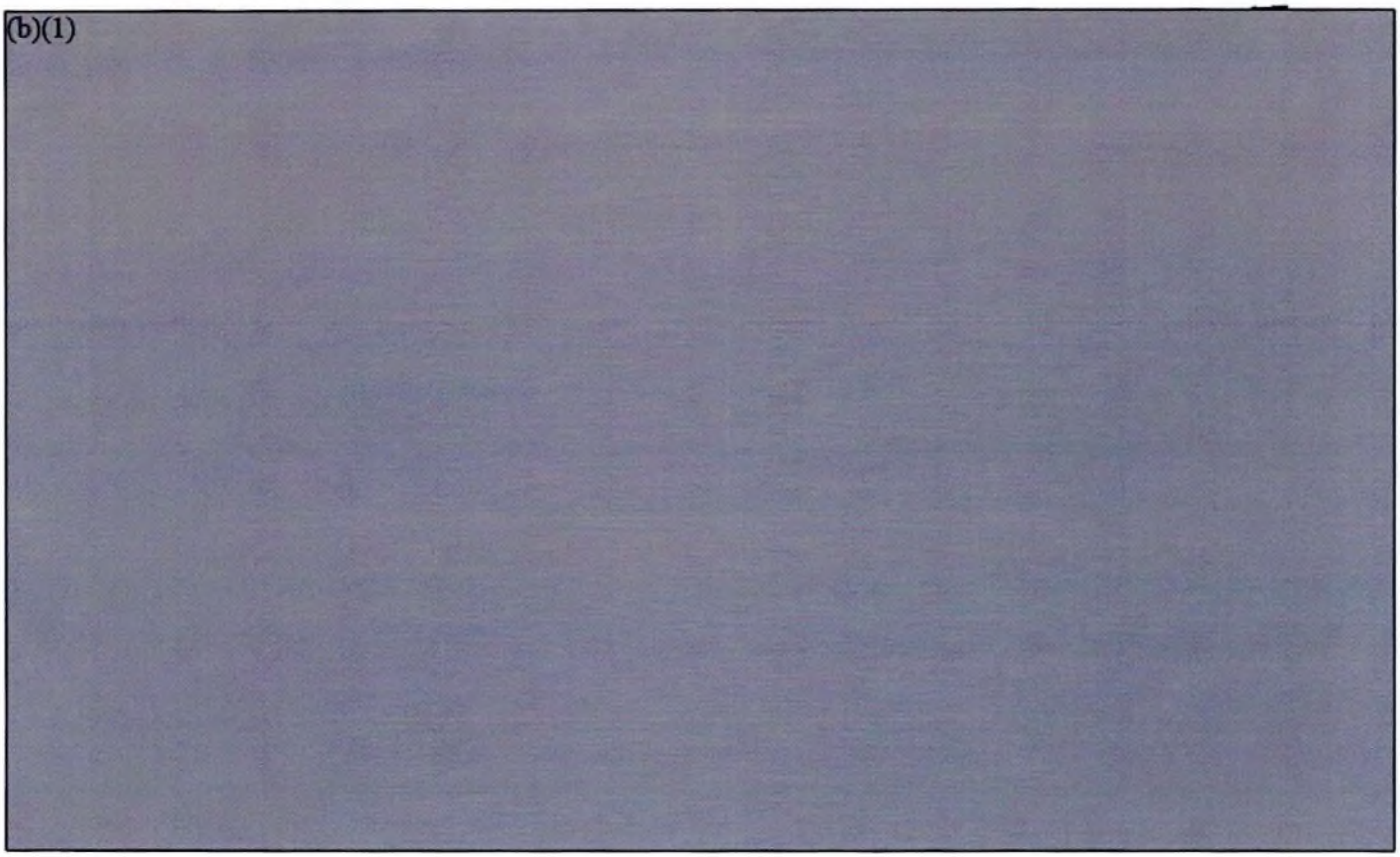
21/ (U) Performance of torpedo only.

22/ (U) Rate of IMA test acceptance from storage.

c. (U) Previous Change Explanations—None.

d. (U) Current Change Explanations—

(b)(1)



(Ch-6) (U) Demonstrated performance was 816.2 pounds based on 100S torpedo size. New demonstrated performance and current estimate is based on 200A prototype hardware configuration.

e. (U) References—

Development Estimate: SDDM, dated March 15, 1984, subject "MK 50 Torpedo (Full Scale Development Approval)."

Approved Program: FY 1987 President's Budget

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. (U) Cost—			
Development (RDT&E)	1,117.7	+62.9	1,180.6
Procurement	3,609.1	+127.7	3,736.8
Swimaway	(2,976.6)	(-48.9)	(2,927.7)
Other Weapon System Cost	(386.8)	(+178.9)	(565.7)
Initial Spares	(245.7)	(-2.3)	(243.4)
Construction (MILCON)	8.9	+.2	9.1
Total FY 84 Base-Year $	4,735.7	+190.8	4,926.5
Escalation			
Development (RDT&E)	49.2	-75.6	-26.4
Procurement	1,868.8	-578.1	1,290.7
Construction (MILCON)	-	-.2	-.2
Total Then-Year $	6,653.7	-463.1	6,190.6

b. (S) Quantities—

(b)(1)			

c. (U) Unit Cost—

Procurement:			
FY 84 Base-Year $	.466	+.017	.483
Then-Year $	.707	-.058	.649
Program:			
FY 84 Base Year $	.603	+.026	.629
Then-Year $	.847	-.056	.791

d. (U) Approved Design to Cost Goal—

	(Average Unit Swimaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Appr Threshold
@ Qty:	1000/1000	1000	1000
@ Peak Rate:	83/mo	83/mo	83/mo
FY 84 Base-Year $	.378/.378	.410	.378
Then Year $	.465/.465	.505	.465

e. (U) Foreign Military Sales—None.

f. (U) Nuclear Costs—None.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate (FY 1986)	UCR Baseline Estimate (FY 1986)	UCR Baseline Estimate (FY 1987)
a. Program Acquisition —			
(1) Cost	6,190.6	6,646.9	6,190.6
(2) Quantity	7,831	7,851	7,831
(3) Unit Cost	.791	.847	.791
b. Current Procurement —			
(1) Cost	N/A	N/A	118.7
Less CY Adv Proc	N/A	N/A	-
Plus PY Adv Proc	N/A	N/A	-
Net Total	N/A	N/A	118.7
(2) Quantity	N/A	N/A	84
(3) Unit Cost	N/A	N/A	1.413

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1,166.9	5,477.9	8.9	6,653.7
Previous Changes:	-	-	-	-
Economic	-4.0	-	-	-4.0
Quanitity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.3	-	-	-1.3
Other	-	-	-	-
Support	-1.5	-	-	-1.5
Subtotal	-6.8	-	-	-6.8
Current Changes:				
Economic	-3.7	-622.6	-	-626.3
Quantity	-11.9	-	-	-11.9
Schedule	-	-15.3	-	-15.3
Engineering	+10.4	-	-	+10.4
Estimating	-	+188.7	-	+188.7
Other	-	-	-	-
Support	-0.7	-1.2	-	-1.9
Subtotal	-5.9	-450.4	-	-456.3
Total Changes	-12.7	450.4	-	-463.1
Current Estimate	1,154.2	5,027.5	8.9	6,190.6

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

(FY 1984 Constant (Base Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1,117.7	3,609.1	8.9	4,735.7
Previous Changes:	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.5	-	-	-1.5
Other	-	-	-	-
Support	-1.2	-	-	-1.2
Subtotal	-2.7	-	-	-2.7
Current Changes:	-	-	-	-
Quantity	-10.9	-	-	-10.9
Schedule	-	-13.4	-	-13.4
Engineering	+9.6	-	-	+9.6
Estimating	+67.2	+142.2	+.2	+209.6
Other	-	-	-	-
Support	-0.3	-1.1	-	-1.4
Subtotal	+65.6	+127.7	+.2	+193.5
Total Changes	+62.9	+127.7	+.2	+190.8
Current Estimate	1,180.6	3,736.8	9.1	4,926.5

b. Previous Change Explanations -

RDT&E:

Estimating: General Reduction by House Appropriations Committee. (-1.5)
Support: Navy Industrial Fund Adjustment

Procurement: Not applicable

MILCON: Not applicable

c. Current Change Explanations—

(1) RDT&E	(Dollars in Millions) Base-Year	Then Year
Economic: Revised Escalation Indices	N/A	-3.7
Quantity: Reduction of 20 Prototype Torpedoes	-10.9	-11.9
Engineering: Increased Reliability and Test Equipment Effort	+9.6	+10.4
Estimating: Change to "True" FY 84 Constant $	+67.2	N/A
Support: Navy Industrial Fund Adjustment/CSS Reduction	-0.3	-0.7

(2) Procurement	Base-Year	Then Year
Economic: Revised Escalation Indices	N/A	-622.6
Schedule: Shift of 533 Torpedoes to FY 95	-13.4	-15.3
Estimating: Increase in Unit 1 Cost	+155.0	+205.7
Estimating: IR&D Adjustment	-12.8	-17.0
Support: Navy Industrial Fund Adjustment/CSS Reduction	-1.1	-1.2
(3) MILCON		
Estimating: Change to "True" FY 84 Constant $	+.2	N/A

d. References —

Development Estimate: SDDM, dated 15 March 1984, subject "MK 50 Torpedo" (Full-Scale Development Approval.)

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate

PAUC (Initial SAR Est)	Changes (Then Year Dollars in Millions)								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
.827	-0.059	-	-	+.046	-	+.033	-	+0.20	.847

b. Current Baseline Estimate to Current Estimate

PAUC (Dev Est)	Changes (Then Year Dollars in Millions)								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
.847	-.080	+.001	-.002	+.001	+.024	-	-	-.056	.791

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

a. RDT&E —

Torpedo	Initial Contract Price Target	Ceiling	Quantity
Honeywell, USD, Hopkins, MN N00024-83-C-6254, CPAF Award: August 1, 1983 Definitized: April 25, 1984	491.1	N/A	90

Current Contract Price Target	Ceiling	Quantity	Estimated Price at Completion Contractor	Program Manager
492.1	N/A	70	492.1	492.1

MK 50 Torpedo, December 31, 1985*

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-5.0	-7.4
Cumulative Variances to Date	-20.6	-10.8
Net Change	-15.6	-3.4

Explanation of Change: The negative cost variance is caused by an upgraded propulsion design and an expanded 100S In-Water Test Program. The negative schedule variance is caused by an overall enhancement of reliability standards, especially in the area of Guidance and Control. The program manager's assessment is that the ceiling price will not be exceeded and is within approved funding.

Warhead	Initial Contract Price Target	Ceiling	Quantity
Honeywell, USD, Hopkins, MN N60921-85-C-0134, CPFF Award: March 8, 1985 Definitized: March 8, 1985	4.4	4.4	72

Current Contract Price Target	Ceiling	Quantity	Estimated Price at Completion Contractor	Program Manager
5.6	5.6	104	5.8	5.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date	0.6	0.4
Net Change	0.6	0.4

Explanation of Change: Option to baseline contract exercised increasing quantity of warhead components to be delivered which increased cost by $1.2M.

b. Procurement—Not applicable

c. MILCON—Not applicable

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: 14.8% ($916.7M/ $6,190.6M)

b. (U) Appropriation Summary—

(Then-Year Dollars in Millions)

Appropriation	Current to Prior Years (FY 75-86)	Budget Year (FY 87)	Balance FYDP (FY 88-91)	To Complete Beyond FYDP	Total
RDT&E	925.6	148.8	79.8	—	1,154.2
Procurement	—	118.7	2,267.3	2,641.5	5,027.5
MILCON	8.9	-	-	-	8.9
Total	934.5	267.5	2,347.1	2,641.5	6,190.6

c. (S) Annual Summary —

(b)(1)

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d. (U) Obligations and Expenditures—

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1975-82	363.9	363.9	363.9
1983	115.1	115.1	115.1
1984	143.5	143.4	139.2
1985	145.5	145.1	132.0
1986	157.6	52.9	7.7
To Complete	228.6	N/A	N/A
Total	1,154.2	820.4	757.9
Appropriation: MILCON			
1982	8.9	8.9	8.9

17. (U) Production Rate Data:

a. Annual Production Rates — Funded Delivery Period exceeds 12 months.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1987	48	N/A	48	48
1988	201	N/A	117	201
1989	288	N/A	223	288
1990	720	N/A	589	857
1991	720	N/A	696	857
1992	720	N/A	720	857
1993	720	N/A	720	857
1994	720	N/A	720	857
1995	720	N/A	720	857
1996	N/A	N/A	-	N/A
1997	N/A	N/A	-	N/A

b. Cost Variance — Dollars in Millions. N/A

c. Schedule Variance —

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	1/87	N/A	1/87
Duration (in Months)	N/A	N/A	123	5	118
End Date (Mo/Yr)	N/A	N/A	4/97	N/A	11/96

d. Deliveries (Plan/Actual) —

	To Date
RDT&E	18/18
Procurement	0/0

18. (U) Operating and Support Costs. N/A

(3)

SAR-85-103

AF-4 ASAT

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SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: SPACE DEFENSE AND OPERATIONS (ASAT)

AS OF DATE: December 31, 1985

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

1. (U) Designation and Nomenclature (Popular Name): Air Launched Antisatellite System (ASAT)

2. (U) DoD Component: U.S. Air Force

3. (U) Responsible Office and Telephone Number:

Space Defense Systems
Space Division
Los Angeles AFS, CA 90009

PM: Col Brock Strom
Assigned: July 26, 1982
AV 833-0740; COMM (213)643-0740

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

RDT&E: PE 64406F/12450F (No shared funding)

PROCUREMENT: APPN 3010 ICN F01500 (Shared Funding)
APPN 3020 ICN MSLWIR (No Shared Funding)
APPN 3080 ICN 833160 (Shared Funding)

MILCON: PE 12450F (No shared funding)

5. (U) Related Programs: North American Air Defense Command Cheyenne Mountain Complex Space Defense Systems; SPACETRACK; F-15 Multistage Improvement Program.

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86-183-T

6. Mission and Description: The mission of the air-launched miniature vehicle (MV) antisatellite (ASAT) system is two-fold: (1) to deter the Soviets from using their operational co-orbital antisatellite weapon system, or other weapon systems which have inherent antisatellite capability, against U.S. or Allied satellites. (2) If necessary, to destroy low altitude Soviet satellites which can provide data used to develop targeting information for Soviet combat forces. This targeting information could place U.S. and Allied ground, air, and sea forces at grave risk during armed conflict. The MV ASAT system consists of three segments: (1) surveillance, (2) command and control, and (3) weapon. The existing Space Surveillance Network provides the information necessary to determine the orbit of target satellites. The command and control segment, known as the ASAT Control System, uses the orbital information provided by the surveillance system and generates intercept profiles for an F-15 aircraft. The MV, which is mounted atop the second stage, acquires the target satellite using the satellite's infrared (heat) emission. After acquisition, the MV is deployed from the second stage and continues to track the oncoming satellite. Maneuver motors on the MV are fired at the appropriate time to effect a direct collision with the satellite. The satellite is destroyed by the collision with the MV. This system will not replace any existing system.

7. Program Highlights:

a. Significant Historical Development - The President directed the initiation of a space defense program in 1978 in response to the threat posed by the Soviet co-orbital ASAT and low-altitude Soviet satellites used to develop targeting information against U.S. and Allied sea, land, and air forces. A program office was established in 1978 to address these threats. After considering a number of different options, the MV ASAT was chosen as the antisatellite system to meet the threat posed by low altitude Soviet satellites. Contracts for the current development phase were signed in Jun 80.

b. Significant Developments Since Last Report - On 6 Dec 85, the program office began an additional effort, production verification, under the development program. This additional effort, which resulted from an internal Air Force study, is designed to provide a more operationally suitable ASAT system. The goal is to modify the existing design of ASAT missiles and carrier aircraft equipment to make them more reliable, maintainable, and producible. Additional test missiles and carrier aircraft equipment will be acquired to demonstrate the validity of the modifications. The testing of these modifications has been incorporated into the test program and extended the completion of testing to FY90. Due to need for production verification effort, the start of the production program of ASAT missiles and carrier aircraft equipment has been delayed from FY85 to FY88. Two target satellites, known as Instrumented Test Vehicles, were launched from Wallops Island, VA on 12 Dec 85. Both satellites are operating well within performance specifications. In the FY86 Appropriations Bill Congressional restrictions prohibited FY86 testing against an object in space, unless the President certifies that the Soviet Union has resumed ASAT testing, requiring replanning of the flight test program. The ASAT system is expected to meet the directed mission requirements.

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

c. (U) Changes Since "As Of" Date -

(U) On 13 Mar 86, the Secretary of the Air Force provided notification to Congress concerning a unit cost breach of the FY 86 program acquisition unit cost threshold. This breach was caused by programmatic decisions reducing the program quantities.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: N/A

9. (U) Schedule

a. (U) Milestones	Development Estimate/ Approved Program	Current Estimate
(U) Concept Definition Contracts	Sep 75/Sep 75	Sep 75
(U) MV Development/Ground Test Contract	Sep 77/Sep 77	Sep 77
(U) Prototype Decision	Feb 80/Feb 80	Feb 80
(U) ASAT Development Contract Award	Jun 80/Jun 80	Jun 80
(U) Critical Design Review	Dec 81/Dec 81	Dec 81
(U) First Captive Flight Test	Dec 82/Dec 82	Dec 82
(U) First Live Launch	Jan 84/Jan 84	Jan 84
(U) AFSARC IIIA (Limited Production Decision	Nov 84/N/A (Ch-1)	N/A (Ch-1)
(U) First Successful Intercept	Sep 85/Sep 85	Sep 85(Ch-2)
(b)(1)		
(U) Full Production Decision	Sep 86/Sep 87(Ch-3)	Sep 87(Ch-3)
(b)(1)		

b. (U) Previous Change Explanations -

(b)(1)

c. (U) Current Change Explanations -

(Ch-1) (U) New program direction precludes need for Limited Production Decision.

(Ch-2) (U) Added new program milestone.

(Ch-3) (U) New date established per new program direction which implements production verification and delays the start of the newly defined production program by three years.

d. (U) References -

Development Estimate: FY85 President's Budget.
Approved Program: FY87 President's Budget.

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10. (U) Technical/Operational Characteristics:

a. (U) Technical -	Dev Estimate/ Appr Program	Demonstrated Performance *	Current Estimate
(U) Missile Length (Ft)	17.8/17.8	17.8	17.8
(U) Missile Diameter (Ft)			
Upper Stage	1.7/1.7	1.7	1.7
Lower Stage	1.5/1.5	1.5	1.5
(U) Missile Weight (Lbs) (Launch Weight)	2706/2651(Ch-1)	2716	2651(Ch-1)
Upper Stage (Including Dispenser)	983/961(Ch-1)	1007	961(Ch-1)
Lower Stage	1723/1690(Ch-1)	1709	1690(Ch-1)

(b)(1) [redacted]

b. (U) Operational

(b)(1) [redacted]

(U) Mean Time to Repair (Hours)			
Organizational Level	4/4	(Ch-5)	4
Intermediate Level	12/12	(Ch-5)	12

(b)(1) [redacted]

2/(U) Chances of sufficient missiles being available at start of war to meet system negation requirements.

3/(U) The period the ASAT system can stand ready to negate required targets.

* (U) Based on latest flight test results.

10. (U) Technical/Operational Characteristics (Cont'd):

c. (U) Previous Change Explanations -

(b)(1)

d. (U) Current Change Explanations -

(b)(1)

e. (U) References -

(U) Development Estimate: FY85 President's Budget.
(U) Approved Program: FY87 President's Budget.

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11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. (U) Cost -	Development Estimate	Changes	Current Estimate
Development (RDT&E)	851.9	+407.7	1259.6
Procurement	1001.9	-299.8	702.1
(3010) CAE Flyaway	(65.9)	(-19.7)	(46.2)
Other Weapon System Costs	(12.4)	(-3.7)	(8.7)
Spares	(5.6)	(-2.8)	(2.8)
(3020) Missile Flyaway	(720.5)	(-234.8)	(485.7)
Other Weapon System Costs	(93.9)	(-34.0)	(59.9)
Spares	(103.6)	(-13.1)	(90.5)
(3080) Other Flyaway	(-)	(+7.0)	(7.0)
Other Weapon System Costs	(-)	(+1.2)	(1.2)
Spares	(-)	(+0.1)	(0.1)
Total Flyaway	(786.4)	(-247.5)	(538.9)
Construction (MILCON)	18.7	-11.0	7.7
Total FY77 Base-Year $	1872.5	+96.9	1969.4
Escalation	2014.9	-148.6	1866.3
Development (RDT&E)	(498.2)	(+370.3)	(868.5)
Procurement	(1496.3)	(-506.4)	(989.9)
Construction (MILCON)	(20.4)	(-12.5)	(7.9)
Total Then-Year $	3887.4	-51.7	3835.7
b. (U) Quantities -			
(U) Development (RDT&E)	15	+6	21

(b)(1)

c. (U) Unit Cost -

(b)(1)

d. (U) Approved Design to Cost Goal - None.

e. (U) Foreign Military Sales - None.

f. (U) Nuclear Costs - None.

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12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate (Dec 84 SAR)	Budget Year UCR Baseline Estimate (Dec 85 SAR)
a. (U) Program Acquisition -			
(1) (U) Cost	3835.7	4087.7	3835.7
(b)(1)			
b. (U) Current Procurement -	(FY86)	(FY86)	(FY87)
(1) (U) Cost	0	136.0	30.5
(U) Less CY Adv Proc	0	14.9	28.5
(U) Plus PY Adv Proc	0	9.0	0
(U) Net Total	0	130.1	2.0
(b)(1)			

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1350.1	2498.2	39.1	3887.4
Previous Changes:				
Economic	-9.2	-5.6	-0.7	-15.5
Quantity	-	-	-	-
Schedule	+63.3	+125.0	-	+188.3
Engineering	-	-	-	-
Estimating	+1.8	-0.4	-1.4	-
Other	-	-	-	-
Support	-	+27.5	-	+27.5
Subtotal	+55.9	+146.5	-2.1	+200.3
Current Changes:				
Economic	-4.0	-173.1	-0.6	-177.7
Quantity	+304.0	-1158.6	-20.9	-875.5
Schedule	+111.0	+320.0	-	+431.0
Engineering	+68.0	+37.0	-	+105.0
Estimating	+112.0	+155.8	+0.1	+267.9
Other	-	-	-	-
Support	+131.1	-133.8	-	-2.7
Subtotal	+722.1	-952.7	-21.4	-252.0
Total Changes	+778.0	-806.2	-23.5	-51.7
Current Estimate	2128.1	1692.0	15.6	3835.7

13. Cost Variance Analysis (Cont'd):

(FY77 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	851.9	1001.9	18.7	1872.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	+33.7	+34.2	-	+67.9
Engineering	-	-	-	-
Estimating	+0.9	-0.3	-1.0	-0.4
Other	-	-	-	-
Support	-	+7.8	-	+7.8
Subtotal	+34.6	+41.7	-1.0	+75.3
Current Changes:				
Quantity	+158.0	-453.6	-10.1	-305.7
Schedule	+55.0	+87.0	-	+142.0
Engineering	+36.0	+16.0	-	+52.0
Estimating	+56.2	+69.2	+0.1	+125.5
Other	-	-	-	-
Support	+67.9	-60.1	-	+7.8
Subtotal	+373.1	-341.5	-10.0	+21.6
Total Changes	+407.7	-299.8	-11.0	+96.9
Current Estimate	1259.6	702.1	7.7	1969.4

b. Previous Change Explanations -

RDT&E

Economic: Revised escalation indices.

Schedule: Flight test schedule was extended due to Congressional withhold of FY84 advanced procurement funds and Congressional testing restrictions.

Estimating: Reprogramming in FY83 and impact of revised economic escalation indices on prior years.

Procurement

Economic: Revised escalation indices.

Schedule: Funding constraints slipped procurement of missiles and program level support build-up in manyears increased.

Estimating: Impact of revised economic escalation indices on prior years.

Support: Support items slipped in conjunction with the change in procurement schedule and program level support build-up in manyears increased.

MILCON

Economic: Revised escalation indices.

Estimating: Revised facility cost based on 35% and 60% design reviews and impact of revised economic escalation indices on prior years.

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

c. (U) Current Change Explanations -

	(Dollars in Millions) Base-Year	Then-Year
1. (U) RDT&E		
(U) Revised economic escalation indices. (Economic)	N/A	-4.0
(U) Addition of six flight test missiles. (Quantity)	+158.0	+304.0
(U) Flight test extended to FY90 due to production verification - addition of six missiles/flights and engineering upgrades. (Schedule)	+55.0	+111.0
(U) Configuration Changes in Mod Blocks 1 and 2. (Engineering)	+36.0	+68.0
(U) Addition of Mission Control support funds in the new directed program. (Estimating)	+55.0	+110.0
(U) Impact of revised economic escalation indices on prior years. (Estimating)	+1.2	+2.0
(U) Addition of production verification tasks to include; support equipment development, first article, logistic planning, and training development. (Support)	+67.9	+131.1
(2) (U) Procurement		
(U) Revised economic escalation indices (Economic)	N/A	-173.1

(b)(1) [redacted]

13. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then Year
Production delay of three years. Incorporation of production verification effort with corresponding program support for 900 manyears for 3 years. (Schedule)	+87.0	+320.0
Addition of Engineering Change Orders (ECO) dollars to allow for uncertainities of concurrency. (Engineering)	+16.0	+37.0
Impact of revised economic escalation indices on prior years. (Estimating)	+4.2	+7.8
Cost Improvement Curve changed to reflect new directed program. The low quantity precludes full benefit of transitioning to a full production environment. (Estimating)	+65.0	+148.0
Result of revised program direction. Implementation of the production verification phase and the quantity reduction result in changes to support equipment and deletion of rate tooling. (Support)	-60.1	-133.8
(3) MILCON		
Revised economic escalation indices. (Economic)	N/A	-0.6
Decreased from two bases to one base. (Quantity)	-10.1	-20.9
Impact of revised economic escalation indices on prior years. (Estimating)	+0.1	+0.1

d. References -

Development Estimate: FY85 President's Budget.

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

(U) Initial SAR/Development Estimate to Current Estimate

(b)(1)

[redacted]

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

a. RDT&E -

Miniature Vehicle and Upper Stage:	Initial Contract Price		
	Target	Ceiling	Qty
LTV Aerospace and Defense Co., Dallas, TX F04701-80-C-0041, CPIF/AF, Award: June 15, 1980 Definitized: December 15, 1980	$268.2M	N/A	15

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$338.1M(Ch-1)	N/A	21(Ch-2)	$606.4M(Ch-3)	$606.4M(Ch-3)

Changes Since Previous Report

(Ch-1) Vought Target Price increased due to three proposals being authorized.

(Ch-2) Quantity changed due to new program direction which implements production verification.

(Ch-3) Increased due to problems in the assembly of the Miniature Vehicle/ Dispenser and Congressional testing restrictions.

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

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-$2.7	-$11.1M
Cumulative Variances to Date (11/30/85)	-$6.8	-$17.8M
Net Change	-$4.1	-$ 6.7M

\+ = favorable - = unfavorable

Explanation of Change: Cumulative cost and schedule variances are primarily due to problems in the assembly of the Miniature Vehicle/Dispenser and Congressional testing restrictions. Impact was an increase in the estimate at completion. The increase was anticipated and is within program budget.

F-15, Lower Stage and Mission Control:
The Boeing Company,
Seattle, WA, F04701-80-C-0040, CPIF/AF
Award: June 15, 1980
Definitized: December 30, 1980

Initial Contract Price		
Target	Ceiling	Qty
$150.9M	N/A	15 L/S

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$256.2M(Ch-4)	N/A	2 CAE 21 L/S(Ch-5)	$274.9M	$274.9M(Ch-6)

Changes Since Previous Report

(Ch-4) Boeing Target Price increase is due to negotiation of Limited Production Readiness Tasks and Work Requests and a Schedule Extension being added.

(Ch-5) Quantity changed due to new program direction which implements production verification.

(Ch-6) Increased due to additional technical change orders being added.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-$2.0M	-$1.2M
Cumulative Variances to Date (11/30/85)	-$1.0M	-$1.0M
Net Change	+$1.0M	+$0.2M

Explanation of Change: Cost variance improved due to actual overhead rates being less than budgeted. No significant change to schedule variance. No impact to the contract or program.

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

Instrumented Test Vehicle:	Initial Contract Price		
	Target	Ceiling	Qty
AVCO Corporation, Wilmington, MA F04701-78-C-0125, FPIF, Award: November 20, 1978 Definitized: September 1, 1980	$36.9M	$40.4M	10

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$51.4M(Ch-7)	$56.5M(Ch-8)	10	$62.0M	$62.0M(Ch-9)

Changes Since Previous Report

(Ch-7) Target Price has increased due to activating the monthly launch support extension.
(Ch-8) Increased due to exercising launch options.
(Ch-9) Increased due to program schedule slip. Additional work/costs are anticipated as a result of Congressional testing restrictions.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-$12.6M	-$2.2M
Cumulative Variances to Date (11/30/85)	-$13.8M	-$1.8M
Net Change	-$ 1.2M	+$0.4M

Explanation of Change: Cumulative cost and schedule variances are due to piece part problems and late subcontractor deliveries. Negative cost variance has increased as a result of piece part reorders, retesting, and rescreening activity. Schedule variance has improved due to rescheduling remaining effort in a more realistic time period. Contractor estimate at completion is over ceiling. Program schedule slipped. Increased costs due to the schedule slip are included in program budget. Additional work/costs are anticipated as a result of Congressional testing restrictions.

Software Verification and Validation:	Initial Contract Price		
	Target	Ceiling	Qty
Logicon, Incorporated, San Pedro CA, F04701-80-C-0048, CPAF, Award: April 15, 1980 Definitized: April 24, 1980	$$6.8M	N/A	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$18.3M	N/A	N/A	$18.3M(Ch-10)	$18.3M

Changes Since Previous Report

(Ch-10) Increased due to authorized additional work in support of independent verification and validation activities of the SPADOC IVA effort.

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

	Cost Variance	Schedule Variance
Previous Cumulative Variances	+$0.05	-$0.02
Cumulative Variances to Date (11/22/85)	+$0.03	-$0.02
Net Change	-$0.02	$0

Explanation of Change: Cost Variance is due to manpower fluctuations. No change in schedule variance. No impact to the contract or program.

b. Procurement -

	Initial Contract Price		
Upper Stage:	Target	Ceiling	Qty
LTV Aerospace and Defense Co., Dallas, TX, F04701-84-C-0060, CPIF/AF, Award: June 15, 1984 Definitized: N/A	$14.0M	N/A	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$24.4M(Ch-11)	N/A	N/A	$24.4M(Ch-11)	$24.4M(Ch-11)

Changes Since Previous Report

(Ch-11) Increased due to additional long lead parts being needed and engineering costs being added.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-$0.1M	-$3.0M
Cumulative Variances to Date (11/30/85)	-$0.2M	-$3.0M
Net Change	-$0.1M	-$0

Explanation of Change: Cumulative cost and schedule variances are due to subcontractor releasing purchase orders slower than anticipated. No impact to the contract or program.

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

Lower Stage:
The Boeing Company,
Seattle, WA, F04701-84-C-0059, CPIF/AF
Award: June 15, 1984
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
$4.2M	N/A	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$6.0M	N/A	N/A	$6.0M(Ch-12)	$6.0M

Changes Since Previous Report

(Ch-12) Increased due to incorporation of Lot 2 long lead production.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	+$0.3M	-$0.1M
Cumulative Variances to Date (11/30/85)	+$0.5M	$0
Net Change	+$0.2M	+$0.1M

Explanation of Change: Cost and schedule variances have improved due to the contractor's receipt of parts earlier than expected. No impact to contract or program.

c. MILCON -- No military construction contracts.

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: 36.4% ($1396.5/$3835.7)

b. Appropriation Summary -

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY72-86)	Budget Year FY87	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	1365.3	278.0	484.8	-	2128.1
Procurement-CAE	2.9	-	115.1	24.0	142.0
Procurement-Missile	28.3	28.5	1113.2	363.0	1533.0
Procurement-Other	-	2.0	15.0	-	17.0
MILCON	-	15.6	-	-	15.6
Total	1396.5	324.1	1728.1	387.0	3835.7

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

c. (U) Annual Summary -

Fiscal Year	Qty	FY77 Base-Year Dollars			Then-Year Dollars			Escl Rate[1] (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit[3]	Credit	Total	
(U) Appropriation: RDT&E								
(U)	(U)	(U)	(U)	(U)	(U)	(U)	(U)	(U)
1972	-	-	-	3.8	-	-	2.7	-
1973	-	-	-	.3	-	-	.2	4.1
1974	-	-	-	.1	-	-	.1	7.9
1975	-	-	-	3.0	-	-	2.7	10.8
1976	-	-	-	4.0	-	-	3.8	7.0
197T	-	-	-	2.2	-	-	2.2	3.3
1977	-	-	-	10.2	-	-	10.4	6.8
1978	-	-	-	36.7	-	-	39.7	6.1
1979	-	-	-	66.0	-	-	78.8	8.4
1980	-	-	-	61.7	-	-	81.9	9.4
1981	-	-	-	99.7	-	-	146.5	11.9
1982	-	-	-	116.0	-	-	182.3	9.2
1983	-	-	-	130.4	-	-	214.5	4.9
1984	-	-	-	118.2	-	-	202.2	3.8
1985	-	-	-	111.9	-	-	197.8	3.6
1986	-	-	-	108.9	-	-	199.5	3.2
1987	-	-	-	145.9	-	-	278.0	4.1
1988	-	-	-	114.6	-	-	226.2	3.9
1989	-	-	-	85.9	-	-	174.8	3.4
1990	-	-	-	40.1	-	-	83.8	2.9
Subtotal	21	-	- 2	1259.6	-	-	2128.1	
(U) Appropriation: Procurement (Carrier Aircraft Equipment)								
(U)	(b)(1)	(U)	(U)	(U)	(U)	(U)	(U)	(U)
1985		-	-	1.4	-	-	2.9	4.1
1986		-	-	-	-	-	-	4.1
1987		-	-	-	-	-	-	4.1
1988		-	-	2.0	4.7	-	4.7	3.9
1989		4.3	7.8	14.2	-	-	33.6	3.4
1990		4.5	8.3	15.0	-	-	36.8	2.9
1991		4.8	8.7	15.9	-	-	40.0	2.3
1992		2.7	5.1	9.2	-	-	24.0	2.3
Subtotal		16.3	29.9	57.7	4.7	-	142.0	

1/(U)Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite rate.
2/(U)Not available.
3/(U)Advance procurement debit amount will be used in production verification program. Therefore, no corresponding advance procurement credit entries exist.

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

Fiscal Year	Qty	FY77 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 1/
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit 2/	Credit	Total	
(U)	(b)(1)	(U)	(U)	(U)	(U)	(U)	(U)	(U)
(U) Appropriation: Procurement (Missile)								
1984		-	-	10.0	19.3	-	19.3	8.0
1985		-	-	4.5	9.0	-	9.0 3/	4.1
1986		-	-	-	-	-	-	4.1
1987		-	-	13.0	28.5	-	28.5	4.1
1988		34.8	33.9	146.0	145.0	28.5	332.7	3.9
1989		34.4	60.8	112.1	-	27.2	264.1	3.4
1990		31.9	62.2	109.4	-	31.7	265.8	2.9
1991		32.1	65.6	100.2	-	36.3	250.6	2.3
1992		41.7	88.3	140.9	-	49.8	363.0	2.3
Subtotal		174.9	310.8	636.1	201.8	173.5	1533.0	
(U) Appropriation: Procurement (Other)								
1987	-	0.1	0.7	1.0	-	-	2.0	4.1
1988	-	1.1	5.1	7.3	-	-	15.0	3.9
Subtotal	-	1.2	5.8	8.3	-	-	17.0	
(U) Appropriation: MILCON	(b)(1)							
1987		-	-	7.7	-	-	15.6	4.1
Subtotal		-	-	7.7			15.6	
Total		-	-	1969.4	-	-	3835.7	

1/(U) Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite rate.
2/(U) Advance procurement debit amounts will be used in production verification program. Therefore, no corresponding advance procurement credit entries exist in FY85 and FY86.
3/(U) This amount reflects $3.2M reduction effective in March 86.

16. Program Funding Summary (Cont'd) :

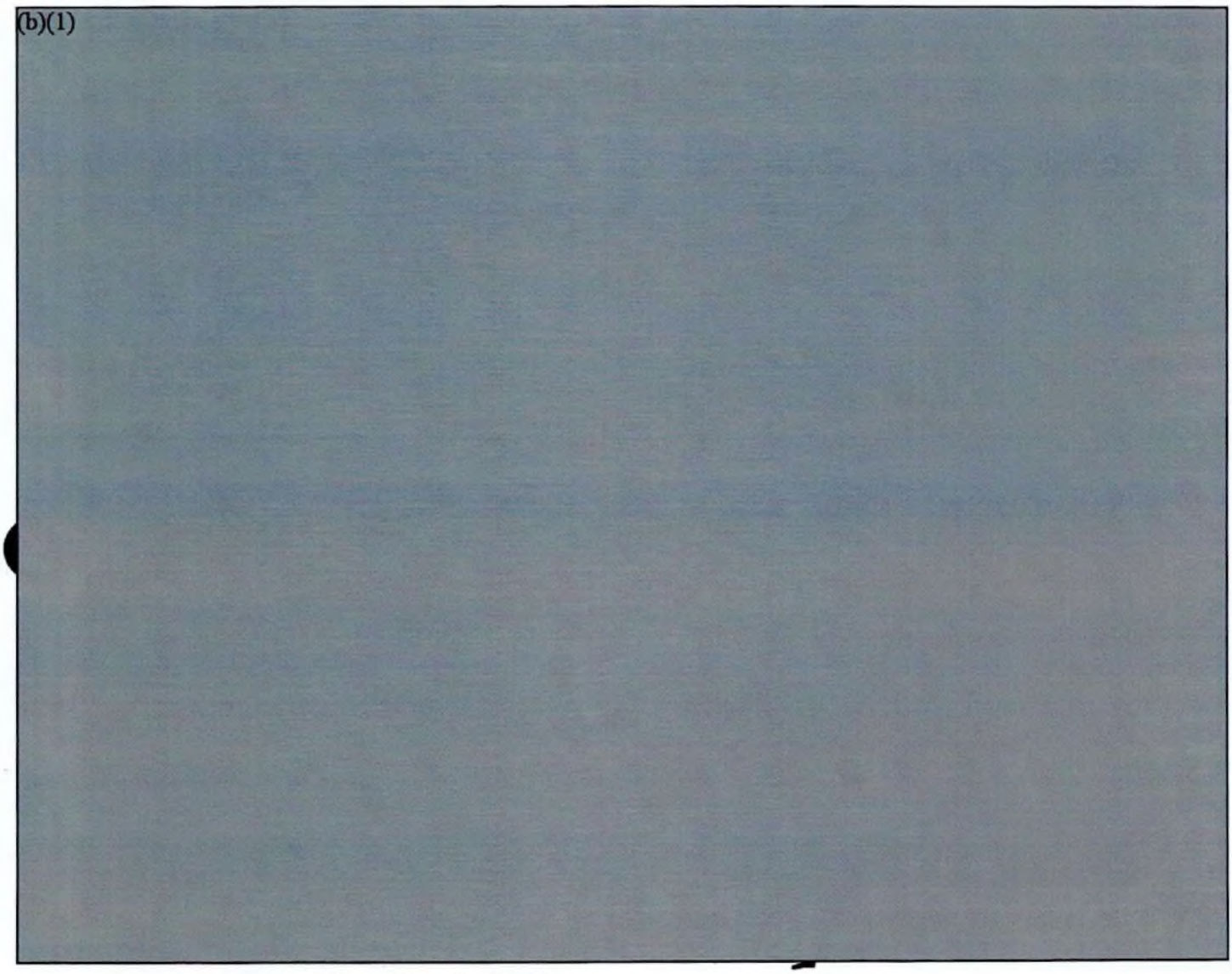
d. Obligations and Expenditures -

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated [1]	Expended [1]
Appropriation: RDT&E			
1972	2.7	2.7	2.7
1973	0.2	0.2	0.2
1974	0.1	0.1	0.1
1975	2.7	2.7	2.7
1976	3.8	3.8	3.8
197T	2.2	2.2	2.2
1977	10.4	10.4	10.4
1978	39.7	39.7	39.7
1979	78.8	78.8	78.8
1980	81.9	81.9	81.9
1981	146.5	146.5	146.5
1982	182.3	182.3	182.3
1983	214.5	214.5	214.5
1984	202.2	202.2	185.0
1985	197.8	127.0	98.2
1986	199.5	97.6	3.1
To Complete	762.8	N/A	N/A
Total	2128.1	1192.6	1052.1
Appropriation: Procurement (Carrier Aircraft Equipment)			
1985	2.9	2.9	2.9
To Complete	139.1	N/A	N/A
Total	142.0	2.9	2.9
Appropriation: Procurement (Missile)			
1984	19.3	19.3	6.8
1985	9.0	9.0	5.1
To Complete	1504.7	N/A	N/A
Total	1533.0	28.3	11.9
Appropriation: Procurement (Other)			
To Complete	17.0	N/A	N/A
Total	17.0	N/A	N/A
Appropriation: MILCON			
To Complete	15.6	N/A	N/A
Total	15.6	N/A	N/A

1/Reflects Program Office record as of 31 Dec 85.

17. (U) Production Rate Date:

(b)(1)



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

	To Date
RDT&E	4/4
Procurement	0/0

18. (U) Operating and Support Costs: N/A.

1/(U) Date reflects start of the missile production program.
2/(U) Date reflects last missile production delivery.

N-3 ASPJ

SAR-85-013

~~SECRET~~

(5)

~~SECRET~~

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

PROGRAM: AIRBORNE SELF PROTECTION JAMMER (ASPJ)

AS OF DATE: DECEMBER 31, 1985*

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APR 01 1986

1. (U) Designation/Nomenclature (Popular Name): AN/ALQ-165(V)/Defensive Electronic Countermeasure System, Airborne (Airborne Self Protection Jammer (ASPJ))

2. (U) DOD Component: Department of the Navy

3. (U) Responsible Office and Telephone Number:

PMA-272/PDW107-7
Naval Air Systems Command
Washington, DC 20361

PMA: Capt A.E. Victor
Assigned: August 29, 1983
(202) 692-5225 A/V 222-5225

4. (U) Program Elements:

RDT&E: 64226N
Procurement: Included in host aircraft Program Elements

5. (U) Related Programs: None

~~Classify by: Executive Order 12356~~
~~Declassify on: OADR~~

~~SECRET~~

~~SECRET~~

OASD(PA) DFOISR 86-T- 0863

6. (U) Mission and Description: ASPJ is a Joint Navy/Air Force Defensive Electronic Countermeasures project to protect tactical aircraft against radar directed terminal threat weapons.

7. (U) Program Highlights:

a. Significant Historical Developments: The Airborne Self Protection Jammer (ASPJ) program is a joint Navy and Air Force effort to develop defensive electronic countermeasures systems to provide tactical aircraft self protection against terminal threat weapons from the mid 1980's through the remainder of the century. The program was started in 1969 as a traveling wave tube component development effort. In 1976, Director of Defense Research and Engineering (DDR&E) directed that this program (renamed ASPJ) and the Air Force lightweight, low cost countermeasures program be combined. Navy was designated the lead service. The joint effort is to develop a common, internal ASPJ system capable of integration with the Navy ALR-67 and the Air Force ALR-74 radar warning receivers (RWR). The basic system will be installed in the F/A-18 and, in a pod, for use with the AV-8B. The common system is comprised of the basic systems and an augmentation unit. It will be installed in the F-14, A-6, and F-16. In January 1980, the Air Force confirmed the requirement for the ASPJ in the F-16. Major design changes were funded by the Air Force and inserted to meet Air Force requirements, thereby achieving the Office of the Secretary of Defense (OSD) guidance of a 100% common Navy and Air Force system.

b. Significant Developments Since Last Report: Eleven of the twelve ASPJ Full Scale Development (FSD) systems have been delivered with the last system plus spare equipments to be delivered in FY86. The ASPJ equipments have undergone initial integration tests with the ALR-67 (F/A-18/F-14/ AV-8B/A-6) and ALR-74 (F-16) warning receiver systems.

The F-16 test aircraft integration with all major interface and installation tasks was successfully completed and tested in July 1985. Similarly, the F/A-18 test aircraft was successfully integrated and subsequently flight tested in September 1985. Government laboratory testing of the system began in January 1985.

Schedule milestones have changed due to the late delivery of ASPJ units. Late delivery was caused by vendor delays on critical components and corrective redesign of electronic circuits and hardware/software integration.

The ASPJ system is expected to fully satisfy its current mission requirements.

c. Changes Since "As Of" Date: None

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 19 Jan 81) threshold breaches.

9. (U) Schedule:

a. Milestones	Development Estimate	Current Estimate
(U) Complete Phase I	Aug 81	Feb 81
(U) Contract Award, Phase II	Dec 81	Aug 81
(U) Techeval/Opeval	Apr 86	Dec 87 (Ch 1)
(U) N/AF SARC III (B)	Aug 86	Mar 88 (Ch 2)
(U) Full Production Contract	Nov 86	Apr 88 (Ch 3)

(b)(1) [redacted]

b. Previous Change Explanations: Same as Current Change Explanations.

c. Current Change Explanations:

(Ch-1) Additional testing delays of four months are the result of the prototype model delivery slippages described in para. 7b.

(Ch-2) Rescheduled to accomodate delays in Techeval/Opeval completion.

(Ch-3) Rescheduled to accomodate delays in Techeval/Opeval completion.

(Ch-4) Rescheduled to accomodate delays in Techeval/Opeval completion.

d. References - Approved program per Secretary Defense Decision Memorandum (SDDM), 24 February 1982 and Under Secretary of Defense (USD) (C^3I) Decision Memorandum (DM), 20 March 1984.

(b)(1) [redacted]

(U) Maintenance Demand Hours (MFHBMA)	8.6	N/A	6.8
DMMH/MA (Basic/Augmented)	0.95/1.2	N/A	2.18/2.65

c. Previous Change Explanations

(Ch-1) Original estimate was calculated. Revised current estimate is based on measured performance of critical components.

d. Current Change Explanations: No changes

e. References -- Approved program per SDDM, 24 February 1982.

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate	Changes	Current Estimate
Development (RDT&E)	227.7	+ 92.9	320.6
Total FY84 Base Year $	227.7	+ 92.9	320.6
Escalation	8.7	+9.8	18.5
Total Then - Year $	236.4	+112.8	349.2
b. Quantities --			
Development	12	-	12
Procurement	801	+225	1026
	813	+225	1038

c. Unit Cost --1/

d. Approved Design to Cost Goal --

	(Average Unit Flyaway Cost) Dev Estimate/ Appr Program	Current Estimate	Latest Appr Threshold
QTY: 250 per contractor Peak Rate: 48 per mo per contr. FY79 Base-Year $	.412/.412	.414	.414

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

1/Procurement costs are included in the host aircraft procurement budgets.

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition				
(1)	Cost	N/A[1/]	N/A[1/]	N/A[1/]
(2)	Quantity	1038[2/]	1066[2/]	1038[2/]
(3)	Unit Cost	[1/]	[1/]	[1/]
b. Current Procurement[1/]		N/A	N/A	N/A
(1)	Cost			
	Less CY Adv Proc			
	Plus PY Adv Proc			
	Net Total			
(2)	Quantity			
(3)	Unit Cost			

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate DE	236.4			236.4
Previous Changes:				
Economic	-1.2			-1.2
Quantity				
Schedule	+5.9			+5.9
Engineering	+38.6			+38.6
Estimating				
Other				
Support				
Subtotal	279.7			279.7
Current Changes:				
Economic	-.2			-.2
Quantity				
Schedule	+14.3			+14.3
Engineering	+55.4			+55.4
Estimating				
Other				
Support				
Subtotal	+69.5			+69.5
Total Changes	+112.8			+112.8
Current Estimate	349.2			349.2

[1/]Procurement costs are included in the host aircraft procurement budgets.
[2/]Calculations include concurrent USAF quantities.

13. Cost Variance Analysis (Cont'd):
(FY 1984 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate DE	227.7			227.7
Previous Changes:				
- Economic				
Quantity				
Schedule	+4.8			+4.8
Engineering	+31.6			+31.6
Estimating				
Other				
Support				
Subtotal	264.1			264.1
Current Changes:				
Economic				
Quantity				
Schedule	+11.9			+11.9
Engineering	+44.6			+44.6
Estimating				
Other				
Support				
Subtotal	+56.5			+56.5
Total Changes	+ 92.9			+ 92.9
Current Estimate	320.6			320.6

b. Previous Change Explanations

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Revised Jan 85 Economic escalation rates and program NIF adjustments (Economic)	--	-1.2
Delay of Aircraft integration (Schedule)	+4.8	+5.9
Introduction of required technical improvement initiatives and additional spares/integration support for A-6E and F-14D block upgrade. (Engineering)	+31.6	+38.6
(2) Procurement		
(3) MILCON		

c. Current Change Explanations:

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Revised Feb 86 Economic escalation rates and program NIF adjustments (Economic)	--	-.2
Delay of Aircraft integration (Schedule)	+11.9	+14.3
Introduction of required technical improvement initiatives (FY88-91). (Engineering)	+44.6	+55.4
(2) Procurement		
(3) MILCON		

d. References - Approved program per SDDM, 24 February 1982 and FY 1987 President's Budget 17 January 1986.

14. Program Acquisition Unit Cost (PAUC) History:1/

15. Contract Information: (Dollars in Millions)

a. RDT&E

ASPJ:	Initial Contract Price Target	Ceiling	Quantity
Joint Venture, ITT/WEC Nutley NJ/Baltimore MD N00019-81-C-0369*, CPAF	80.8	N/A	12

Award: August 27, 1981
Contract Capped: November 9, 1984 (Total Government Liability $140M)

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
172.6*	140.0*	12*	N/A	218.0*

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-0-	-0-
Cumulative Variances to Date	-0-	-0-
Net Change		

NOTE: As part of the contract cap negotiation the contractor is no longer required to submit monthly Contractor Performance Reports (CPR's) once negotiated cap dollar value was reached, this was met in February 1985, last CPR received was for the February 1985 reporting period.

1/Procurement costs are included in the host aircraft procurement budgets.

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

a. Program Status -- (for R&D only)

(1) Percent Program Completed: 64.3% (9 yrs/14 yrs)
(2) Percent Program Cost Appropriated: 61.6% (215.1/349.2)

b. Appropriation Summary --

(Then Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY78-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP	Total
RDT&E	215.1	19.9	114.2	-0-	349.2

c. Annual Summary --

FISCAL YEAR	QTY ASPJ	ADV PROC (NONADD)	BASE-YEAR DOLLARS FLYAWAY (NONADD) NONREC	REC	TOTAL	THEN-YEAR DOLLARS ADV PROC (NONADD)	TOTAL	ESCALATION RATE
APPROPRIATION: RDT&E 1/2/								
FY__	#		$		$		$	#
78			2.6		2.6		2.6	
79		15.2	15.6		15.6		15.6	
80			13.2		13.2		13.2	
81			28.1		28.1		28.1	
82		23.7	24.0		24.0		24.0	
83	2		32.8		32.8		32.8	
84	3	42.0	41.1		41.1		42.0	3.80
85	5	36.0	34.0		34.0		36.0	3.60
86	2		19.0		19.0		20.8	3.20
87			17.5		17.5		19.9	4.10
88			10.3		10.3		12.1	3.90
89			21.2		21.2		25.8	3.40
90			39.8		39.8		49.7	2.90
91			20.8		20.8		26.6	2.30
TOTAL	12		320.6		320.6		349.2	

1/ Does not include Air Force share of common development.
2/ Procurement costs are included in the host aircraft lines as ancillary equipment.

d. Obligation and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
		Appropriation: RDT&E	
1978	2.6	2.6	2.6
1979	15.6	15.6	15.6
1980	13.2	13.2	13.2
1981	28.1	28.1	28.1
1982	24.0	24.0	24.0
1983	32.8	32.8	32.8
1984	42.0	42.0	42.0
1985	36.0	33.9	13.7
To Complete	154.9	N/A	N/A
Total	349.2	192.2	172.0

17. Production Rate Data -- N/A

Production costs are included in the host aircraft procurement budgets.

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	12/11
Procurement	0/0

18. Operating and Support Cost -- N/A

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

PROGRAM: Sea Lance (ASW Standoff Weapon)

AS OF DATE: December 31, 1985 ("*")

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1. (U) **Designation and Nomenclature (Popular Name):** UUM-125A/Sea Lance

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

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

PMS414 Program Office
Naval Sea Systems Command
Washington, DC 20362

PM: CAPT John T. Regan
Assigned: January 3, 1983
AUTOVON: 222-7997 COMMERCIAL: (202) 692-7997

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

RDT&E: PE 63367N
PE 64309N

PROCUREMENT: APPN 1507 ICN 4110

MILCON: PE 24896N

AS AMENDED
APR 1 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

5. (U) **Related Programs:** MK 50 Advanced Lightweight Torpedo; Nuclear Depth Bomb; CCS MK 1 Fire Control System.

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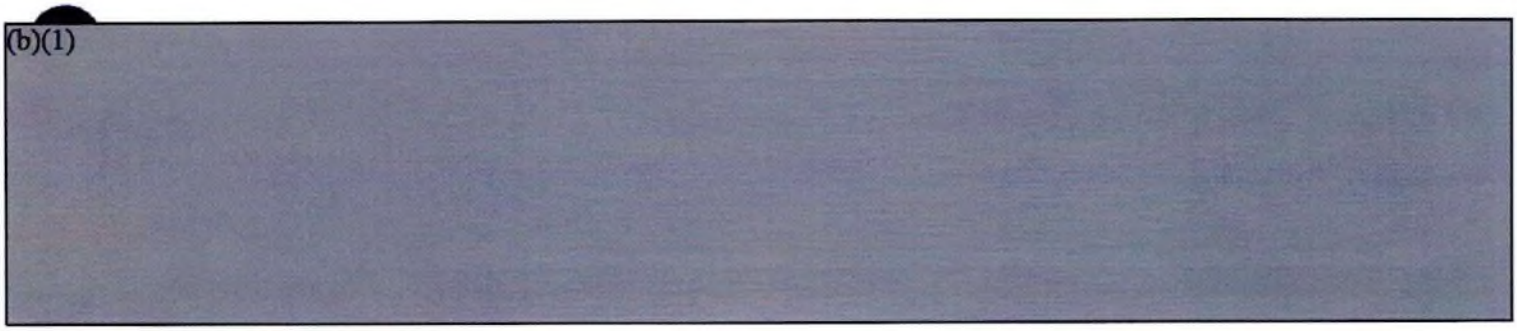
(b)(1)



7. (U) **Program Highlights:**

a. Significant Historical Developments -- The Sea Lance Mission Element Need Statement (MENS) was approved 4 January 1980. Four Concept Formulation Study (CFS) Phase contracts were awarded 1 February 1980 leading to the selection of a single contractor, Boeing Aerospace Company, to proceed into the Demonstration and Validation (D&V) Phase. A successful DSARC I was conducted on 1 December 1982. Studies of missile airframe, propulsion, guidance and control retardation system, capsule and subsystem technologies applicable to Sea Lance were conducted. Subsystem prime item and critical item development specifications were prepared and approved. Subsystem Preliminary Design Reviews were conducted, which ended with the System Preliminary Design Review and the commencement of detailed design. Validation of missile flyout from the capsule during a simulated broach condition and static rocket motor firings were conducted and developmental testing was initiated. The program was rescheduled four times due to funding shortfalls.

b. Significant Developments Since Last Report -- Developmental testing progressed on schedule. Two body wind tunnel tests were performed to gather flight stability data on the missile system through separation. A full scale Structural Development Model of the complete missile was fabricated and assembled. The guidance and control systems in an Operational Mockup of the missile were installed and laboratory dynamic fly-downs of the missile have begun. Torpedo MK 50 protective shell assembly and side parachute deceleration configurations were selected. Preliminary Stowage Rack Shock Test and missile system transition tests were conducted. These included submarine mechanical interface achievement in strikedown, stowage and torpedo tube loading, and launch at maximum expected depth and speed underway. Successful static rocket motor firings were conducted in July and October 1985. Acquisition strategy was finalized and contractual action for award of a Full Scale Development contract was initiated. Operational testing is planned to commence with DT/OT flight testing in April 1989. Sea Lance will satisfy the mission requirements.

c. Changes Since "As Of" Date -- Successfully fired the final two static rocket motors in February 1986.

(U)
(C) **Decision Coordinating Paper (DCP) Threshold Breaches:**

a (U) SDDM Threshold Breaches --

(b)(1) [redacted]

(U) DSARC - Congress reduced the Sea Lance budget by $10.0M during the FY 85 appropriation deliberations. The reduction caused Milestone II to be delayed until April 1986, thus breaching the SDDM DSARC II schedule milestone. Notification of breach was provided to OSD by Commander, Naval Sea Systems Command letter 8832 Ser PMS414F/C251 of 15 November 1984.

(U) RDT&E Threshold - PBD #242 transferred funding for 15 limited production missiles from FY 89 WPN to RDT&E appropriation. The 15 limited production missiles support the MK 50 flight test program during full scale engineering and development and are more appropriately budgeted under RDT&E. Direction for the shift of funding from WPN to RDT&E resulted from the OSD POM 87 Budget Hearing. The transfer of funding will result in an RDT&E threshold breach. The FY 89 WPN budget has been reduced correspondingly.

b. (U) References --
SDDM, dated 16 December 1982.
Draft DCP, dated 12 December 1985 (forwarded for review).

(U) **Schedule:**

a. (U) Milestones --	Planning Estimate/ Approved Program	Current Estimate
(U) MENS Approved	Jan 80/Jan 80	Jan 80
(U) CFS Contract Awards	Feb 80/Feb 80	Feb 80
(U) Sustaining Contract Award	Apr 81/Apr 81	Apr 81
(U) DSARC I	Dec 82/Dec 82	Dec 82
(U) D&V Contract Award	May 83/May 83	May 83
(U) DSARC II	Sep 85/Sep 85	Apr 86
(U) FSD Contract Award	Oct 85/Oct 85	Jun 86
(U) Start Technical Evaluation	Dec 87/Dec 87	Jul 89
(U) DNSARC IIIA	May 88/May 88	Jul 89
(U) Limited Production Contract Award	May 88/May 88	------ (Ch-1)
(U) Production Contract Award	Mar 89/Mar 89	Oct 89 (Ch-2)
(U) Start Operational Evaluation	Jul 88/Jul 88	Jan 90 (Ch-3)
(U) DNSARC IIIB (Full Rate Prod)	Mar 89/Mar 89	Jul 90

(b)(1) [redacted]

b. (U) Previous Change Explanations -- The DSARC II and FSD Contract Award estimated completion dates were slipped due to a $10.0M Congressional reduction and $0.4M Navy imposed reduction in FY 85 funding. The milestones following FSD contract award were changed due to a funding reduction of $56.4M in FY 86.

c. (U) Current Change Explanations --

(Ch-1) The need for a Limited Production Contract Award was eliminated due to the transfer of funding for the 15 limited production missiles from FY 89 WPN to RDT&E appropriation. These 15 missiles support the MK 50 flight test program and are now included under the Jun 86 FSD Contract Award.

(Ch-2) Prior date of Aug 90 reflected start of the fabrication phase, while the actual date of Oct 89 reflects the contract award to buy long lead material.

(Ch-3) Minor adjustment from Feb 90 to Jan 90 to reflect exact start date for OPEVAL.

d. (U) References --

Planning Estimate: SDDM, dated 16 December 1982, subject "ASW Standoff Weapon Program."

Approved Program: FY 1987 President's Budget.

(b)(1) [redacted]

(U) **Technical/Operational Characteristics:**

a. (U) Technical --	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
(U) Max Loading/ Handling Wt (lbs)	3100/same	N/A	3100

(b)(1)

b. (U) Operational --

(b)(1)

(U) Maintenance Cycle (yrs)	3/same	N/A	3

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

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

e. (U) References --

Planning Estimate: SDDM, dated 16 December 1982, subject "ASW Standoff Weapon Program."

Approved Program: FY 1987 President's Budget.

(U) **Program Acquisition Cost:** (Current Estimate in Millions of Dollars)

		Planning Estimate	Changes	Current Estimate
a.	Cost --			
	Development (RDT&E)	$ 567.2	$ +89.8	$ 657.0
	Procurement	800.3	-10.2	790.1
	Total Flyaway	----	----	(654.8)
	Other Wpn Sys Cost	----	----	(102.9)
	Initial Spares	----	----	(32.4)
	Construction (MILCON)	19.2	-6.4	12.8
	Total FY 84 Base-Year $	$ 1386.7	$ +73.2	$ 1459.9
	Escalation	490.2	-110.5	379.7
	Development (RDT&E)	(68.4)	(+19.9)	(88.3)
	Procurement	(416.5)	(-128.5)	(288.0)
	Construction (MILCON)	(5.3)	(-1.9)	(3.4)
	Total Then-Year $	$ 1876.9	$ -37.3	$ 1839.6
b.	Quantities --			
	Development (RDT&E)	37	+15	52
	Procurement	1015	-15	1000
	Total	1052	0	1052
c.	Unit Cost --			
	Procurement:			
	FY 84 Base-Year $	$ 0.788	$ +0.002	$ 0.790
	Then-Year $	1.199	-0.121	1.078
	Program:			
	FY 84 Base-Year $	1.318	+0.070	1.388
	Then-Year $	$ 1.784	$ -0.035	$ 1.749

d. Approved Design-to-Cost Goal -- None.

e. Foreign Military Sales (FMS) -- None.

f. Nuclear Costs -- None.

. (U) **Program Acquisition/Current Procurement Unit Cost Summary:** (Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline (Dec 84 SAR)	UCR Baseline Estimate
a.	Program Acquisition --			
	(1) Cost	1839.6	1901.4	1839.6
	(2) Quantity	1052	1052	1052
	(3) Unit Cost	1.749	1.807	1.749
b.	Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	N/A	N/A	N/A
	Less CY Adv Proc	N/A	N/A	N/A
	Plus PY Adv Proc	N/A	N/A	N/A
	(2) Quantity	N/A	N/A	N/A
	(3) Unit Cost	N/A	N/A	N/A

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

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

	RDT&E	PROC	MILCON	Total
anning Estimate	635.6	1216.8	24.5	1876.9
Previous Changes:				
Economic	-7.5	-35.6	-0.4	-43.5
Quantity	-	-	-	-
Schedule	+64.9	+67.0	-	+131.9
Engineering	-	-	-	-
Estimating	-19.8	-44.5	+0.4	-63.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+37.6	-13.1	0.0	+24.5
Current Changes:				
Economic	-8.2	-157.4	-	-165.6
Quantity	+41.2	-41.2	-	0
Schedule	+35.0	+73.0	-	+108.0
Engineering	+9.1	-	-	+9.1
Estimating	-5.0	-	-8.3	-13.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+72.1	-125.6	-8.3	-61.8
tal Changes	+109.7	-138.7	-8.3	-37.3
Current Estimate	745.3	1078.1	16.2	1839.6

(U) **Cost Variance Analysis (Cont'd)**

(FY 84 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	Total
Planning Estimate	567.2	800.3	19.2	1386.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	+42.4	+8.1	-	+50.5
Engineering	-	-	-	-
Estimating	-17.6	-25.5	+0.3	-42.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+24.8	-17.4	+0.3	+7.7
Current Changes:				
Quantity	+31.4	-30.0	-	+1.4
Schedule	+30.9	+37.2	-	+68.1
Engineering	+7.4	-	-	+7.4
Estimating	-4.7	-	-6.7	-11.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+65.0	+7.2	-6.7	+65.5
Total Changes	+89.8	-10.2	-6.4	+73.2
Current Estimate	657.0	790.1	12.8	1459.9

b. Previous Change Explanations --

RDT&E

Economic: revised escalation indices.
Schedule: program stretchout to accommodate reduced funding levels.
Estimating: reflects offsets to revised escalation rates, FY 85 Congressional funding reduction and Jan 85 FYDP reduction.

Procurement

Economic: revised escalation indices.
Schedule: delay of one year in receipt of WPN funding.
Estimating: reflects offsets to revised escalation rates and revised submarine integration costs.

MILCON

Economic: revised escalation indices.
Estimating: reflects offsets to revised escalation rates.

(U) **Cost Variance Analysis (Cont'd):**

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Jan 86 economic escalation rates (Economic)	N/A	-8.2
Navy decision to shift funding for 15 flight test missiles from WPN appropriation to RDT&E (Quantity)	+31.4	+41.2
Program stretchout to accommodate FY 85 Congressional funding reduction (Schedule)	+30.9	+35.0
Navy decision to incorporate alternate fuzing capability (Engineering)	+ 7.4	+ 9.1
FY 88 Navy funding reduction (Estimating)	- 4.7	- 5.0
(2) Procurement		
Revised Jan 86 economic escalation rates (Economic)	N/A	-157.4
Navy decision to shift funding of 15 flight test missiles from WPN appropriation to RDT&E (Quantity)	-30.0	-41.2
Program stretchout to accommodate FY 85 Congressional funding reduction (Schedule)	+37.2	+73.0
(3) MILCON		
Revised facilities estimate (Estimating)	-6.7	-8.3

d. References -- SDDM, dated 16 December 1982, subject "ASW Standoff Weapon Program."

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

a. Initial SAR Estimate to Current Baseline Estimate -- Same as current baseline estimate.

b. Current Baseline Estimate to Current Estimate --

PAUC (Baseline Estimate) PE	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.784	-0.199	0	+0.228	+0.009	-0.073	--	--	-0.035	1.749

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

a. RDT&E --

	Initial Contract Price		
Missile:	Target	Ceiling	Qty
Boeing Aerospace Co., Kent, WA N00024-83-C-6039, CPAF, Work start date: 25 November 1982 Definitized: 27 May 1983	$95.9	N/A	N/A

Current Contract			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$108.8	N/A	N/A	$108.6	$115.8

Cost/Schedule Variances --

	Cost Variance	Schedule Variance
Previous Cumulative Variances	+0.5	-1.5
Cumulative Variances to Date (12/31/85)	0.0	-1.1
Net Change	-0.5	+0.4

CPR data as of 31 December 1985

Explanation of Change: Cumulative variance to date indicates no cost variance and a slightly unfavorable schedule variance. The unfavorable schedule variance is due to elimination of rocket motor casing work. The unfavorable cost variance net change is primarily due to overbudget activity on the Missile Fin Actuator Units (FAUs). The favorable schedule variance net change reflects program rebaselining to accommodate reduced FY 85 funding. Cost and schedule performance is anticipated to be on target at program completion.

b. Procurement -- Not applicable.

c. MILCON -- Not applicable.

d. O&M -- Not applicable.

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

a. Program Status --

(1) Percent Program Completed: 43.8% (7 yrs/16 yrs)

(2) Percent Program Cost Appropriated: 12.9% ($237.2/$1839.6)

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

Appropriation	Current & Prior Yrs (FY 80-86)	Budget Year (FY 87)	Balance To Complete FYDP (FY 88-91)	Balance To Complete Beyond FYDP (FY 92-95)	Total
RDT&E	237.2	118.4	380.2	9.5	745.3
Procurement	0.0	0.0	375.6	702.5	1078.1
MILCON	0.0	0.0	16.2	-	16.2
Total	237.2	118.4	772.0	712.0	1839.6

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escal Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1980				8.5			7.0	10.59
1981				21.3			19.0	10.61
1982				37.6			35.4	7.6
1983				22.9			22.5	4.9
1984				26.8			27.4	3.8
1985				48.3			51.1	3.6
1986	3		4.9	68.2			74.8	3.2
1987	24		39.1	103.9			118.4	4.1
1988	10		16.3	110.9			130.9	3.9
1989	11		17.9	94.9			115.5	3.4
1990	4		6.5	74.6			93.2	2.9
1991				31.8			40.6	2.3
1992				7.3			9.5	2.3
Subtotal	52		84.7	657.0			745.3	

(U) **Program Funding Summary (Cont'd):** (Current Estimate in Millions of Dollars)

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escal Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: Procurement								
1989		30.2	2.1	37.3			47.3	3.4
1990	72		82.5	95.2			123.5	2.9
1991	216		133.8	154.3			204.8	2.3
1992	216		135.9	156.8			212.9	2.3
1993	216		126.7	146.1			202.9	2.3
1994	216		122.2	140.9			200.2	2.3
1995	64		51.6	59.5			86.5	2.3
Subtotal	1000	30.2	654.8	790.1			1078.1	
Appropriation: MILCON								
1989	-			4.8			6.0	3.4
1990	-			8.0			10.2	2.9
Subtotal	-			12.8			16.2	
Total				1459.9			1839.6	

(U) **Program Funding Summary (Cont'd):**

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1980	7.0	7.0	7.0
1981	19.0	19.0	19.0
1982	35.4	35.4	35.4
1983	22.5	22.5	22.5
1984	27.4	27.4	27.4
1985	51.1	51.1	46.5
1986	74.8	38.6	8.0
To Complete	508.1	N/A	N/A
Total	745.3	201.0	165.8

(U) **Production Rate Data:**

Not applicable due to Milestone II schedule of April 1986.

18. (U) **Operating and Support (O&S) Costs:**

Not applicable due to Milestone II schedule of April 1986.

AF-8 C-17A
(1)

SAR-85-066

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

PROGRAM: C-17A
AS OF: December 31, 1985

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Designation and Nomenclature (Popular Name):

C-17A/Direct Delivery Airlift Aircraft

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FOR OPEN PUBLICATION

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

2. **DoD Component:** U.S. Air Force

3. **Responsible Office and Telephone Number:**

C-17A Systems Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433

Program Dir: Maj Gen E. E. Harbour
Assigned: January 25, 1980
AV: 785-6306 COM: (513) 255-6306

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

RDT&E: PE 64231F (no shared funding), PE 64227F (shared funding)
PROCUREMENT: PE 41130F APPN 3010 ICN C017AD (no shared funding)
MILCON: PE 41130F (no shared funding)

5. **Related Programs:** None

SAF/PAS
86-175 - T

OASD(PA) DI SLTR 86-T-0581

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, 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 exhausted thrust reverser system that provides backup capability, reduces the aircraft ramp space requirements, and minimizes the interference of dust and debris on ground personnel activities; cargo door, ramp design and cargo restraint systems that are operable by a single loadmaster and permit immediate equipment offload without special handling equipment; two man cockpit with cathode ray tube (CRT) displays that reduce complexity and improve reliability; maximum use of built-in test (BIT) features to reduce maintenance and troubleshooting times; and walk-in avionics bays that improve accessibility. The end result is significantly reduced maintenance manhours per flight hour.

7. Program Highlights:

a. Significant Historical Developments --

A SECDEF decision during the FY81 budget review directed funding for a new aircraft which places increased emphasis on strategic airlift capability. The initial C-X Program Management Directive (PMD) was issued on 10 Dec 1979. The requirements for the C-17A aircraft were formalized by the C-X Mission Element Need Statement (MENS), dated 7 April 1980. In August 1981, SECAF announced Douglas Aircraft Company the winner of the C-X source selection.

On 23 July 1982, the FSED contract that had been negotiated during the C-X source selection was awarded to Douglas with a restructure clause inserted to limit the scope of the contract to a 15 month modestly paced program.

A revised PMD was issued in July 1983 which directed the continuation of C-17 design effort and the initiation of activities leading to an FSD start by FY85, a production start by FY88, and an initial operational capability of 12 aircraft in FY92.

7. Program Highlights (Cont'd):

In 1984, the C-17 program continued to operate as a moderately paced engineering effort. During this period, major wind tunnel testing was completed, structural design criteria were developed, and design analyses and vendor studies were completed.

The Secretary of Defense approved FSED on 15 Feb 85.

b. Significant Developments Since Last Report --

The successful review of the program office's RDT&E cost estimate by the OSD CAIG culminated in Secretary Weinberger's authorization to proceed with FSED on 15 February 1985, contingent on second source certification. Following the Secretary's approval, the program office and Douglas Aircraft Company (DAC) conducted 33 individual preliminary design reviews (PDR) and status reviews to achieve a consensus that the preliminary design approach satisfied all contractual requirements. On 31 October 1985, the program office and Douglas Aircraft Company completed negotiations on the C-17 contract restructure. The restructure clause allowed the Air Force and DAC to update the original "modestly paced engineering effort" to the DSARC approved FSED schedule and funding. Secretary of the Air Force, The Honorable Mr Rourke, signed the C-17 second source certification to Congress on 30 December 1985, and the restructured contract was issued the following day. The C-17 is expected to satisfy mission requirements.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 12 October 1984) or SDDM (dated 15 February 1985) threshold breaches.

9. Schedule:

	Planning Estimate/ Approved Program	Current Estimate
a. Milestones --		
(1) Source Selection Decision	Aug 81/Aug 81	Aug 81 *
(2) Contract Award	Jul 82/Jul 82	Jul 82 *
(3) Start FSED	Oct 84/Oct 84	Dec 85 * (Ch-1)
(4) Milestone II	Nov 87/Nov 84	Nov 84 *
(5) First Full Funded Production Lot	Dec 87/Dec 87	Dec 87
(6) Milestone III	Feb 91/Feb 91	N/A
(7) Milestone III A	Nov 87/Nov 87	Sep 86 (Ch-2)
(8) Milestone III B	Feb 91/Feb 91	Aug 91
(9) IOC (Delivery of 12th acft)	Jan 92/Jan 92	Apr 92 (Ch-3)

* Reflects actual dates of accomplishment

9. Schedule (Cont'd):

b. Previous Change Explanations --

The authority to award the July 1982 contract directed a program review before beginning full scale development (FSD). In June 1984, the Air Force was informed DSARC II would be required to initiate FSD. This resulted in a schedule change for Milestone II from November 1987 to October 1984.

DSARC II was conducted in November 1984. Approval to enter FSED program was held in abeyance pending completion of a "bottoms up" program office cost estimate. The estimate was completed and briefed to the OSD CAIG on January 31, 1985. SEC DEF signed FSED approval memo on February 15, 1985.

Milestone III was separated into a low-rate production decision (IIIA) and a full-rate production decision (IIIB).

c. Current Change Explanations --

(Ch-1) Start of FSED delayed by DSARC request for RDT&E independent cost estimate and second source certification prior to FSED approval.

(Ch-2) During DSARC II review, a Milestone IIIA was added in Sep 86 for initial rate production decision. (This date was incorrectly shown as November 1987 in the previous SAR).

(Ch-3) IOC delayed to Apr 92 due to revised initial production rate buys.

d. References --

Planning Estimate: PMD 0020(14) dated 25 Jul 83.

Approved Program:

DCP dated 12 Oct 84; SDDM dated 15 Feb 85; PMD 0020(17)/64231F/41130F dated 2 Oct 85, amended by PMD 0020(18) dated 20 Dec 85.

10. Technical/Operational Characteristics:

	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. Technical --			
(1) Mission Completion Success Probability 1/	.93/.93	N/A	.93
(2) Maintenance Manhours Per Flying Hour (Air Vehicle) 1/	18.6/18.6	N/A	18.6

. Technical/Operational Characteristics (Cont'd):

b. Operational --	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
(1) Payload/Range (LBS/NM) 2/	172,200/2400/172,200/2400	N/A	172,200/2400 (Ch-1)
(2) Landing Distance (Ft) 3/	1550/1575 (Ch-2)	N/A	1575 (Ch-2)
(3) Takeoff Distance (Ft) 4/	6510/6640 (Ch-2)	N/A	6640 (Ch-2)
(4) Cruise Speed (KTAS)	450/450	N/A	450
(5) Backup Capability (Percent Grade) 5/	2/2	N/A	2

1/ Reliability and maintainability based on 100,000 fleet flying hours.

2/ Unrefueled, max 2.25G payload, standard day, C-X reserves

3/ Landing ground roll, payload 129,200 lbs, fuel to fly a 500 NM mission with zero payload, sea level, standard day, max reverse thrust.

4/ Takeoff ground run at gross weight to carry a payload of 172,200 lbs for a range of 2400 NM, sea level, standard day.

5/ Backup capability with 172,200 lbs payload and fuel to fly 1000 NM sea level, standard day.

c. Previous Change Explanations -- Program Office current estimate of range increased due to additional fuel capacity resulting from lighter aircraft weight (December 31, 1983 SAR).

d. Current Change Explanations --

(Ch-1) The current estimate for maximum payload range was adjusted as the result of the DSARC II added requirements (see Ch-2) and increased drag resulting from wind tunnel test analysis.

(Ch-2) The approved program values and current estimate for landing distance and takeoff distance were adjusted to incorporate the increase in basic aircraft weight attributed to DSARC II direction which added provisions for two additional pallets on the ramp and provided for full combat offload from the logistics rail system.

e. References --

Planning Estimate: PMD 0020(14) dated 25 Jul 83 as amended by PMD 0020(15), January 1984; MENS for C-X, November 28, 1980; PSOC for C-X, January 22, 1980.

Approved Program:
DCP dated 12 Oct 84: SDDM dated 15 Feb 85; and PMD 0020(17)/64231F/41130F dated 2 Oct 85, amended by PMD 0020(18) dated 20 Dec 85.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars):

a. Cost --	Planning Estimate	Changes	Current Estimate
Development (RDT&E)	2704.1	+175.7	2879.8
Procurement	16793.2	-109.0	16684.2
Airframe	(11229.3)	(-679.0)	(10550.3)
Engine	(2371.6)	(+625.1)	(2996.7)
Avionics	(687.1)	(-312.2)	(374.9)
Total Flyaway	(14288.0)	(-366.1)	(13921.9)
Peculiar Support	(314.2)	(+1409.6)	(1723.8)
Other Weapon System Cost	(1139.4)	(-1079.0)	(60.4)
Initial Spares	(1051.6)	(- 73.5)	(978.1)
Construction (MILCON)	47.3	+ 65.2	112.5
Total FY 81 Base-Year $	19544.6	+131.9	19676.5
Escalation	20209.2	-5400.3	14808.9
Development (RDT&E)	(1242.9)	(- 69.3)	(1173.6)
Procurement	(18939.6)	(-5384.1)	(13555.5)
Construction (MILCON)	(26.7)	(+ 53.1)	(79.8)
Total Then-Year $	39753.8	-5268.4	34485.4
b. Quantities --			
Development (RDT&E)	1	---	1
Procurement	210	---	210
Total	211	---	211
c. Unit Cost --			
Procurement:			
FY81 Base-Year $	79.968	- .519	79.449
Then-Year $	170.156	- 26.157	143.999
Program:			
FY81 Base-Year $	92.628	+ .626	93.254
Then-Year $	188.407	- 24.969	163.438

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

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary:

a. Program Acquisition (Current (Then-Year) Dollars in Millions) --

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
(1) Cost	34485.4	37855.5	34485.4
(2) Quantity	211	211	211
(3) Unit Cost	163.438	179.410	163.438

b. Current Procurement --

There are no procurement quantities in either the current year (FY86) or the budget year (FY87).

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	3947.0	35732.8	74.0	39753.8
Previous Changes:				
Economic	- 82.8	- 128.4	- 1.6	- 212.8
Quantity	0.0	0.0	0.0	0.0
Schedule	0.0	0.0	0.0	0.0
Engineering	0.0	0.0	0.0	0.0
Estimating	-245.8	-1189.7	0.0	-1435.5
Other	0.0	0.0	0.0	0.0
Support	+397.0	- 647.0	0.0	- 250.0
Subtotal	+ 68.4	-1965.1	- 1.6	-1898.3
Current Changes:				
Economic	- 62.5	-5067.5	- 1.6	-5131.6
Quantity	0.0	0.0	0.0	0.0
Schedule	+205.5	+ 189.3	0.0	+ 394.8
Engineering	0.0	+ 214.5	0.0	+ 214.5
Estimating	-105.0	+ 71.6	+121.5	+ 88.1
Other	0.0	0.0	0.0	0.0
Support	0.0	+1064.1	0.0	+1064.1
Subtotal	+ 38.0	-3528.0	+119.9	-3370.1
Total Changes	+106.4	-5493.1	+118.3	-5268.4
Current Estimate	4053.4	30239.7	192.3	34485.4

13. Cost Variance Analysis (Cont'd):

(FY81 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2704.1	16793.2	47.3	19544.6
Previous Changes:				
Quantity	0.0	0.0	0.0	0.0
Schedule	0.0	0.0	0.0	0.0
Engineering	0.0	0.0	0.0	0.0
Estimating	- 150.0	- 446.9	0.0	- 596.9
Other	0.0	0.0	0.0	0.0
Support	+ 279.6	- 379.4	0.0	- 99.8
Subtotal	+ 129.6	- 826.3	0.0	- 696.7
Current Changes:				
Quantity	0.0	0.0	0.0	0.0
Schedule	+ 118.5	0.0	0.0	+ 118.5
Engineering	0.0	+ 115.0	0.0	+ 115.0
Estimating	- 72.4	- 34.2	+ 65.2	- 41.4
Other	0.0	0.0	0.0	0.0
Support	0.0	+ 636.5	0.0	+ 636.5
Subtotal	+ 46.1	+ 717.3	+ 65.2	+ 828.6
Total Changes	+ 175.7	- 109.0	+ 65.2	+ 131.9
Current Estimate	2879.8	16684.2	112.5	19676.5

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Estimating: Refinement of FY1983/1984 requirements; reestimate based on impact of revised economic escalation indices in prior years; reestimate of flyaway costs based on an independent cost analysis (ICA).

Support: Reestimate of support requirements based on ICA.

13. Cost Variance Analysis (Cont'd):

PROCUREMENT

Economic: Revised economic escalation indices.

Estimating: Realignment of procurement funding to the program estimate; reestimate of flyaway cost based on an ICA; one-time change resulting from a correction to the methodology for computing inflation on programs with advance procurement funding.

Support: Deletion of initial spares for FY1988 and FY1989 based on decision to use interim contractor support for the first two years of operation; restructive of support requirements based on ICA.

MILCON

Economic: Revised economic escalation indices.

c. Current Change Explanations --

	(Dollars In Millions)	
RDT&E	Base Year $	Then Year $
Revised economic escalation indices (Economic)	N/A	- 62.5
Increased cost based on revised schedule due to budget cuts and constraints (Schedule)	+ 118.5	+ 205.5
Reestimate based on bottoms-up approach to estimating (Estimating)	- 72.4	- 105.0
Total Changes	+ 46.1	+ 38.0

3. Cost Variance Analysis (Cont'd):

	(Dollars In Millions) Base Year $	Then Year $
Procurement		
evised economic escalation indices (Economic)	N/A	-5067.5
Procurement schedule slip beginning in FY90 and an increase in peak buy quantity from 25 to 29 (Schedule)	0.0	+ 189.3
Increased funding requirement due to addition of 4-pallet ramp, combat offload rail system, and DoD Standard avionics racks. (Engineering)	+ 115.0	+ 214.5
Net effect of a detailed bottoms-up cost estimate and increases due to an updated engineering estimate which projects higher cost weight and estimating changes caused by the revised schedule. (Estimating)	+ 26.2	+ 174.3
Adjustments to refine the mix of previous support and estimating category changes	0.0	0.0
Decrease to estimating category (Estimating)	(- 60.4)	(- 102.7)
Increase to support category (Support)	(+ 60.4)	(+ 102.7)
Further definition of peculiar support requirements and detailed buildup of spares necessitate additional funding requirements (Support)	+ 576.1	+ 961.4
Total Changes	+ 717.3	-3528.0
MILCON		
Revised economic escalation indices (Economic)	N/A	- 1.6
Improved definition of support facility requirements during bottoms-up estimate results in increased funding requirements (Estimating)	+ 65.2	+ 121.5
Total Changes	+ 65.2	+ 119.9

d. References —
Planning Estimate: FY85 President's Budget, January 1984

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

a. Initial SAR/Planning Estimate (PE) to Current Estimate

PAUC (Initial SAR/PE)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
188.407	-25.329	0	+1.871	+1.017	-6.386	+3.858	0	-24.969	163.438

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

a. RDT&E --	Initial Contract Price		
	Target	Ceiling	Qty
McDonnell-Douglas Corp. Douglas Aircraft Co. Long Beach, CA F33657-81-C-2108 FPIF Award: 23 July 1982 Definitized: 31 Dec 1985	31.6	31.6	0

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
3387.1 (Ch-1)	* TBD	1	3387.1 (Ch-1)	3387.1 (Ch-1)

Current Change Explanation -- (Ch-1) Reflects inclusion of restructured RDT&E program

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ + 3.2	$ - 2.3
Cumulative Variances to Date (Nov 85)	$ + 6.0	$ - 8.1
Net Change	$ + 2.8	$ - 5.8

Explanation of Change:

Cost Variance: The favorable cost variance is primarily due to underruns to estimates for manufacturing and material requirements for mockups, underruns to engineering direct costs and staffing shortages in product support. No impact.

Schedule Variance: The unfavorable schedule variance is primarily due to previous engineering staff shortages and late Pratt & Whitney Engine data. Douglas Aircraft Company appears to be making satisfactory progress in filling personnel vacancies. No impact to the program or contract at completion.

* To be determined in conjunction with production options

b. Procurement -- N/A

c. MILCON -- N/A

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

a. Program Status --

(1) Percent Program Completed (Years Funds Appropriated/Total Program Years):

6/19 = 31.6%

(2) Percent Program Cost Appropriated (Funds Appropriated To Date in Millions/Total Program Funding in Millions):

611.5/34485.4 = 1.8%

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

Appropriation	Current & Prior Yrs (FY81-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92-99)	Total
RDT&E	611.5	614.2	2479.6	348.1	4053.4
Procurement	N/A	217.3	7396.4	22626.0	30239.7
MILCON	N/A	---	10.3	182.0	192.3
Total	611.5	831.5	9886.3	23156.1	34485.4

c. Annual Summary:

APPROPRIATION - RDT&E

Fiscal Year	Qty	Base Year 81 Dollars			Then Year Dollars			Escl * Rate %
		Flyaway			Advance Proc			
		Non Rec	Rec	Total	Debit	Credit	Total	
1981				32.0			33.4	11.9
1982				0.0			0.0	9.2
1983				51.0			59.6	4.9
1984				21.1			25.7	3.8
1985				95.5			120.0	3.6
1986				286.4			372.8	3.2
1987				454.0			614.2	4.1
1988				659.9			925.0	3.9
1989				521.2			753.3	3.4
1990				316.7			469.6	2.9
1991				218.6			331.7	2.3
1992				181.3			281.3	2.3
1993				42.1			66.8	2.3
Subtotal	1	N/A	N/A	2879.8	N/A	N/A	4053.4	N/A

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

APPROPRIATION - PROCUREMENT

Fiscal Year	Qty	FY81 Base Year Dollars			Then Year Dollars			Escl * Rate %
		Flyaway			Advance Proc			
		Non Rec	Rec	Total	Debit	Credit	Total	
1987	0	117.5		139.9	35.0	0.0	217.3	4.1
1988	2	404.1	350.2	852.0	68.2	35.0	1363.2	3.9
1989	4	63.1	534.4	776.5	101.7	68.2	1274.2	3.4
1990	6	64.8	657.6	1173.1	170.2	101.7	1970.8	2.9
1991	10	41.4	954.3	1622.0	341.7	170.2	2788.2	2.3
1992	20		1542.3	2085.5	498.2	341.7	3666.3	2.3
1993	29		1842.5	2174.9	505.7	498.2	3912.6	2.3
1994	29		1666.8	1948.3	516.1	505.7	3584.9	2.3
1995	29		1560.5	1732.7	528.5	516.1	3260.9	2.3
1996	29		1494.3	1707.3	542.7	528.5	3288.3	2.3
1997	29		1461.9	1514.3	443.3	542.7	2983.2	2.3
1998	23		1166.2	957.7	0.0	443.3	1929.8	2.3
Subtotal	210	690.9	13231.0	16684.2	3751.3	3751.3	30239.7	

APPROPRIATION - MILCON

1989				.3			.5	3.4
1990				1.8			2.7	2.9
1991				4.6			7.1	2.3
1992				15.3			24.5	2.3
1993				15.8			25.8	2.3
1994				16.6			27.8	2.3
1995				9.7			16.6	2.3
1996				14.1			24.6	2.3
1997				4.4			7.8	2.3
1998				23.3			42.6	2.3
1999				6.6			12.3	2.3
Subtotal				112.5			192.3	
Total	211	690.1	13231.0	19676.5	3751.3	3751.3	34485.4	

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
1981	33.4	33.4	33.4
1982	0.0	0.0	0.0
1983	59.6	59.6	59.6
1984	25.7	25.7	25.7
1985	120.0	119.9	83.5
1986	372.8	64.5	.1
To Complete	3441.9	N/A	N/A
Total	4053.4	303.1	202.3

* Reflects program office records as of January 16, 1986

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1988	2	N/A	2	N/A
1989	4	N/A	4	N/A
1990	10	N/A	6	N/A
1991	20	N/A	10	N/A
1992	25	N/A	20	N/A
1993	25	N/A	29	N/A
1994	25	N/A	29	N/A
1995	25	N/A	29	N/A
1996	25	N/A	29	N/A
1997	25	N/A	29	N/A
1998	24	N/A	23	N/A

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY$)	N/A	N/A	19676.5	N/A	N/A
(TY$)	N/A	N/A	34485.4	N/A	N/A
PAUC (BY$)	N/A	N/A	93.254	N/A	N/A
(TY$)	N/A	N/A	163.438	N/A	N/A

17. Production Rate Data (Cont'd):

c. Schedule Variance --

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	10/86	N/A	N/A
Duration (in Months)	N/A	N/A	159	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	12/99	N/A	N/A

d. Deliveries (Plan/Actual) --

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

18. Operating and Support Costs: N/A

AF-7 C-5B

SAR-85-105

SELECTED ACQUISITION REPORT(RCS:DD-COMP(QA)823)

PROGRAM: C-5B

AS OF: December 31, 1985

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1. Designation and Nomenclature (Popular Name): C-5B (GALAXY)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

C-5B Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433

PM: COL JOHN T. GUTTMAN
Assigned: NOVEMBER 1, 1985
AV 785-5729; COMM (513) 255-5729

4. Program Elements/Procurement Line Items:

PROCUREMENT: APPN 3010 PE 41119F ICN C005BO (No shared funding)
MILCON: APPN 3300 PE 41896F (Shared funding)

5. Related Programs: C-5A Wing Modification

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

SAF/PAS

86 186 - T

OASD(PA) DTIC 86-T-0570

6. Mission and Description: Additional airlift is needed for rapid intertheater deployment of combat forces to support national strategy goals and to meet the mobility requirements of a modern army. The C-5B Program was initiated to fulfill the immediate need for additional intertheater airlift capability. The C-5B provides a near term reduction to the airlift shortfall. The aircraft is basically a C-5A with minor configuration changes intended to improve reliability. The aircraft will be a multi-engine turbofan aircraft designed to airlift substantial payloads, including outsize combat equipment, over intercontinental ranges without refueling and deliver this equipment/cargo for rapid intratheater deployment of combat forces. The C-5B augments existing C-5A squadrons.

7. Program Highlights:

a. Significant Historical Developments - The Lockheed-Georgia Company submitted an unsolicited Firm Fixed Price (FFP) Proposal for C-5B aircraft to the Secretary or the Air Force in October 1981. Based on the unsolicited proposal the Air Force was directed to procure 50 aircraft officially designated as the C-5B. A preliminary production contract was awarded to Lockheed in October 1982 for start-up and long lead efforts. A supplemental agreement was issued in December 1982 for FY83 start-up, long lead and procurement of one aircraft to be delivered in December 1985. The U.S. Air Force exercised Option One (four aircraft) and Option Two (eight aircraft) in December 1983 and December 1984 respectively.

b. Significant Developments Since Last Report - Option Three for sixteen C-5B aircraft, numbers fourteen through twenty-nine, was exercised in November 1985. First Flight of the C-5B occurred on 10 September 1985 (on schedule) and delivery of the first aircraft was accomplished on 28 December 1985 (also on schedule).

The C-5B program is expected to meet mission requirements.

c. Changes Since "As Of" Date - None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: No DCP

9. Schedule:

a. Milestones —	Production Estimate/ Approved Program	Current Estimate
Award Initial Contract	Oct 82/Oct 82	Oct 82*
Award Production Contract	Dec 82/Dec 82	Dec 82*
First Flight	Sep 85/Sep 85	Sep 85*
First Delivery	Dec 85/Dec 85	Dec 85*
16th Aircraft Delivery	Jun 87/Jun 87	Jun 87
50th Aircraft Delivery	Mar 89/Mar 89	Feb 89(Ch-1)
IOC 1/	N/A/N/A	N/A

b. Previous Change Explanations -- None.

c. Current Change Explanations --
(Ch-1) Erroneously reported as Mar 89 in Dec 84 SAR.

d. References --

Production Estimate: PMD 2072 (5), 5 April 1983.
Approved Program: PMD 2072 (5), 5 April 1983.

1/ Follow-on procurement of C-5 aircraft which adds an additional 50 C-5B aircraft to the current C-5A fleet.
* Reflects actual date of accomplishment.

10. Technical/Operational Characteristics:

	Production Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. Technical --			
Maintainability MMH/FH 2/	N/A/N/A	N/A	N/A
Cargo Compartment Size (Ft)			
Height	13.5/13.5	13.5*	13.5
Width	19.0/19.0	19.0*	19.0
Length	144.8/144.8	144.8*	144.8
Wing Span (Ft)	222.8/222.8	222.8*	222.8
b. Operational --			
Payload/Range (lbs/NM)	216,000/2,850/ 216,000/2,850	N/A**	216,000/2,850
Landing Distance (Ft)	2,490/2,490	N/A**	2,490
Takeoff Distance (Ft)	7,950/7,950	N/A**	7,950
Cruise Speed (KTAS)	450/450	N/A**	450

* Mean value
** Final operational flight test report due in Mar 86.

2/ The C-5B Program is structured with a goal of 40 MMH/FH. This will be based on operating sixteen aircraft at an average rate of 3.2 flight hours per day per aircraft over three consecutive months from one main operating base.

c. Previous Change Explanations -- None.

10. Technical/Operational Characteristics (Cont'd):

d. Current Changes — None.

e. References —

Production Estimate: PMD 2072 (5), 5 April 1983.
Approved Program: PMD 2072 (5), 5 April 1983.

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost —	Production Estimate	Changes	Current Estimate
Development (RDT&E)	—	—	—
Procurement	5723.9	-863.0	4860.9
Flyaway	(5105.2)	(-551.2)	(4554.0)
Other Wpn Sys Cost	(268.9)	(-114.9)	(154.0)
Initial Spares	(349.8)	(-196.9)	(152.9)
Construction	121.8	-113.1	8.7
Total: Constant FY80$	5845.7	-976.1	4869.6
Escalation	3821.6	-755.1	3066.5
Development	—	—	—
Procurement	(3750.2)	(-688.6)	(3061.6)
Construction	(71.4)	(-66.5)	(4.9)
Total Program Cost (Then-Year)$	9667.3	-1731.2	7936.1
b. Quantities —			
Development (RDT&E)	—	—	—
Procurement	50	—	50
Total	50	—	50
c. Unit Cost —			
Procurment:			
Constant FY80$	114.478	-17.260	97.218
Current (Then-Year)$	189.482	-31.032	158.450
Program:			
Constant FY80$	116.914	-19.522	97.392
Current (then-Year)$	193.346	-34.624	158.722

d. Approved Design to Cost Goal — N/A

e. Foreign Military Sales — None.

f. Nuclear Costs — None.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.	Program Acquisition			
	(1) Cost	7936.1	8426.2	7936.1
	(2) Quantity	50	50	50
	(3) Unit Cost	158.722	168.524	158.722
b.	Current Procurement	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	2158.6	2380.6	1953.8
	Less CY Adv Proc	313.8	326.0	0.0
	Plus PY Adv Proc	251.5	251.5	357.5
	Net Total	2096.3	2306.1	2311.3
	(2) Quantity	16	16	21
	(3) Unit Cost	131.019	144.131	110.062

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	--	9474.1	193.2	9667.3
Previous Changes				
Economic	--	+157.2	-6.5	+150.7
Quantity	--	--	--	--
Schedule	--	+36.0	--	+36.0
Engineering	--	--	--	--
Estimating	--	-946.1	-169.9	-1116.0
Other	--	--	--	--
Support	--	-311.8	--	-311.8
Subtotal	--	-1064.7	-176.4	-1241.1
Current Changes				
Economic	--	-218.4	--	-218.4
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	-86.2	-3.2	-89.4
Other	--	--	--	--
Support	--	-182.3	--	-182.3
Subtotal	--	-486.9	-3.2	-490.1
Total Changes	--	-1551.6	-179.6	-1731.2
Current Estimate	--	7922.5	13.6	7936.1

13. Cost Variance Analysis (Cont'd):
(FY 1980 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	--	5723.9	121.8	5845.7
Previous Changes				
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	-516.3	-111.2	-627.5
Other	--	--	--	--
Support	--	-191.9	--	-191.9
Subtotal	--	-708.2	-111.2	-819.4
Current Changes				
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	-34.9	-1.9	-36.8
Other	--	--	--	--
Support	--	-119.9	--	-119.9
Subtotal	--	-154.8	-1.9	-156.7
Total Changes	--	-863.0	-113.1	-976.1
Current Estimate	--	4860.9	8.7	4869.6

b. Previous Change Explanations --

RDT&E None.

Procurement
Economic: Revised escalation indices.
Schedule: Slip of two aircraft from FY85 to FY87.
Estimating: Reduction for ECO and EPA adjustments; re-estimate for prior year escalation; one-time change in advance procurement inflation methodology.
Support: Reduction of spares requirements and other peculiar equipment.

MILCON
Economic: Revised escalation indices.
Estimating: Decrease due to the shift of funding responsibility for reserve aircraft from the C-5B to C-5A program; additional facilities identified by MAC.

13. Cost Variance Analysis (Cont'd):
c. Current Change Explanations —

(Dollars in Millions)

	Base-Year	Then-Year
(1) RDT&E		
N/A		
(2) Procurement		
Revised Jan 86 economic escalation indices (Economic)	N/A	-218.4
Adjustment for prior year escalation (Estimating)	+81.3	+132.6
Reduction in ECO requirements. (Estimating)	-176.2	-299.8
The provisioning process identified fewer spares than anticipated. (Support)	-8.6	-13.4
The requirements process identified less peculiar support equipment than anticipated. (Support)	-51.3	-87.9
Adjustment to refine the mix of previous support and estimating category changes primarily related to the impact of economic escalation on prior years	0.0	0.0
o Increase to Estimating Category (Estimating)	+60.0	+81.0
o Decrease to Support Category (Support)	-60.0	-81.0
(3) MILCON		
USAF cut reduces required funding for maintenance hangar and parking ramp extension at Altus AFB. (Estimating)	-1.9	-3.2

d. References —
Production Estimate: FY1984 President's Budget, January 1983

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

Initial SAR/Production Estimate (PdE) to Current Estimate (CE)

PAUC	Changes (Then-Year Dollars in Millions)								PAUC
(Initial SAR/PdE)	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	(Current Estimate)
193.346	-1.354	-	+.720	-	-24.108	-9.882	-	-34.624	158.722

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

a. RDT&E -- N/A

b. Procurement --

(1) Aircraft — Initial Contract Price

Target	Ceiling	Qty
$50.0	N/A	0

Lockheed-Georgia Co.
Marietta GA
F33657-82-C-2117 FFP
Award: Oct 22, 1982
Definitized: Oct 22, 1982

Current Contract Price / Estimated Price at Completion

Target	Ceiling	Qty	Contractor	Program Manager
$7428.0(Ch-1)	N/A	50	$7428.0(Ch-1)	$7428.0(Ch-1)

(Ch-1) Increase due to the exercise of the FY 86 aircraft option and the negotiated price for the FY 87 aircraft buy.

(2) Aircrew Training System — Initial Contract Price

Target	Ceiling	Qty
$120.7	N/A	1

United Airlines Aircrew Training Inc.
Lakewood CO
F33657-84-C-0052 FFP, Nov 84
Award: Oct 30, 1984
Definitized: Oct 30, 1984

Current Contract Price / Estimated Price at Completion

Target	Ceiling	Qty	Contractor	Program Manager
$120.7	N/A	1	$120.7	$120.7

(3) Troop Seats — Initial Contract Price

Target	Ceiling	Qty
$1.5	N/A	50

Enginetics Corporation
4060 Lisa Drive
Tipp City OH 45371
F33657-83-C-0380 FFP, Dec 83
Award: Dec 30, 1983
Definitized: Dec 30, 1983
1st Report

Current Contract Price / Estimated Price at Completion

Target	Ceiling	Qty	Contractor	Program Manager
$2.7	N/A	50	$2.7	$2.7

c. MILCON -- N/A

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

a. Program Status —

(1) Percent Program Completed: 66.7% (4/6)

(2) Percent Program Cost Appropriated: 75.3% ($5975.8/$7936.1)

b. Appropriation Summary —

(Then-Year Dollars in Millions)

Appropriation	Current Prior Yrs (FY83-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-92)	Beyond FYDP	Total
RDT&E	--	--	--	--	--
Procurement	5968.7	1953.8	--	--	7922.5
MILCON	7.1	--	6.5	--	13.6
Total	5975.8	1953.8	6.5	--	7936.1

16. c. Annual Summary —

Fiscal Year	Qty	FY 80 Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl Rate(%) 1/
Appropriation: Procurement								
1983	1	190.0	208.8	533.0	80.7	0.0	780.8	9.0
1984	4	179.7	530.6	847.3	240.3	69.8	1306.5	8.0
1985	8	75.2	865.8	1072.7	280.3	236.3	1722.8	4.1
1986	16	3.3	1176.9	1289.5	313.8	251.5	2158.6	4.1
1987	21	6.0	1317.7	1118.4	0.0	357.5	1953.8	4.1
Subtotal	50	454.2	4099.8	4860.9	915.1	915.1	7922.5	
Appropriation: MILCON								
1986				4.7			7.1	3.2
1987				--			--	4.1
1988				4.0			6.5	3.9
Subtotal				8.7			13.6	
Total	50	454.2	4099.8	4869.6	915.1	915.1	7936.1	

1/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures —

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated*	Expended*
Appropriation: Procurement			
1983	780.8	780.2	689.5
1984	1306.5	1292.6	1156.3
1985	1722.8	1390.6	33.8
1986	2158.6	1870.1	—
1987	1953.8	—	—
Total	7922.5	5333.5	1879.6
Appropriation: MILCON			
1986	7.1	—	—
1987	—	—	—
1988	6.5	—	—
Total	13.6	—	—

*Reflects program office records as of 31 December 1985 (with the exception of spares expenditures 30 September 1985).

17. Production Rate Data:

a. Annual Production Rates -- (Note: The annual production rates shown differ from the annual funded quantities because the funded delivery period is 1.7 mos for FY83, 6.7 mos for FY84, 9.9 mos for FY85, 12.0 mos for FY86 and 12.6 mos for FY87.)

Production Rates (Quantity/Year)			
Fiscal Year	Production Estimate	Current Estimate	Maximum Economic
1983	7.2	7.2	7.2
1984	7.2	7.2	7.2
1985	10.7	9.7	9.7
1986	17.2	16.0	16.0
1987	20.0	20.0	20.0

17. Production Rate Data (Cont'd):

b. Cost Variance — Dollars in Milllions

Item	Production Estimate	Change (Pde - CE)	Current Estimate	Change (Max - CE)	Maximum Economic
Prog Acq Cost (BY)	5845.7	-976.1	4869.6		4869.6
Prog Acq Cost (TY)	9667.3	-1731.2	7936.1		7936.1
PAUC (BY)	116.914	-19.522	97.392	--	97.392
PAUC (TY)	193.346	-34.624	158.722	--	158.722

c. Schedule Variance --

	Production Estimate	Variance (CE - Pde)	Current Estimate	Variance (CE - Max)	Maximum Economic
Start Date (Mo/Yr)	12/85	--	12/85	--	12/85
Duration (in months)	39	--	39	--	39
End Date (Mo/Yr)	2/89	--	2/89	--	2/89

d. Deliveries (Plan/Actual) --

	To Date
Procurement	1/1

18. Operating and Support Costs: N/A

AF-13 (6) DMSP

SAR-85-072

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: DMSP BLOCK 5D-2 IMPROVED/5D-3

AS OF DATE: December 31, 1985

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1. Designation and Nomenclature (Popular Name): DMSP Block 5D-2 Improved/ 5D-3/Defense Meteorological Satellite Program (DMSP)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

DMSP Program Office
Space Division
P.O. Box 92960
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Assigned: February 25, 1985
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4. Program Elements/Procurement Line Items:

RDT&E: PE 35160F (No shared funding)

PROCUREMENT: APPN 3020 PE 35160F ICN MS0554
APPN 3080 PE 35160F ICN 833340

MILCON: PE 35160F (No shared funding)

5. Related Programs: None.

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE
SAF/PAS
86-171 - T

OASD(PA) DFOISR 86 -T- 10569

6. Mission and Description: The mission of DMSP is to provide, through all levels of conflict, consistent with the survivability of the supported forces, 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 is supplied to Air Force Global Weather Central, the Navy Fleet Numerical Oceanography Center, and to deployed tactical receiving terminals worldwide. The DMSP system is the only DoD meteorological satellite system. It consists of 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.

7. Program Highlights:

a. Significant Historical Developments -- The Defense Meteorological Satellite Program is a Joint-Service program in accordance with the Memorandum of Agreement on Joint Service Management and Operations, dated 15 December 1976. The program supports all military services. This is a continuing program. RDT&E funding will allow evolutionary development of spacecraft and sensors as necessary to support new requirements of the special strategic missions, the Joint-Service mission, and the Joint Chiefs of Staff. Continuation of efforts begun in FY 82 included development of the 5D-3 qualified primary sensor and production of the microwave imager. The satellite reliability program continued. During 1984 DMSP definitized the multiyear procurement contract for four 5D-3 Operational Linescan Systems (OLS) for 5D-2 Improved spacecraft 11-14; S11-12 procured in FY 83 and S13-14 procured in FY 85. Critical Design Review (CDR) on the 5D-3 OLS development sensor was held in May 84. Headquarters Air Force directed that an additional 5D-3 spacecraft (S-20) be procured in FY 90. The first Command System Test (CST) was performed in Sep 84. It successfully verified the ability of the ground system to command an encrypted satellite. Six Air Force Mark IV transportable tactical terminals were bought on a Firm Fixed Price contract in Sep 84. The preplanned product improvement (P3I) water vapor profiling capability for the temperature sounder was accelerated to a December 84 start. Released the Request for Proposal (RFP) to RCA Corporation/Astro-Electronics Division for the 5D-3 Spacecraft (S-15) Development. A proposal was received in Jun 85. The Automated Weather Distribution System (AWDS) Product Driver Subsystem (APDS) successfully completed Preliminary Design Review (PDR) in Mar 85 and CDR in Aug 85. Harris Corporation submitted their second proposal for the Fairchild Satellite Operation Center (FSOC) in May 85. A successful Quality Audit and Manufacturing Readiness Review Follow-up were conducted at RCA in Jul 85 prior to entering full-scale box level production on 5D-2 Improved Spacecraft S11-S14.

b. Significant Developments Since Last Report -- Since 30 Sep 85, the DMSP SPO has been performing fact-finding on RCA's proposal for the 5D-3 Spacecraft (S-15) development. Negotiations to begin Mar 86. Contract award is anticipated in May 86. Negotiations have completed with the Harris Corporation for the Fairchild Satellite Operation Center (FSOC) effort; contract award is anticipated in Mar 86. Operational testing is not completed; operational testing date has not yet been definitized. Although the baseline is funded for Titan II, it has not yet been authorized pending the results of DOD/NASA decisions per FY86 Appropriations Bill.

The DMSP will meet its directed operational force structure and all mission requirements through FY 91.

7. Program Highlights (Cont'd):

c. Changes Since "As Of" Date -- None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: None. DMSP does not have SDDMs, DCPs or SCPs.

9. Schedule:

a. Milestones--

	Production Estimate/ Approved Program	Current Estimate
Spacecraft (S11-14) Production Contract Awd	Sep 83/Sep 83	Sep 83
Primary Sensor (S11-14) Prod Contract Awd	Jan 84/Jan 84	Jan 84
S11 Delivery	Jul 87/Jul 87	Jul 87
IOC - Block 5D-2 Improved (F-11) 1/	TBD/TBD	TBD
IOC - Block 5D-3 (F-15) 1/	TBD/TBD	TBD
Spacecraft (S15) Design Contract Awd	Nov 85/Nov 85	May 86 (Ch-1
Primary Sensor (S15) Design Contract Awd	Sep 82/Sep 82	Sep 82
Fairchild Satellite Operations Center (FSOC) Operational (Ch-3)	Sep 87/Sep 88	Jan 89 (Ch-2
Thule Command Readout Station (CRS)		
(1) Operational	Sep 87/Sep 87	Sep 87
(2) Deactivate Loring CRS	Sep 88/Sep 88	Sep 88

1/ IOC will occur 30 days after launch (completion of on-orbit checkout). As DMSP launches on demand, no firm estimate is currently available.

b. Previous Change Explanations --

Previous entries for Thule CRS Operational (Oct 87) and Deactivate Loring CRS (Oct 88) were incorrect. Per PMD (20) and Program Manager's current estimate, corrected entries as Sep 87 and Sep 88, respectively. Fairchild (Back-Up) Satellite Operations Center operational (IOC) slipped from Sep 87 to Sep 88 due to delay in contract award.

c. Current Change Explanations --

(Ch-1) Slipped from Nov 85 to May 86 due to delay in contract award. Additional technical evaluation of proposal is required.
(Ch-2) Slipped from Sep 88 to Jan 89 due to delay in contract award. Second proposal required to address all SPACECMD requirements.
(Ch-3) Fairchild (Back-Up) Satellite Operations Center (FSOC) has now become the primary operations center with the operations center at Omaha as back-up; hence deletion of (Back-Up).

d. References --

Production Estimate:
PMD R-S 3015 (20), dated 31 May 1983, subject "DMSP"

Approved Program: PMD R-S 3015 (22), dated 18 Dec 1984, subject "DMSP"

10. Technical/Operational Characteristics:

a. Technical	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Altitude (Nautical miles)1/	450/450	450 3/	450
Inclination (Degrees)2/	98.7/98.7	98.7 3/	98.7
b. Operational			
Mean Mission Duration (Months):			
5D-2 Improved	33/33		33
5D-3	42/42		42
Early Orbit Checkout (Days):			
5D-2 Improved	30/30		30
5D-3	30-120/30-120		30
Primary Sensor:			
Global Resolution (Km)	2.78/2.78	2.78 3/	2.78
Theater Resolution (Km)	0.56/0.56	0.56 3/	0.56
Mark IV Transportable			
Tactical Terminals:			
Set Up (Hours)	8/8	4 4/	6
MTBF (Hours)	2000/2000	2000 5/	2000
MTBF (Power Generation) (Hours)	3000/3000	3000 5/	3000
Availability	0.995/0.995	0.995 5/	0.995

1/ ± 20 nautical miles
2/ ± .15°
3/ Anticipated (based on current on-orbit satellite performance)
4/ Best case
5/ Mean

c. Previous Change Explanations --

Previous entry for 5D-3 Mean Mission Duration was omitted. Previous entry for Early Orbit Checkout allowed up to 90 days in a transfer orbit for Space Shuttle launches. No longer required due to transition to Titan II ELV.

d. Current Change Explanations -- None. No change in current estimate or demonstrated performance.

e. References:

Production Estimate:
PMD R-S 3015 (20), dated 31 May 1983, subject "DMSP"

Approved Program: FY 87 President's Budget.

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost --	Production Estimate	Changes	Current Estimate
Development (RDT&E)	$ 224.5	$ +15.8	$ 240.3
Procurement	491.6	+98.1	589.7
Launch Vehicle	(26.0)	(+ 7.4)	(33.4)
Spacecraft	(201.3)	(+30.4)	(231.7)
Primary Sensor	(79.6)	(+21.6)	(101.2)
Mission Sensors	(57.1)	(+ 2.3)	(59.4)
Support	(48.9)	(+ 4.4)	(53.3)
Total Flyaway	(412.9)	(+66.1)	(479.0)
Ground System	(58.0)	(+15.5)	(73.5)
Field Level Support	(19.8)	(-19.8)	(0.0)*
Initial Spares	(0.9)	(+36.3)	(37.2)
Total Non-Flyaway	(78.7)	(+32.0)	(110.7)
Construction (MILCON)	2.6	-	2.6
Total FY75 Base-Year $	718.7	+113.9	832.6
Escalation	1160.3	+134.1	1294.4
Development (RDT&E)	(318.1)	(+ 5.1)	(323.2)
Procurement	(839.1)	(+129.0)	(968.1)
Construction (MILCON)	(3.1)	-	(3.1)
Total Then-Year $	$1879.0	$+248.0	$2127.0

* Current Estimate now included in Initial Spares Line.

b. Quantities --			
Development (RDT&E)	1	-	1
Procurement	8	+1	9
Total	9	+1	10
c. Unit Cost --			
Procurement:			
FY75 Base-Year $	$ 61.450	$+4.072	$ 65.522
Then-Year $	166.338	+6.751	173.089
Program:			
FY75 Base-Year $	79.856	+3.404	83.260
Then-Year $	$208.778	$+3.922	$212.700

11. Program Acquisition Cost (Cont'd):

d. Approved Design to Cost Goal -- None.

e. Foreign Military Sales -- None.

f. Nuclear Costs -- None.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition--			
(1) Cost	2127.0	2262.5	2127.0
(2) Quantity	10	10	10
(3) Unit Cost	212.700	226.250	212.700
b. Current Procurement--	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	55.5	67.6	25.7
Less CY Adv Proc	-	-	-
Plus PY Adv Proc	-	-	-
Net Total	55.5	67.6	25.7
(2) Quantity	-	-	-
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	542.6	1330.7	5.7	1879.0
Previous Changes:				
Economic	-12.3	+3.2	-	-9.1
Quantity	-	+190.2	-	+190.2
Schedule	-	-	-	-
Engineering	+7.4	-	-	+7.4
Estimating	-13.2	+117.3	-	+104.1
Other	-	-	-	-
Support	-3.4	+81.3	-	+77.9
Subtotal	-21.5	+392.0	-	+370.5
Current Changes:				
Economic	-15.0	-96.8	-	-111.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+32.8	-23.5	-	+9.3
Estimating	+33.6	-60.5	-	-26.9
Other	-	-	-	-
Support	-9.0	+15.9	-	+6.9
Subtotal	+42.4	-164.9	-	-122.5
Total Changes	+20.9	+227.1	-	+248.0
Current Estimate	563.5	1557.8	5.7	2127.0

(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	+3.3	-	-	+3.3
Estimating	-7.7	+36.4	-	+28.7
Other	-	-	-	-
Support	-1.6	+26.2	-	+24.6
Subtotal	-6.0	+123.8	-	+117.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+13.4	-8.2	-	+5.2
Estimating	+12.4	-23.2	-	-10.8
Other	-	-	-	-
Support	-4.0	+5.7	-	+1.7
Subtotal	+21.8	-25.7	-	-3.9
Total Changes	+15.8	+98.1	-	+113.9
Current Estimate	240.3	589.7	2.6	832.6

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations --

RDT&E
Economic: revised escalation indices
Engineering: develop satellite autonomy capability
Estimating: revised estimate due to late start of S-15 development; funding reallocated to complete spacecraft S8-10, which are not included in SAR; reestimate due to actuals experienced on 5D-2 Improved Design Improvement Studies; reduction in prior years to reflect actuals; transition to Titan II ELV as 5D-3 booster; offset impact of revised escalation indices in current and prior years
Support: design tactical terminal modifications; OSD directed reductions for FCRC technical support and flying hours

Procurement
Economic: revised escalation indices
Quantity: add one 5D-3 satellite (S-20) due to extension of 5D-3 program
Estimating: reduction in prior years to reflect actuals; funding reallocated to complete S8-10 spacecraft which are not included in SAR; extension of 5D-3 program; acceleration of water vapor profiling capability; offset impact of revised escalation indices in current and prior years; transition to Titan II ELV as 5D-3 booster; decrease in spacecraft deficiency correction contingency
Support: decrease in spares and equipment allocation; decrease for payback of funds for additional Mark IV terminal procured in FY 84; offset impact of revised escalation indices in current and prior years; replace outdated and unsupportable Control Readout Station (CRS) antenna and Satellite Operations Center (SOC) computers; decrease in Mark IV production

MILCON: None. No previous changes.

c. Current Change Explanations--

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation rates (Economic)	N/A	-15.0
De-scoped survivability of 5D-3 spacecraft (S-15) (Engineering)	-2.9	-6.6
Increased vacuum ultraviolet (SSVUV) sensor development task (Engineering)	+2.5	+6.0

13. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E (Cont'd)		
Increased validation requirement for microwave temperature sounder (SSM/T-2) per PMD (Engineering)	+1.7	+3.9
New sensor technology effort to satisfy wind measurement requirements (Engineering)	+12.1	+29.5
Offset impact of revised escalation rates in current and prior years (Estimating)	+0.4	+0.8
Reduction in prior years to reflect actuals (Estimating)	-0.1	-0.2
Decrease in 5D-3 (S-15) operational linescan system level of effort study tasking (Estimating)	-2.9	-3.2
Revised estimate based on late start of S-15 development (Estimating)	+5.3	+12.8
Definitized Titan II ELV contract requirement (Estimating)	-7.1	-16.7
Increase in Automated Weather Product Driver System application (Estimating)	+16.8	[redacted]
Deleted Shuttle-Launch Base requirement (Support)	-1.2	-2.9
Decreased requirements for Flight Vehicle Simulator Facility (Support)	-2.8	-6.1
(2) Procurement		
Revised economic escalation rates (Economic)	N/A	-96.8
Reduced survivability requirements for S16-20 spacecraft (Engineering)	-11.2	-31.8
Addition of classified mission sensor capability for S16-20 spacecraft (Engineering)	+3.0	+8.3

	(Dollars in Millions) Base-Year	Then-Year
(2) Procurement (Cont'd)		
Reduced requirements for merging of mission sensors for S16-20 spacecraft (Estimating)	-7.3	-19.3
Upgrade of production and test equipment model for primary sensor (OLS 13-20) (Estimating)	+9.7	+27.6
Offset impact of revised escalation rates in current and prior years (Estimating)	+3.6	+8.6
Reduction in prior years to reflect actuals (Estimating)	-3.7	-8.0
Revised estimate of S16-20 spacecraft effort based on better cost data in June 1985 (Estimating)	-20.4	-54.0
Revised estimate of primary sensors (OLS 16-20) effort based on better cost data in June 1985 (Estimating)	-2.1	-7.9
Reestimate of S16-20 mission sensor mix in June 1985 using better cost data (Estimating)	-3.0	-7.5
Revised estimate of spares and equipment allocation due to better analysis of future requirements (Support)	+4.3	+12.2
Increase for Mark IV Mission Sensor Processing in FY 91 (Support)	+1.4	+3.7

(3) MILCON No current changes.

d. References --

Production Estimate:
PMD R-S 3015 (20), dated 31 May 1983, subject "DMSP"

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

a. Initial SAR/Production Estimate to Current Estimate

PAUC (Initial SAR/Pd Estimate)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
208.778	-12.090	-1.858	--	+1.670	+7.720	--	+8.480	+3.922	212.700

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

a. RDT&E--

Spacecraft Design Improvements

RCA Corp., Princeton, NJ,
F04701-83-C-0030, CPFF,
Award: September 2, 1983
Definitized: September 2, 1983

Initial Contract Price		
Target	Ceiling	Qty
$10.0	N/A	N/A

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$15.1 (Ch-1)	N/A	N/A	$15.1 (Ch-1)	$15.1 (Ch-1)

Changes Since Previous Report

(Ch-1) Increase due to addition of Survivability Study.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -0.1	$ -0.7
Cumulative Variances To Date (12/1/85)	$ 0.0	$ -1.1
Net Change	$ +0.1	$ -0.4

Explanation of Change: Schedule variance due to delay in obtaining manpower dedicated to the design trade studies. Cost variance due to contractor reporting total actuals expended for Inertial Measurement Unit (IMU) Qualification/Refurbishment study instead of estimated actuals. There will be no overrun because particular study is done by FFP subcontractor. No impact to contract or program is anticipated, as indicated in the contractor and Program Manager's Estimate at Completion.

\+ = Favorable - = Unfavorable

Hardcopy Image Processing System

General Electric Co., Lanham, MD,
F04701-83-C-0124, FPIF,
Award: October 17, 1983
Definitized: October 17, 1983

Initial Contract Price		
Target	Ceiling	Qty
$12.0	$12.7	N/A

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$12.1	$12.8	N/A	$12.8 (Ch-1)	$12.8 (Ch-1)

Changes Since Previous Report

(Ch-1) Increase due to definitization of Film Transport Speed.

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

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -0.3	$ -1.1
Cumulative Variances To Date (12/31/85)	$ -0.7	$ -0.2
Net Change	$ -0.4	$ +0.9

Explanation of Change: Schedule variance due to film processor testing anomalies with Goodyear (major subcontractor) equipment, which delayed system integration and test. Cost variance due to extended development effort caused by delay in system definition and hardware design. Delay in Goodyear effort will cause a 28 week slip in the GE contract completion. Impact of slip is reflected in Program Manager's Estimated Price at Completion.

5D-3 Operational Linescan System

Westinghouse Corp., Baltimore, MD,
F04701-82-C-0148, FPIF,
Award: September 28, 1982
Definitized: September 28, 1982

Initial Contract Price		
Target	Ceiling	Qty
$23.2	$24.8	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$23.5	$25.2 (Ch-1)	1	$23.4 (Ch-1)	$23.5 (Ch-1)

Changes Since Previous Report

(Ch-1) Decrease due to cancellation of Shuttle Study.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -0.2	$ -0.1
Cumulative Variances To Date (12/31/85)	$ -0.7	$ -0.4
Net Change	$ -0.5	$ -0.3

Explanation of Change: Schedule variance due to late start of system test as a result of late parts. Negotiated a six month schedule extension due to prioritizing last 5D-2 OLS ahead of this first 5D-3 OLS. End item delivery will slip to 30 Apr 86, impact to spacecraft contractor will be determined at a later date. Cost variance due to replacing non-flight boards used as work-arounds with flight boards. Impact of work-arounds and schedule extension is reflected in Program Manager's Estimated Price at Completion.

Automated Weather Distribution System Product Driver Subsystem

Harris Corp, Melbourne, FL,
F04701-79-C-0055, FPIF,
Award: January 19, 1985
Definitized: January 19, 1985

Initial Contract Price		
Target	Ceiling	Qty
$11.3	$12.4	1

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$11.3	$12.4	1	$11.1	$11.5

Changes Since Previous Report

None. This is the first time this contract appears in the SAR.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 0.0	$ 0.0
Cumulative Variances To Date (12/27/85)	$ +0.1	$ -0.4
Net Change	$ +0.1	$ -0.4

Explanation of Change: Schedule variance due to less than anticipated use of software staff. Harris has rebaselined software related tasks as a result of a negotiated six month contract extension. Contractor believes the extension will resolve all anticipated software problems. Cost variance is contributed to lower than planned cost in Program Management, System Engineering, and Laboratory Operations. Contractor is predicting $.1M underrun as a result of rebaselining.

b. Procurement

5D-2 Improved Spacecraft
RCA Corp., Princeton, NJ,
F04701-83-C-0030, FPIF,
Award: September 2, 1983
Definitized: September 2, 1983

Initial Contract Price		
Target	Ceiling	Qty
$161.7	$171.9	4

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$161.9	$171.9	4	$166.9 (Ch-1)	$166.9 (Ch-1)

Changes Since Previous Report

(Ch-1) Increase due to use of Management Reserve for unplanned in-scope effort and implementing the government authorized rebaselining.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ +2.0	$ -4.4
Cumulative Variances To Date (12/1/85)	$ -0.8	$ -4.0
Net Change	$ -2.8	$ +0.4

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

Explanation of Change: Schedule variance due to late material deliveries. Work arounds in process and no impact to the contract or program is anticipated. Cost variance driven by intensified Cost/Schedule Control System Criteria (C/SCSC) implementation activity, and due to delay in level of effort tasks as a result of late production start. The high cost of C/SCSC training resulted in labor, purchased services and computer expenditures. No contract or program impact is anticipated.

5D-3 Operational Linescan System

Westinghouse Corp., Baltimore, MD,
F04701-83-C-0048, FPIF,
Award: January 19, 1984
Definitized: December 2, 1983

Initial Contract Price		
Target	Ceiling	Qty
$51.5	$54.8	4

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$52.0	$55.3 (Ch-1)	4	$51.7 (Ch-2)	$51.7

Changes Since Previous Report

(Ch-1) Increase due to addition of Solenoid Mechanism modification.
(Ch-2) Increase due to definitization of Solenoid Mechanism modification.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -0.1	$ -0.4
Cumulative Variances To Date (12/31/85)	$ -0.1	$ +0.7
Net Change	$ -0-	$ +1.1

Explanation of Change: Schedule variance due to early delivery of subcontract items. Cumulative cost variance due to design and processing problems with the Specialty Devices. Rework and test are in process. No contract or program impact is anticipated.

Microwave Temperature Sounder

Aerojet ElectroSystems Co., Azusa, CA,
F04701-83-C-0038, FPIF,
Award: May 24, 1983
Definitized: May 24, 1983

Initial Contract Price		
Target	Ceiling	Qty
$9.5	$10.1	4

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$22.0 (Ch-1)	$23.3 (Ch-2)	4	$21.9	$21.9

Changes Since Previous Report

(Ch-1) Increase due to definitization of connector relocation modification.
(Ch-2) Decrease due to definitization of water vapor profiling capability modification.

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

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ +0.4	$ -1.0
Cumulative Variances To Date (1/3/86)	$ +0.2	$ -1.7
Net Change	$ -0.2	$ -0.7

Explanation of Change: Schedule variance due to Gunn Diode Oscillator (GDO) failure during receiver subsystem testing. Reprocurement of GDO has delayed B-1 and B-2 delivery. This delay does not impact the spacecraft contractor. Cost variances due to lower expenditures in Level of Effort tasks as a result of the delay in B-1 system integration and test. Program Manager's Estimate reflects the impact of the B-1 and B-2 schedule extension and reprocurement of the GDO.

c. MILCON - No military construction contracts.

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

a. Program Status --

(1) Percent Program Completed: 29.4% (5 yrs/17 yrs)

(2) Percent Program Cost Appropriated: 28.0% (594.5/$2127.0)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY82-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-98)	Total
RDT&E	144.3	63.6	216.4	139.2	563.5
Procurement - Missile	378.9	19.4	765.6	112.5	1276.4
Procurement - Other	65.6	6.3	92.5	117.0	281.4
MILCON	5.7	-	-	-	5.7
Total	594.5	89.3	1074.5	368.7	2127.0

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

c. Annual Summary -- 1/

Fiscal Year	Qty	FY 75 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 2/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1982				8.4			15.5	9.2
1983				8.7			16.8	4.9
1984				9.8			19.6	3.8
1985				18.4			38.0	3.6
1986				25.4			54.4	3.2
1987				28.6			63.6	4.1
1988				24.4			56.2	3.9
1989				23.8			56.5	3.4
1990				22.3			54.5	2.9
1991				19.7			49.2	2.3
1992				7.5			19.2	2.3
1993				7.3			19.1	2.3
1994				7.4			19.9	2.3
1995				7.0			19.2	2.3
1996				7.1			19.9	2.3
1997				7.2			20.6	2.3
1998				7.3			21.3	2.3
Subtotal	1		*	240.3			563.5	
Appropriation: Procurement - Missile								
1982		0.0	7.0	7.0			14.3	9.6
1983	2	3.8	65.7	69.5	29.8		152.0	9.0
1984		3.6	10.5	14.1			32.2	8.0
1985	2	3.9	54.9	58.8		29.8	139.4	4.1
1986		3.9	12.7	16.6			41.0	4.1
1987		3.5	4.0	7.5			19.4	4.1
1988		2.5	30.8	33.3			89.6	3.9
1989	2	2.5	104.9	107.4			298.9	3.4
1990	3	2.5	117.1	119.6			343.2	2.9
1991		2.4	9.1	11.5			33.9	2.3
1992		2.4	2.2	4.6			14.0	2.3
1993		2.4	2.3	4.7			14.6	2.3
1994		2.4	2.3	4.7			15.2	2.3
1995		2.4	2.4	4.8			16.1	2.3
1996		2.5	2 4	4.9			16.8	2.3
1997		2.5	2.5	5.0			17.5	2.3
1998		2.5	2.5	5.0			18.3	2.3
Subtotal	9	45.7	433.3	479.0	29.8	29.8	1276.4	

* Not Available

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

c. Annual Summary (Cont'd) -- 1/

Fiscal Year	Qty	FY 75 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 2/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement - Other								
1983				3.7			7.6	4.9
1984				6.3			13.2	3.8
1985				13.9			30.3	3.6
1986				6.4			14.5	3.2
1987				2.7			6.3	4.1
1988				4.8			11.6	3.9
1989				11.0			27.2	3.4
1990				14.0			35.6	2.9
1991				7.0			18.1	2.3
1992				5.1			13.6	2.3
1993				5.3			14.5	2.3
1994				5.7			15.9	2.3
1995				5.9			16.8	2.3
1996				6.1			17.7	2.3
1997				6.3			18.6	2.3
1998				6.5			19.9	2.3
Subtotal				110.7			281.4	
Appropriation: MILCON								
1985				2.6			5.7	3.6
Subtotal				2.6			5.7	
Total	10			832.6	29.8	29.8	2127.0	

1/ Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3.

2/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated 2/	Expended 2/
Appropriation: RDT&E			
1982	15.5	15.5	15.2
1983	16.8	16.8	15.3
1984	19.6	19.6	18.0
1985	38.0	36.7	19.0
1986	54.4	9.1	1.0
To Complete	419.2	N/A	N/A
Total	563.5	97.7	68.5
Appropriation: Procurement - Missile			
1982	14.3	14.2	9.0
1983	152.0	150.6	49.3
1984	32.2	28.0	9.3
1985	139.4	101.2	18.5
1986	41.0	4.3	1.7
To Complete	897.5	N/A	N/A
Total	1276.4	298.3	87.8
Appropriation: Procurement - Other			
1983	7.6	7.5	5.8
1984	13.2*	12.3**	7.9**
1985	30.3*	4.1**	4.1**
1986	14.5*	- **	- **
To Complete	215.8*	N/A	N/A
Total	281.4	23.9	17.8

* Includes SM-ALC/AFLC Programmed and Contractual funds.
** Only DMSP/AFSC obligations/expenditures are shown.

Appropriation: Construction			
1985	5.7	-	-
Total	5.7	-	-

2/ Obligation and Expenditure information reflects program office records as of 31 December 1985.

17. Production Rate Data:

a. Annual Production Rates -- 1/

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum 2/
1983	N/A	0.0	0.0	0.0
1984	N/A	0.5	0.5	0.5
1985	N/A	1.0	0.8	0.8
1986	N/A	1.2	1.0	1.0
1987	N/A	1.1	1.1	1.1
1988	N/A	0.8	0.8	0.8
1989	N/A	0.5	0.7	0.7
1990	N/A	0.6	0.9	0.9
1991	N/A	1.0	1.0	1.0
1992	N/A	1.0	1.0	1.0
1993	N/A	0.9	0.9	0.9
1994	N/A	0.4	0.6	0.6
1995	N/A	0.0	0.3	0.3
1996			0.1	0.1
1997				
1998				

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum 2/
Prog Acq Cost (BY$)	718.7	+ 113.9	832.6	-	832.6
(TY$)	1879.0	+ 248.0	2127.0	-	2127.0
PAUC (BY$)	79.856	+ 3.404	83.260	-	83.260
(TY$)	208.778	+ 3.922	212.700	-	212.700

c. Schedule Variance --

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum 2/
Start Date (Mo/Yr)	9/83	-	9/83	-	9/83
Duration (in Months)	138	+17	155	-	155
End Date (Mo/Yr)	2/95	-	7/96	-	7/96

17. Production Rate Data (Cont'd):

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	
5D-2 Improved	0/0
5D-3	0/0
Procurement	
5D-2 Improved	0/0
5D-3	0/0

1/ Annual production rates differ from the annual funded quantities because delivery dates vary, and always at a delivery period greater than twelve months.

2/ Maximum assumes:

a) NOAA-TIROS spacecraft production will absorb production slack in DMSP years less than 1.1 per year.

b) To increase DMSP production to 1.1 per year would result in spacecraft having to be kept in storage.

18. Operating and Support Costs: N/A.

AF-14 DSP (5)

~~SECRET~~

SAR-85-075

SELECTED ACQUISITION REPORT (RCS: DD-COMP(O&A)823) (U)
PROGRAM: Defense Support Program (DSP) (U)

AS OF DATE: December 31, 1985

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AS AMENDED
MAR 18 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE
SAF/PAS
86-169 - T

(b)(1)

2.(U) DOD Component: U.S. Air Force

3.(U) Responsible Office and Telephone Number:

Deputy for Defense Support Systems
Space Division
Los Angeles AFS, CA 90009

PM: Col Wayne J. Craft
Assigned: April 1, 1985
AUTOVON 833-1150
Commercial: (213) 643-1150

4.(U) Program Element:
RDT&E: PE 12431F (No shared funding)
PROCUREMENT: APPN 3020 ICN MS0647
APPN 3080 ICN 833100
MILCON: PE 12431F (No shared funding)

~~CLASSIFIED BY: DSP SCG Aug 83~~
~~DECLASSIFY ON: OADR~~

5.(U) Related Programs: Jam Resistant Secure Communications Terminals (JRSCT); AFSATCOM Modulation Compatability (AMC) Terminal.

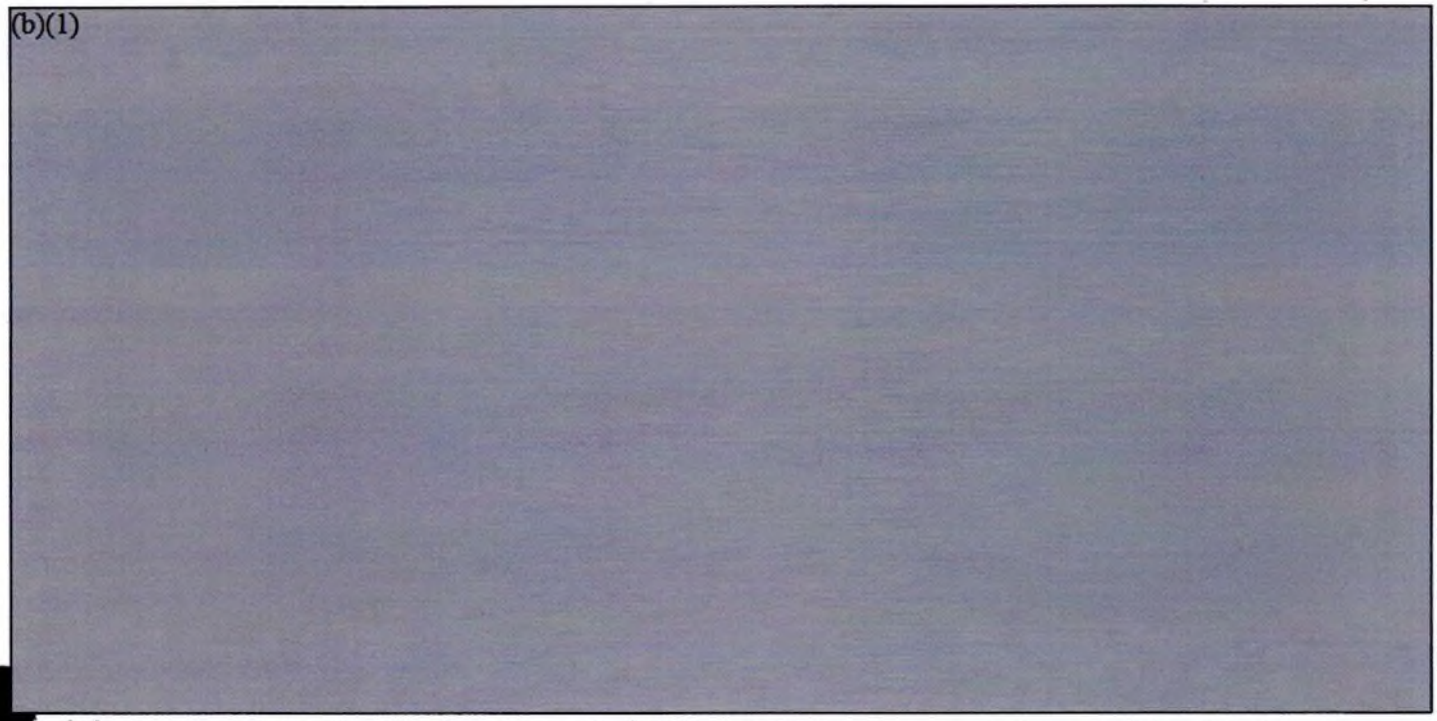
(b)(1)

~~SECRET~~

7. (U) Program Highlights:

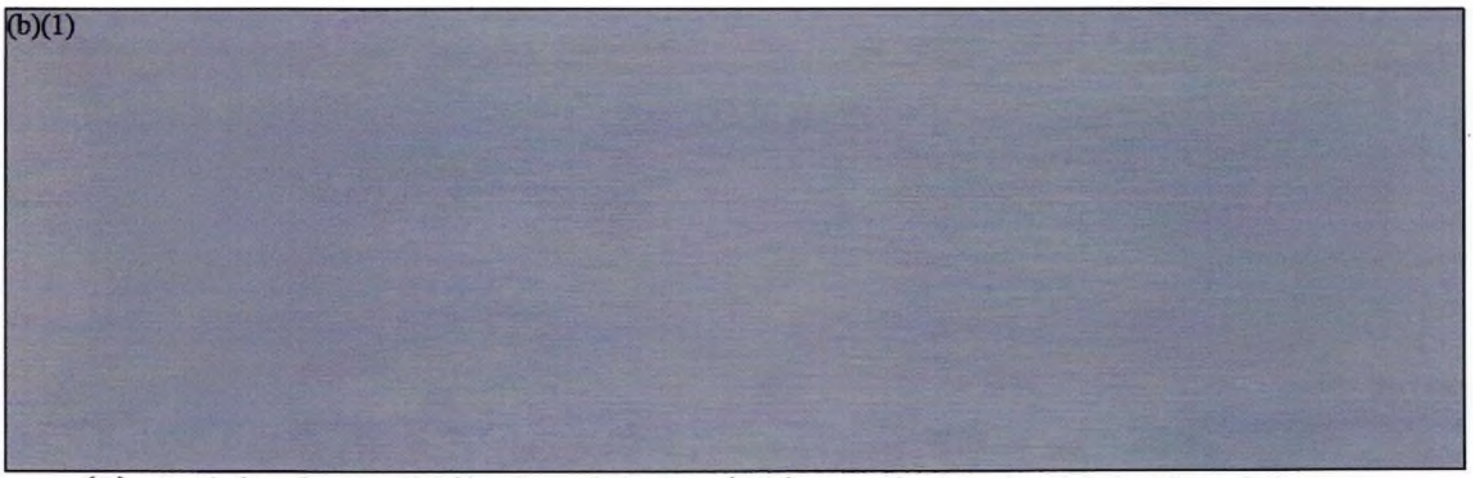
a. (U) Significant Historical Developments --

(b)(1)



(U) Sensor Evolutionary Development (SED) satellite improvements are intended to prolong the useful life of each satellite, make the satellite more survivable in hostile environments, increase the viewing area of each satellite, and increase the accuracy of the data provided.

(b)(1)



(U) Activity in the Mobile Ground System (MGS) area included a Mobile Ground Terminal (MGT) operational demonstration, an MGT C-5A loading demonstration showing worldwide mobility, and delivery of the first two MGTs. In addition, the Army delivered the first Jam Resistant Secure Communications Terminal (JRSCT).

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

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

(U) In the ground segment, significant developments since the last report have included the delivery of two Mobile Ground Terminals (MGTs) and four accompanying Mobile Communications Terminals (MCTs). Two significant contracts, which will provide the ground segment with the modifications necessary to make it compatible with the technological advances in the second generation of satellites (Satellites 14-17), were also awarded since the last report. The contracts awarded are the AFSATCOM Modulation Compatability (AMC) Terminal and the MGT-14 contracts.

(b)(1)

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

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: -- There are currently no DCP (dated September 1, 1972, #58) threshold breaches.

9. (U) Schedule:

a.(U) Milestones --	Development Estimate/ Approved Program	Current Estimate
(b)(1)		
(U) Delivery of Dual Satellite Software	Feb 74/Feb 74	Feb 74
(U) Delivery of Simplified Processing Station (SPS)	Dec 78/Dec 78	Dec 78
(U) Satellite 12 Delivery	Jun 81/Jun 81	Jun 81
(U) Satellite 5R Delivery	Sep 82/Sep 82	Aug 85 (Ch-1)
(U) Completion of Computer Replacement Large Processing Station (LPS) Upgrade	Jun 83/Jun 83	Jun 83
(U) Satellite 14-17 Design and Development (start)		
(U) Sensor	Jul 81/Jul 81	Jul 81
(U) Spacecraft	Nov 81/Nov 81	Nov 81
(U) Long Lead Material Support (Sat 14-17)	Nov 81/Nov 81	Nov 81
(U) Production Contract Award (Sat 14-17)		
(U) Sensor	Jan 83/Jan 83	Jan 83
(U) Spacecraft	Oct 83/Oct 83	Oct 83
(U) Production Contract Award Mobile Ground Terminal	Apr 81/Apr 81	Apr 81
(b)(1)		
(U) Satellites 14-17 Delivery Start	Jan 87/Jan 87	Jul 87 (Ch-2)
(U) Satellite 18-19 Long Lead Contract Award	Jun 85/Oct 86	Oct 86
(U) Satellite 18-19 Production Contract Award	Jun 86/Oct 86	Oct 86
(U) Satellite 18-19 Delivery Start	May 90/Aug 91	Aug 91
(U) Satellite 18-22 MYP Contract Award (Ch-3)	Dec 86/Dec 86	Dec 86 (Ch-3)

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

b. (U) Previous Change Explanations -- A three-month delay in delivery of Satellites 14-17 and a four-month delay in the Long Lead contract award for Satellites 18-22 was due to schedule impacts resulting from launching Satellite 13 and accelerating the launch of Satellites 12 and 6R. The delay of four months in the Production contract for Satellites 18-19 was due to a decision made by the program office and approved by Air Staff to offset cost growth in Laser Crosslink Production. The 15-month delay in Satellites 18-19 Delivery Start is due to the change in the ready-to-ship date based on FY87 Long Lead Procurement authorization and FY88 production authorization as a result of the delay in Satellites 18-19 Production Contract award.

c. (U) Current Change Explanations --

(Ch-1) This delay, from Jul 85 to Aug 85, was due to the deceleration of Satellite 5R.

(Ch-2) This delay, from Apr 87 to Jul 87, is due to Satellite 5R impacts on planned launch delay resulting from problems with the booster.

(Ch-3) Multi-Year Procurement strategy approved by HQ Air Force for Satellites 18-22, replacing the Satellite 18-19 annual buy profile. Those annual buy profile milestones will no longer appear in future SAR reporting.

d. (U) References --

Development Estimate:

PMD No. R-S 4047 (24), October 18, 1983;
FY85 RDT&E Descriptive Summaries, January 1984.

Approved Program: Same as Development Estimate.

10. (U) Technical/Operational Characteristics:

a.(U) Technical --	Dev Estimate/ Appr Program	Demonstrated Performance[4]	Current Estimate
(U) Current Operational System			
(b)(1)			
(U) Satellite 14-17 Survivability Enhancements			
(b)(1)			

10.(U) Technical/Operational Characteristics (Cont'd):

b.(U) Operational --	Dev Estimate/ Appr Program	Demonstrated Performance[4]	Current Estimate
(U) Current Operational System			
(U) Probability of Detection			
(b)(1) [redacted]			
(U) Satellite 14-17 Survivability Enhancements			
(U) Two-Color Focal Plane, Probability of Detection Individual Events			
(b)(1) [redacted]			

1 (U) SED - Sensor Evolutionary Development

(b)(1) [redacted]

4 (U) Mean values.

c. (U) Previous Change Explanations -- None. No previous changes.

d. (U) Current Change Explanations -- None. No changes in current estimate or demonstrated performance.

e. (U) References --

Development Estimate:

PMD NO. R-S 4047 (24), 18 October 1983;
FY85 RDT&E Descriptive Summaries, January 1984

Approved Program: FY87 President's Budget

11.(U) Program Acquisition Cost: (Current Estimate in Millions of Dollars) 1/

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	$1304.3	$+185.4	$1489.7
Procurement	3094.6	+456.7	3551.3
Total Flyaway	(2364.4)	(+297.6)	(2662.0)
Other System Costs	(730.2)	(+159.1)	(889.3)
Construction (MILCON)	25.7 2/	-0.3	25.4
Total FY 78 Base Year $	4424.6	+641.8	5066.4
Escalation	1123.0 2/	651.8	1774.8
Development (RDT&E)	(-30.4)	(+156.5)	(+126.1)
Procurement	(+1151.6)	(+495.0)	(+1646.6)
Construction (MILCON)	(+1.8) 2/	(+0.3)	(+2.1)
Total Then-Year $	$5547.6	$+1293.6	$6841.2
b. Quantities --			
Development (RDT&E)	4	-	4
Procurement	15	+3	18
Total	19	+3	22
c. Unit Cost --			
Procurement:			
FY 78 Base-Year $	$206.307	$-9.013	$197.294
Then-Year $	283.080	+5.692	288.772
Program:			
FY 78 Base-Year $	232.874	-2.583	230.291
Then-Year $	$291.979	$+18.985	$310.964

d. Approved Design to Cost Goal -- None

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

1/ Reflects change in OSD policy concerning treatment of the prior to the program base-year dollars in the December 31, 1984 SAR.
2/ Correction for error noted in December 31, 1984 SAR.

12.(U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition --			
(1) Cost	6841.2	6268.3	6841.2
(2) Quantity	22	20	22
(3) Unit Cost	310.964	313.415	310.964
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	261.8	269.0	499.8
Less CY Adv Proc	-	-	250.0
Plus PY Adv Proc	-	-	-
Net Total	261.8	269.0	249.8
(2) Quantity	-	-	-
(3) Unit Cost	N/A	N/A	N/A

13. (U) Cost Variance Analysis:

a. 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	-4.5	+25.3	-	+20.8
Quantity	-	+437.8	-	+437.8
Schedule	-	+40.5	-	+40.5
Engineering	-	-	-	-
Estimating	+74.7	-30.3	-	+44.4
Other	-	-	-	-
Support	+45.3	+131.9	-	+177.2
Subtotal	+115.5	+605.2	-	+720.7
Current Changes:				
Economic	-4.7	-118.9	-	-123.6
Quantity	-	+657.0	-	+657.0
Schedule	-	+11.3	-	+11.3
Engineering	-	-	-	-
Estimating	-1.2	-383.5	-	-384.7
Other	-	-	-	-
Support	+232.3	+180.6	-	+412.9
Subtotal	+226.4	+346.5	-	+572.9
Total Changes	+341.9	+951.7	-	+1293.6
Current Estimate	1615.8	5197.9	27.5	6841.2

(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	-	+177.7	-	+177.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+41.3	-2.7	-	+38.6
Other	-	-	-	-
Support	+22.5	+68.4	-	+90.9
Subtotal	+63.8	+243.4	-	+307.2
Current Changes:				
Quantity	-	+323.0	-	+323.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.7	-200.4	-0.3	-201.4
Other	-		-	
Support	+122.3	+90.7	-	+213.0
Subtotal	+121.6	+213.3	-0.3	+334.6
Total Changes	+185.4	+456.7	-0.3	+641.8
Current Estimate	1489.7	3551.3	25.4	5066.4

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

b. Previous Change Explanations --

RDT&E
Economic: revised economic escalation indices.
Estimating: revised prior year escalation indices and appropriated costs, revised prior-year approved costs, estimating changes associated with the acquisition of software upgrades to support Satellites 14-17 and on, change in acquisition strategy for Laser Crosslink subsystem.

Support: integration and other program level efforts to support the acquisition of an added satellite in FY 90.

Procurement
Economic: revised economic escalation indices.
Quantity: acquisition of an additional satellite in FY 90.
Schedule: one year delay of start of procurement for Satellites 18 and 19.
Estimating: new satellite procurement strategy (two in FY 88 versus one each in years FY 87 and FY 88); revised prior year approved cost, escalation indices, and appropriated costs.

Support: inclusion of previously deleted logistics items to support ground systems, support of additional satellite in FY 90.

MILCON None.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-4.7
Revised prior year inflation indices. (Estimating)	+0.8	+1.4
Adjustment of prior year costs to actuals. (Estimating)	-1.5	-2.6
Changes associated with the development of hardware and software upgrades to ground stations to support Sat 14. (Support)	+91.5	+170.3
Integration and other Program Level efforts to support the acquisition of an added satellite in FY91. (Support)	+30.8	+62.0

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

c. Current Change Explanations

	(Dollars in Millions) Base-Year	Then-Year
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-118.9
Revised prior year inflation indices. (Estimating)	+12.1	+21.6
Adjustment of prior year costs to actuals. (Estimating)	-4.4	-8.1
Acquisition of 2 additional satellites, one in FY89 and one in FY91. (Quantity)	+323.0	+657.0
One year delay (FY88 to FY89) in procurement of Satellite 19. (Schedule)	--	+11.3
Estimating changes associated with a new acquisition strategy (multi-year procurement) for 5 satellites. (Estimating)	-162.5	-304.2
Re-estimate of FY90 and FY91 costs based on better information. (Estimating)	-39.6	-81.4
Adjustments to refine the mix of previous support and estimating category changes primarily related to the impact of escalation on current and prior years.	0.0	0.0
Estimating category adjustment. (Estimating)	(-6.0)	(-11.4)
Support category adjustment. (Support)	(+6.0)	(+11.4)
Estimating changes associated with ground station hardware acquisition. (Support)	+22.3	+42.3
Support of an additional satellite in FY91. (Support)	+11.7	+24.2
Add Satellite Readout Station Upgrade Project. (Support)	+50.7	+102.7
(3) MILCON		
Correcting entry - adjustment to prior year inflation rate not addressed in Dec 84 SAR. (Estimating)	-0.3	--

d. References:

PMD No. R-S 4047 (24), October 18, 1983, subject: Defense Support Program PMP, December 15, 1982, subject: Defense Support Program.

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

Initial SAR/Development Estimate (DE) to Current Estimate (CE)

PAUC (Initial SAR /Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
291.979	-4.673	+9.948	+2.355	-	-14.950	-	+26.305	+18.985	310.964

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

a. RDT&E

Satellite RDT&E
TRW Electronics and Defense,
Redondo Beach, CA,
F04701-81-C-0014, CPIF,
Award: October 30, 1981 (Ch-1)
Definitized: March 12, 1982

Initial Contract Price

Target	Ceiling	Qty
$119.6 (Ch-1)	N/A	0

Current Contract Price

Target	Ceiling	Qty
$169.5 (Ch-2)	N/A	0

Estimated Price At Completion

Contractor	Program Manager
$186.3 (Ch-2)	$186.3 (Ch-2)

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-18.7	$-0.9
Cumulative Variances To Date (11/29/85)	-18.9	-0.6
Net Change	$-0.2	$+0.3

Explanation of Change: The Satellite RDT&E contract schedule variance is unfavorable due to delayed submittal of documentation. The cost variance remains unfavorable with a negative trend due to technical difficulties experienced on Laser Crosslink and Mission Data Message (MDM) subsystems. The program manager's assessment is that the contract will complete on schedule, and at the estimated target price. Because the contract is over 97% complete, this contract will no longer appear in future Selected Acquisition Reports.

(Ch-1) - Corrects error in previously submitted SAR.
(Ch-2) - Increase due to Functional Configuration Audit/Physical Configuration Audit (FCA/PCA) tasks added to the contract.

b. Procurement

Mobile Ground Terminal
IBM Federal Systems Division,
Westlake Village, CA,
F04701-81-C-0022, FPIF,
Award: April 13, 1981
Definitized: October 6, 1981

Initial Contract Price

Target	Ceiling	Qty
$62.0	$66.9	1

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$243.1 (Ch-3)	$262.9 (Ch-3)	6	$245.5 (Ch-3)	$246.0 (Ch-3)

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+2.3	$-3.8
Cumulative Variances To Date (11/15/85)	+0.6	-3.2
Net Change	$-1.7	$+0.6

Explanation of Change: The Mobile Ground Terminal contract cost variance is favorable due primarily to cost-effective development of the Data Processing Subsystem (DPSS) and less operation and maintenance support at the site than originally anticipated. Late delivery of some Government Furnished Equipment and problems encountered in the Phased Array Subsystem (PASS) have impacted the schedule, but due to work-arounds underway, no delay in the completion of the contract is expected. The program manager's assessment is that the contract will complete on time, at or below target price.

(Ch-3) - Increase due to AFSATCOM Modulation Compatability (AMC) Terminal and MGT-14 efforts added to the contract.

Sensor 14-17 Production
Aerojet ElectroSystems Co., Azusa, CA,
F04701-81-C-0105, FPIF/AF,
Award: October 1, 1981
Definitized: April 1, 1982

Initial Contract Price		
Target	Ceiling	Qty
$104.7 (Ch-4)	$113.4 (Ch-4)	4

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$294.0 (Ch-5)	$318.8 (Ch-5)	4	$294.0 (Ch-5)	$294.0 (Ch-5)

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+2.8	$-2.4
Cumulative Variances To Date (12/31/85)	+3.3	-2.7
Net Change	$+0.5	$-0.3

Explanation of Change: The improvement in the Sensor 14-17 Production contract cost variance is due chiefly to the accomplishment of delayed work. The schedule variance is unfavorable due to added work but, the recent trend is favorable. The program manager's assessment is that the contract will complete on time at target price.

(Ch-4) - Corrects error in previously submitted SAR.

(Ch-5) - Increase due to modifications to the Infrared Processing Unit (IRPU) added to the contract.

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

Large Processing Station Upgrade
Aerojet ElectroSystem Co., Azusa, CA,
F04701-79-C-0158, FFP,
Award: January 2, 1980
Definitized: June 16, 1980

Initial Contract Price		
Target	Ceiling	Qty
$9.7	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$79.1	N/A	0	$79.1	$79.1

This is a FFP contract. No CPR/CSSR required. Contract is 98% complete; this contract will no longer appear in future SAR reports.

Satellite 14-17 Production and Long-Lead
TRW Electronics and Defense,
Redondo Beach, CA,
F04701-82-C-0035, FFP/FPIF/CPFF,
Award: March 11, 1982 (Ch-6)
Definitized: December 15, 1982

Initial Contract Price		
Target	Ceiling	Qty
$47.9	N/A	4

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$620.6 (Ch-7)	$674.6 (Ch-7)	4	$621.5 (Ch-7)	$625.0 (Ch-7)

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+11.3	$-13.3
Cumulative Variances To Date (11/29/85)	$-5.2	$-13.3
Net Change	$-16.5	$0.0

Explanation of Change: The contract cost variance has worsened due to incorporation of a Productivity Reductions Proposal, thereby removing the distortion in the contract cost baseline. The negative contract schedule variance has remained unchanged due to late receipt of critical parts and acceleration of the production schedule to meet accelerated satellite launch dates. The program manager's assessment is that the contract will complete on time with a slight cost overrun at completion, but no impact to the program is expected.

(Ch-6) - Corrects error in previously submitted SAR.

(Ch-7) - Increase due to Laser Crosslink Subsystems effort added to the contract.

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

Satellite 4-13 Production & 5R-6R Upgrade
TRW Electronics and Defense,
Redondo Beach, CA,
F04701-71-C-0131, FPIF/FPP,
Award: November 20, 1970
Definitized: November 20, 1970

Initial Contract Price		
Target	Ceiling	Qty
$79.5	$93.8	4

Current Contract Price		
Target	Ceiling	Qty
$419.4 (Ch-8)	$442.5 (Ch-8)	4

Estimated Price At Completion	
Contractor	Program Manager
$421.1 (Ch-8)	$421.1 (Ch-8)

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-2.7	$-0.6
Cumulative Variances To Date (09/27/85)	$-2.8	$0.0
Net Change	$-0.1	$+0.6

Explanation of Change: Cost variance worsened due to impacts resulting from launch delays. A contingent liability has been established for the projected overrun at completion. This contract has been completed and will no longer appear in future SAR reports.

(Ch-8) - Increase due to Sats 12, 5R, and 6R impact to DSP-1 production program.

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

a. Program Status --
(1) Percent Program Completed: 80.0% (20 yrs/25 yrs)

(2) Percent Program Cost Appropriated: 60.4% (4131.0/6841.2)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY67-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP N/A	Total
RDT&E	1171.2	138.2	306.4	-	1615.8
Procurement - Missile	2168.5	358.5	1511.4	-	4038.4
Procurement - Other	763.8	141.3	254.4	-	1159.5
MILCON	27.5	-	-	-	27.5
TOTAL	4131.0	638.0	2072.2	-	6841.2

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

c. Annual Summary --

Fiscal Year	Qty	FY 78 Base-Year Dollars			Then-Year Dollars			Escl Rate[1] (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1967	-	-	-	57.1	-	-	30.8	3.1
1968	-	-	-	93.4	-	-	52.3	3.6
1969	-	-	-	162.4	-	-	95.3	4.2
1970	-	-	-	118.9	-	-	73.5	5.4
1971	-	-	-	130.7	-	-	84.4	5.3
1972	-	-	-	47.5	-	-	31.9	3.6
1973	-	-	-	46.7	-	-	32.3	3.6
1974	-	-	-	77.6	-	-	60.1	8.3
1975	-	-	-	40.7	-	-	34.4	10.8
1976	-	-	-	18.2	-	-	16.4	7.0
1977	-	-	-	30.4	-	-	29.4	7.5
1978	-	-	-	28.0	-	-	28.7	6.0
1979	-	-	-	27.2	-	-	30.6	8.4
1980	-	-	-	24.8	-	-	31.0	9.4
1981	-	-	-	63.2	-	-	87.6	11.9
1982	-	-	-	97.4	-	-	144.2	9.2
1983	-	-	-	76.9	-	-	119.2	4.9
1984	-	-	-	29.6	-	-	47.7	3.8
1985	-	-	-	38.3	-	-	63.9	3.6
1986	-	-	-	44.9	-	-	77.5	3.2
1987	-	-	-	77.0	-	-	138.2	4.1
1988	-	-	-	51.3	-	-	95.4	3.9
1989	-	-	-	36.9	-	-	70.7	3.4
1990	-	-	-	39.8	-	-	78.3	2.9
1991	-	-	-	30.8	-	-	62.0	2.3
Subtotal	4	-	-	1489.7	-	-	1615.8	-

1/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite indices.

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

c. Annual Summary --

Fiscal Year	Qty	FY 78 Base-Year Dollars			Then-Year Dollars			Escl Rate[1] (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Missile Procurement								
1969	-	-	31.4	31.4	-	-	17.8	3.5
1970	-	-	62.3	62.3	-	-	37.0	4.7
1971	3	-	165.3	165.3	-	-	102.8	5.7
1972	2	-	157.5	157.5	-	-	105.2	3.7
1973	3	-	231.4	231.4	-	-	167.1	4.7
1974	-	-	38.1	38.1	-	-	28.1	8.4
1975	1	-	91.7	91.7	-	-	80.8	16.3
1976	-	-	42.1	42.1	-	-	39.5	7.9
1977	-	-	27.9	27.9	-	-	28.0	7.5
1978	-	-	88.9	88.9	-	-	94.1	6.0
1979	-	-	100.0	100.0	-	-	123.4	8.7
1980	-	-	73.9	73.9	-	-	103.9	9.7
1981	-	-	33.5	33.5	-	-	51.8	11.9
1982	-	-	147.0	147.0	215.2	-	241.4	9.6
1983	2	-	233.7	233.7	-	107.6	408.5	9.0
1984	2	-	195.1	195.1	-	107.6	356.8	8.0
1985	-	-	30.7	30.7	-	-	58.2	4.1
1986	-	-	62.7	62.7	-	-	124.1	4.1
1987	-	-	173.5	173.5	250.0	-	358.5	4.1
1988	1	-	207.4	207.4	63.1	72.4	445.6	3.9
1989	2	-	216.2	216.2	36.4	144.7	480.6	3.4
1990	1	-	127.5	127.5	12.3	72.4	292.2	2.9
1991	1	-	124.2	124.2	-	72.3	293.0	
Subtotal	18	-	2662.0	2662.0	577.0	577.0	4038.4	-

1/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite indices.

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

c. Annual Summary --

Fiscal Year	Qty	FY 78 Base-Year Dollars			Then-Year Dollars			Escl Rate[1] (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Other Procurement								
1969	-	-	-	31.3	-	-	17.6	3.5
1970	-	-	-	144.5	-	-	85.4	4.7
1971	-	-	-	56.5	-	-	35.0	5.7
1972	-	-	-	65.2	-	-	42.0	3.7
1973	-	-	-	27.6	-	-	19.0	4.7
1974	-	-	-	2.2	-	-	1.7	8.4
1975	-	-	-	6.4	-	-	5.6	16.3
1976	-	-	-	13.7	-	-	12.8	7.9
1977	-	-	-	13.6	-	-	13.6	7.5
1978	-	-	-	0.3	-	-	0.3	6.0
1979	-	-	-	6.0	-	-	7.6	8.7
1980	-	-	-	19.0	-	-	26.6	9.7
1981	-	-	-	46.8	-	-	70.3	11.9
1982	-	-	-	64.3	-	-	100.1	9.2
1983	-	-	-	54.2	-	-	87.8	4.9
1984	-	-	-	21.5	-	-	36.1	3.8
1985	-	-	-	37.1	-	-	64.6	3.6
1986	-	-	-	76.3	-	-	137.7	3.2
1987	-	-	-	75.6	-	-	141.3	4.1
1988	-	-	-	35.0	-	-	67.4	3.9
1989	-	-	-	4.8	-	-	9.5	3.4
1990	-	-	-	75.7	-	-	153.3	2.9
1991	-	-	-	11.7	-	-	24.2	2.3
Subtotal	-	-	-	889.3	-	-	1159.5	-
Appropriation: Construction								
1975	-	-	-	19.6	-	-	17.3	8.5
1976	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-
1981	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-
1983	-	-	-	1.1	-	-	1.9	4.9
1984	-	-	-	-	-	-	-	-
1985	-	-	-	4.7	-	-	8.3	3.6
Subtotal	-	-	-	25.4	-	-	27.5	-
Total	22	-	-	5066.4	-	-	6841.2	-

1/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite indices.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated[1/]	Expended[1/]
Appropriation: RDT&E			
1967	30.8	30.8	30.8
1968	52.3	52.3	52.3
1969	95.3	95.3	95.3
1970	73.5	73.5	73.5
1971	84.4	84.4	84.4
1972	31.9	31.9	31.9
1973	32.3	32.3	32.3
1974	60.1	60.1	60.1
1975	34.4	34.4	34.4
1976	16.4	16.4	16.4
1977	29.4	29.4	29.4
1978	28.7	28.7	28.7
1979	30.6	30.6	30.6
1980	31.0	31.0	31.0
1981	87.6	87.6	87.6
1982	144.2	144.2	144.2
1983	119.2	118.5	113.2
1984	47.7	46.5	40.0
1985	63.9	62.1	18.2
1986	77.5	25.6	5.2
To Complete	444.6	-	-
Total	1615.8	1115.6	1039.5
Appropriation: Missile Procurement			
1969	17.8	17.8	17.8
1970	37.0	37.0	37.0
1971	102.8	102.8	102.8
1972	105.2	105.2	105.2
1973	167.1	167.1	167.1
1974	28.1	28.1	28.1
1975	80.8	80.8	80.8
1976	39.5	39.5	39.5
1977	28.0	28.0	28.0
1978	94.1	94.1	94.1
1979	123.4	123.4	123.4
1980	103.9	103.9	103.9
1981	51.8	51.8	51.8
1982	241.4	241.0	233.1
1983	408.5	397.7	355.8
1984	356.8	327.4	75.2
1985	58.2	31.5	25.9
1986	124.1	57.6	0.0
To Complete	1869.9	-	-
Total	4038.4	2034.7	1669.5

1/ Obligation and expenditure data reflects Program Office records as of 31 Dec 85.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated[1]/	Expended[1]/
Appropriation: Other Procurement			
1969	17.6	17.6	17.6
1970	85.4	85.4	85.4
1971	35.0	35.0	35.0
1972	42.0	42.0	42.0
1973	19.0	19.0	19.0
1974	1.7	1.7	1.7
1975	5.6	5.6	5.6
1976	12.8	12.8	12.8
1977	13.6	13.6	13.6
1978	0.3	0.3	0.3
1979	7.6	7.6	7.6
1980	26.6	26.6	26.6
1981	70.3	70.3	70.3
1982	100.1	96.3	80.0
1983	87.8	86.5	72.0
1984	36.1	27.3	14.5
1985	64.6	35.4	1.2
1986	137.7	0.0	0.0
To Complete	395.7	-	-
Total	1159.5	583.0	505.2
Appropriation: Construction			
1975	17.3	17.3	17.3
1976	-	-	-
1977	-	-	-
1978	-	-	-
1979	-	-	-
1980	-	-	-
1981	-	-	-
1982	-	-	-
1983	1.9	1.9	1.9
1984	-	-	-
1985	8.3	8.3	-
To Complete	-	-	-
Total	27.5	27.5	19.2

1/ Obligation and expenditure data reflects Program Office records as of 31 Dec 85.

17. (U) Production Rate Data:

a., Annual Production Rates 1/

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1971	3	3	3	3
1972	2	2	2	2
1973	3	3	3	3
1974				
1975	1	1	1	1
1976				
1977				
1978				
1979				
1980				
1981				
1982				
1983	.51	.51	.51	.51
1984	1.02	1.02	1.02	1.02
1985	1.02	1.02	1.02	1.02
1986	.98	.98	.98	1.02
1987	.72	.72	.72	1.02
1988	.51	.51	.26	1.02
1989	.51	.51	.77	1.02
1990		.77	1.02	1.02
1991			1.26	1.26

1/ Funded delivery period in FY83 and out is 47 months.

b. Cost Variance -- Dollars in Millions

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	4419.1	+647.4	5066.5	-	5066.5
	(TY $)	5547.6	+1293.6	6841.2	-	6841.2
PAUC	(BY $)	223.484	+6.811	230.295	-	230.295
	(TY $)	291.979	+18.985	310.964	-	310.964

c. Schedule Variance --

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	Nov 70	N/A	Nov 70	N/A	Nov 70
Duration (in Months)	226	+24	250	-	250
End Date (Mo/Yr)	Sep 89	N/A	Sep 91	N/A	Sep 91

d. Deliveries (Plan/Actual) —

	To Date
RDT&E	4/4
Procurement	9/9

18. (U) Operating and Support Costs: N/A

N-12 EA-6B-6

SAR-85-003

~~(CONFIDENTIAL)~~

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: EA-6B

AS OF DATE: DECEMBER 31, 1985 *

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1. DESIGNATION/NOMENCLATURE (POPULAR NAME):
EA-6B/TACTICAL ELECTRONIC WARFARE (PROWLER)

2. DOD COMPONENT: U.S. NAVY

3. RESPONSIBLE OFFICE AND TELEPHONE NUMBER:
NAVAL AIR SYSTEMS COMMAND
WASHINGTON, D.C. 20361

PROGRAM MANAGER: CAPT. R. R. BUEHLER
ASSIGNED: 13 SEPTEMBER 1984
TELEPHONE: 692-8083

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FOR OPEN PUBLICATION
APR 2 1986
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

AS AMENDED

4. PROGRAM ELEMENTS:
RDT&E: 25674N
PROCUREMENT: 24154N
APPN: 1506 ICN 0115
0116

5. RELATED PROGRAMS: A-6E INTRUDER, E-2/C, F-14 TOMCAT AND F-111.

~~Classified by: OPNAVINST 5513.2-20~~
~~Declassify on: 31 Dec 1989~~

THIS PAGE IS UNCLASSIFIED

~~(CONFIDENTIAL)~~

1 of 17

OASD(PA) DFOISR 86-F-0881

6. MISSION AND DESCRIPTION: (U) MISSION: The EA-6B's primary mission is the suppression and degradation of enemy defense systems by tactical jamming of enemy electronic activity. Secondary missions include passive early warning for fleet defense and battlefield electronic surveillance. The EA-6B is a four place derivation of the highly successful A-6 series attack aircraft. It is equipped with a computer controlled electronics surveillance and control system and up to eleven high power jamming transmitters in various frequency bands depending on the particular mission. The EA-6B is powered by two J-52-P-408 engines. The aircraft is 59 feet in length and has a wing span of 53 feet.

7. PROGRAM HIGHLIGHTS (SINCE LAST REPORT):

(b)(1) [redacted]

b. Significant Developments Since Last Report -- (U) ICAP II Follow-on Test and Evaluation (FOT&E) has been completed. The ALP decision was made in March 1985 following the completion of FOT&E. The first ICAP-II aircraft was deployed as scheduled in August 1985. The ICAP II aircraft is expected to meet or exceed all mission objectives/requirements based on previous test results.

Excluded from the Selected Acquistion Report are the 110 EA6B aircraft procured in FY 1983 and prior. Also excluded are approved dollars of $2,916.1M for FY 1983 and prior.

R + D

c. Change Since "As of" Date -- None

8. DECISION COORDINATING PAPER (DCP) THRESHOLD BREACHES: NONE

9. (U) SCHEDULE:

a. MILESTONES

MILESTONES	PRODUCTION ESTIMATE/ APPROVED PROGRAM	CURRENT ESTIMATE
EA-6B NAVY DECISION COORDINATION PAPER (NO. 20 REV A)	JUNE 1971/JUNE 1971	JUNE 1971
EA-6B Standard Version (Board of Inspection Survey)	1971/1971	1971
EA-6B Standard Version (Navy Prelimary Evaluation)	1972/1972	1972
EXCAP EA-6B Operation Evaluation	MAY 74/MAY 74	MAY 74
EA-6B ICAP/ALQ-99 TJS (Navy Prelimary Evaluation)	NOV 75/NOV 75	NOV 75
ICAP ALQ-99 TJS (Navy Prelimary Evaluation)	APR 76/APR 76	APR 76
EA-6B EXCAP (Operation Evaluation)	JUL 76/JUL 76	JUL 76
SERVICE ACCEPTANCE TRIALS & TECH EVAL OF ICAP EA-6B; FINAL REPORT	NOV 77/NOV 77	NOV 77
EA-6B ICAP BIS	NOV 77/NOV 77	NOV 77
EA-6B ICAP AIRCRAFT (Operational Evaluation)	MAR 79/MAR 79	MAR 79
NAVY PRELIMINATION EVALUATION OF AN/ ALQ-99 SYS IN EA-6B ICAP II AIRPLANE	MAR 82/MAR 82	MAR 82
ICAP II INITIAL TRIALS PHASE & NAVY TECHNICAL EVALUATION OF SERVICE ACCEPTANCE TRIALS, PROJ BIS 21323 FINAL REPORT	SEP 82/SEP 82	SEP 82
OPERATIONAL EVALUATION OF ICAP II AIRCRAFT	DEC 82/DEC 82	DEC 82
BOARD OF INSPECTION SURVEY REPORT ICAP II	AUG 83/AUG 83	AUG 83
Full Scale Development (EA-6B ADVCAP)	MAR 83/MAR 83	MAR 83
First Flight	MAY 87/MAY 87	MAY 87
CTE (Contractor Tech. Eval.)	FEB 87 /FEB 87	FEB 87
NPE I (Navy Prelim. Eval.)	AUG 87/AUG 87	AUG 87
TECHEVAL (Technical Evaluation)	JUL 88/JUL 88	JUL 88
OPEVAL (Operational Evaluation)	DEC 88/DEC 88	DEC 88
III B Full Prod. Delivery	MAY 89/MAY 89	MAY 89
First Delivery	SEP 90/SEP 90	SEP 90

b. PREVIOUS CHANGE EXPLANATIONS: None

c. CURRENT CHANGE EXPLANATIONS: None

d. REFERENCES: PBD 369-1 OF 30 DEC 1966
Approved Program: FY 87 President's Budget.

10. TECHNICAL/OPERATIONAL CHARACTERISTICS:

(b)(1)

[redacted]

b. OPERATIONAL

Speed (Kts)			
(1) Max at Sea Level	530/530	530	530
(2) Stall Speed (Power Approach)	104/103	103	103
Specific Range at Optimum Altitude(NM/lb)	.0836	.0906	.0906
Take off Distance (over 50' obstacle)	5,530/4,360	4,360	4,360
Radius/Range (Combat) (NM)	304/942;304/942	304/942	304/942
Combat Ceiling Altitude (ft)	34,600/34,600	34,600	34,600
Mission Reliability	90.2/90.2	90.2	90.2
Maintainability			
(1) Standard Depot Level Maintenance (SDLM)	N/A;N/A	24	24
(2) Maintenance Man-hours per Flight Hour	N/A;N/A	36	36
Weight (Takeoff) (lb)	58,600/58,600	58,600	58,600
Dimensions (Length/Span) (ft)	59/53;59/53	59/53	59/53

c. PREVIOUS CHANGE EXPLANATIONS: None.

d. CURRENT CHANGE EXPLANATION: None.

e. REFERENCES: Prod Est. PBD 369-1 of 30 Dec 1966.
Approved Program: FY 87 President's Budget.

(CONFIDENTIAL)

11. PROGRAM ACQUISITION COST:

	PRODUCTION ESTIMATE BASELINE	CHANGES	CURRENT ESTIMATE
a. COST			
DEVELOPMENT (RDT&E)	210.6	+132.7	343.3
PROCUREMENT	2,029.0	+1,158.2	3,187.2
AIRFRAME	639.9	(+643.7)	1,283.6
ENGINE	98.9	(+108.1)	207.0
AVIONICS	490.9	(+331.4)	822.3
TOTAL FLYAWAY	1,229.7	(+1,083.2)	2,312.9
OTHER WPN SYS COST	678.6	(+26.3)	704.9
INITIAL SPARES	120.7	48.7	169.4
CONSTRUCTION (MILCON)	-0-	-0-	-0-
TOTAL FY-84 BASE-YEAR	2,239.6	+1,290.9	3,530.5
ESCALATION	508.2	+196.8	705.0
DEVELOPMENT (RDT&E)	30.9	+18.4	49.3
PROCUREMENT	477.3	+178.4	655.7
CONSTRUCTION (MILCON)	-0-	-0-	-0-
TOTAL THEN-YEAR	2,747.8	+1,487.7	4,235.5
b. QUANTITIES			
DEVELOPMENT (RDT&E)	---	---	---
PROCUREMENT	38	+48	86
TOTAL	38	+48	86
c. UNIT COST			
PROCUREMENT			
FY-84 BASE-YEAR	53.4	-16.3	37.1
THEN-YEAR	65.9	-21.2	44.7
PROGRAM			
FY-84 BASE-YEAR	58.9	-17.4	41.5 40.5
THEN-YEAR $'s	72.3	-23.0	49.3

d. APPROVED DESIGN TO GOAL COST: N/A

e. FOREIGN MILITARY SALES: None

f. NUCLEAR COSTS: None

12. PROGRAM ACQUISITION/CURRENT PROCUREMENT AND COST SUMMARY: (Current (Then Year) Dollars in Millions)

	CURRENT YEAR		BUDGET YEAR
	SAR CURRENT ESTIMATE	UCR BASELINE ESTIMATE	UCR BASELINE ESTIMATE
a. Program Acquisition --			
(1) Cost	4,235.5	4,328.6	4,235.5
(2) Quantity	86	65	86
(3) Unit Cost	49.3	66.6	49.3
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	455.6	501.6	450.2
Less CY ADV. Proc.	23.8	33.0	22.0
Plus PY ADV. Proc.	21.2	21.2	23.8
Net Total	453.0	489.8	452.0
(2) Quantity	12	12	12
(3) Unit Cost	37.8	40.8	37.7

13. COST VARIANCE ANALYSIS:
a. Summary -- (Current (Then Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
PRODUCTION ESTIMATE	241.5 ✓	2,506.3 ✓		2,747.8 ✓
PREVIOUS CHANGES				
ECONOMIC	+55.4	+811.3		+866.7
QUANTITY		+ 1,021.6		+ 1,021.6
SCHEDULE	+ 148.9			+ 148.9
ENGINEERING				
ESTIMATING	- 55.4	- 819.6		- 875.0
OTHER				
SUPPORT		+ 418.6		+ 418.6
SUBTOTAL	+ 148.9	+ 1,431.9		+ 1,580.8
CURRENT CHANGES				
ECONOMIC	- 7.5	- 204.7		- 212.2
QUANTITY		+ 1,272.4		+ 1,272.4
SCHEDULE				
ENGINEERING				
ESTIMATING	+ 9.7	- 836.3		- 826.6
OTHER				
SUPPORT		- 326.7		- 326.7
SUBTOTAL	+ 2.2	- 95.3		- 93.1
TOTAL CHANGES	+ 151.1	+ 1,336.6		+ 1,487.7
CURRENT ESTIMATES	392.6	3,842.9		4,235.5

13. COST VARIANCE ANALYSIS (Cont'd):
(FY 84 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
PRODUCTION ESTIMATE	210.6	2,029.0		2,239.6
PREVIOUS CHANGES				
ECONOMIC				
QUANTITY		+ 787.9		+ 787.9
SCHEDULE	+124.5			+ 124.5
ENGINEERING				
ESTIMATING		- 7.6		- 7.6
OTHER				
SUPPORT		+ 317.6		+ 317.6
SUBTOTAL	+124.5	+ 1,097.9		+ 1,222.4
CURRENT CHANGES				
ECONOMIC				
QUANTITY		+ 1,010.2		+ 1,010.2
SCHEDULE				
ENGINEERING				
ESTIMATING	+ 8.2	- 686.5		- 678.3
OTHER				
SUPPORT		- 263.4		- 263.4
SUBTOTAL	+ 8.2	+ 60.3		+ 68.5
TOTAL CHANGES	+ 132.7	+ 1,158.2		+ 1,290.9
CURRENT ESTIMATES	343.3	3,187.2		3,530.5

b. Previous Change Explanations:

(1) RDT&E
- REVISED JAN '86 ECONOMIC ESCALATION RATES (ECONOMIC)
- INCREASE IS ATTRIBUTABLE TO ACCELERATION OF ALQ-149 INTO ICAP II AIRCRAFT, INTEGRATION OF HARM INTO ICAP II AND ADVCAP AIRCRAFT DEVELOPMENT OF JAMMER MODULATION, ADVCAP REPRICING AND EXPANDED FREQUENCY JAMMER DEVELOPMENT. (SCHEDULE)
- OFFSET OF REVISED ESCALATION RATES (ESTIMATING)

(2) PROCUREMENT
- REVISED JAN '85 ECONOMIC ESCALATION RATES (ECONOMIC)
- INCREASE OF 27 IN THE NUMBER OF BUDGETED AIRCRAFT FOR FY 86-90. (QUANTITY)
- ADDITIONAL SUPPORT MATERIAL/SERVICES AND INITIAL SPARES REQUIRED FOR THE ADDITIONAL AIRCRAFT. (SUPPORT)
- OFFSET OF REVISED ESCALATION RATES (ESTIMATING)

c. Current Change Explanations - (Dollars in Millions)

(1) RDT&E	BASE YEAR DOLLARS	THEN YEAR DOLLARS
° REVISED JAN '86 ECONOMIC ESCALATION RATES (ECONOMIC)	N/A	- 7.5
° REFLECTS THE ADDITION OF REQUIREMENTS FOR FY 91. (EST)	+ 8.2	+ 2.2
° REVISED PROGRAM ESTIMATES (EST)	N/A	+ 7.5

(2) PROCUREMENT	BASE YEAR DOLLARS	THEN YEAR DOLLARS
° REVISED FEB '86 ECONOMIC ESCALATION RATES (ECONOMIC)	N/A	- 204.7
INCREASE OF 21 IN THE NUMBER OF BUDGETED AIRCRAFT FOR FY 86-90. (QUANTITY)	+ 1,010.2	+ 1,272.4
° REVISED PROGRAM ESTIMATES (ESTIMATING)	- 686.5	- 836.3
° REDUCTION IN SUPPORT EQUIPMENT MONIES RELATED TO BUDGET CUTS ASSOCIATED WITH "ANNUALIZED SUPPORT." (SUPPORT)	- 263.4	- 326.7

(3) MILCON. None

c. References - Production Estimate (FY 85 President's Budget).

14. PROGRAM ACQUISITION UNIT COST (PAUC) HISTORY: Millions of then-year $s
a. Initial SAR Estimate to Current Baseline Estimate

Pde EST.	CHANGES (THEN YEAR DOLLARS IN MILLIONS)								PAUC (CURRENT ESTIMATE)
	ECON	QTY	SCH	ENG	EST	OTHER	SPT	TOTAL	
72.3	+ 7.6	-13.6	+1.7		-19.8		+1.1	-23.0	49.3

15. CONTRACT INFORMATION: (Then-Year Dollars in Millions)
a. RDT&E: None

b. PROCUREMENT:

Initial Contract Price

	Target	Ceiling	Qty
AIRFRAME	105.5	105.5	6

Grumman Aerospace
Long Island, NY
N00019-83-C-0365
FFP
Award Date: Dec. '84
Definitization: Jan 1986

Initial Contract Price

	Target	Ceiling	Qty
ENGINES Pratt & Whitney West Palm Beach, FL. N00019-83-C-0299 FFP Award Date: Dec. 84 Definitized: Jan '85	17.2	17.2	12

Current Contract Price

Target	Ceiling	Qty
14.4	14.4	12

Estimated Price At Completion

Contractor	Program Manager
14.4	14.4

Previous Cumulative Variances To Date -- None
Cumulative Variance To Date (12/31/85) -- None

Initial Contract Price

	Target	Ceiling	Qty
Airframe Grumman Aerospace Long Island, NY N00019-85-C-0025 FFP Awarded: Dec. '85 Defintization Date: June '86	182.9	182.9	12

Current Contract Price

Target	Ceiling	Qty
182.9	182.9	12

Estimated Price At Completion

Contractor	Program Manager
182.9	182.9

Previous Cumulative Variances To Date -- None
Cumulative Variance To Date (12/31/85) -- None

Current Contract Price

Target	Ceiling	Qty
105.5	105.5	6

Estimated Price at Completion

Contractor	Program Manager
105.5	105.5

Previous Cumulative Variances -- None
Cumulative Variance To Date (12/31/85) -- None

	Initial Contract Price		
	Target	Ceiling	Qty
ENGINES Pratt & Whitney West Palm Beach, FL. N00019-84-C-0275 FFP Award Date: Dec. 85 Definitized: Apr '86	29.9	29.9	24

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
29.9	29.9	24	29.9	29.9

Previous Cumulative Variances To Date -- None
Cumulative Variance To Date (12/31/85) -- None

16. PROGRAM FUNDING SUMMARY: (Current Estimate In Millions of Dollars)

a. Program Status
   (1) Percent Program Completed: 37.5% (3yrs/8yrs)
   (2) Percent Program Cost Appropriated: 35.1% ($1,488.8/$4,235.5)

b. Appropriation Summary

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY84-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92)	Total
RDT&E	139.4	69.7	183.5	-0-	392.6
Procurement	1,349.4	450.2	2,043.3	--	3,842.9
MILCON	-0-	-0-	-0-	--	-0-
TOTAL	1,488.8	519.9	2,226.8	--	4,235.5

FISCAL YEAR	QTY	FY84 Base-Year Dollars FLYAWAY NONREC	FLYAWAY REC	TOTAL	Then-Year Dollars ADVANCE PROCUREMENT DEBIT	CREDIT	TOTAL	ESCL RATE (%)

c. Annual Summary

APPROPRIATION: RDT&E

1984				24.7			25.4	3.80
1985				33.8			35.8	3.60
1986				71.3			78.2	3.20
1987				62.6			69.7	4.10
1988				50.6			58.5	3.90
1989				32.6			39.6	3.40
1990				32.3			40.3	2.90
1991				35.3			45.1	2.30
SUB-TOTAL				343.2			392.6	

APPROPRIATION: PROCUREMENT

1984	8	2.4	211.8	472.4	22.8	16.9	504.1	8.00
1985	6	8.3	177.6	350.3	21.2	22.8	389.7	4.10
1986	12	6.7	302.7	394.3	23.8	21.2	455.6	4.10
1987	12	3.8	291.4	376.4	22.0	23.8	450.2	4.10
1988	12	3.5	297.7	373.6	22.3	22.0	460.7	3.90
1989	12	35.9	274.8	370.9	29.8	22.3	469.5	3.40
1990	12	25.0	336.3	421.4	36.5	29.8	546.0	2.90
1991	12	4.5	330.4	427.9	--	29.3	567.1	2.30
SUB-TOTAL	86	90.1	2,222.7	3,187.2	178.4	188.1	3,842.9	
TOTAL	86	90.1	2,222.7	3,530.5	178.4	188.1	4,235.5	

d. Obligations and Expenditures

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
Appropriation: RDT&E			
1984	25.3	25.3	22.0
1985	35.8	35.8	33.1
1986	78.2	36.4	6.8
To Complete	253.2	N/A	N/A
Total	392.6	97.5	61.9

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: Procurement		
1984	504.1	415.8	236.7
1985	389.7	287.1	53.0
1986	455.6	37.4	-0-
To Complete	2,493.5	N/A	N/A
Total	3,842.9	740.3	289.7

17. PRODUCTION RATE DATA:

a. Annual Production Rates

Fiscal Year	Production Rates (Quantity/Year) Development Estimate	Production Estimate Baseline	Current Estimate	Maximum *
1984	N/A	8	8	24
1985	N/A	6	6	24
1986	N/A	12	12	24
1987	N/A	12	12	24
1988	N/A	12	12	24
1989	N/A	12	12	24
1990	N/A	12	12	24
1991	N/A	12	12	24

* This rate is attainable with the participation of A6E aircraft.

b. Cost Variance - Dollars in Millions

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog. Acq. Cost	(BY $)	2,239.6	+1,290.9	3,530.5	--	3,530.5
	(TY $)	2,747.8	+1,487.7	4,235.5	--	4,235.5
Pauc	(BY $)	58.9	- 17.4	41.5	--	41.5
	(TY $)	72.3	- 23.0	49.3	--	49.3

c. Schedule Variance

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date	12/82	--	1/85	--	1/85
Duration	43	-1	42	0	42
End Date	7/86	--	7/93	--	7/93

d. Deliveries (Plan/Actual)

	To Date
RDT&E	0/0
Procurement	3/3

18. Operating and Support Cost: N/A

N-11. E-6A

SAR-85-007

UNCLASSIFIED

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: E-6A

AS OF DATE: DECEMBER 31, 1985*

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

1. **Designation/Nomenclature:** E-6A Airborne Strategic Communications

2. **DOD Component:** U. S. Navy

3. **Responsible Office and Telephone Number:**

E-6A Program Office
Naval Air Systems Command
Washington, DC 20361

PM: Capt Ernest L. Lewis, USN,
Assigned: 30 December 1985
AUTOVON: 222-8086
COMM: 202-692-8086

4. **Program Elements/Procurement Line Items:**
RDT&E: 11402N

PROCUREMENT: 11315N APPN 1506 ICN 0435

5. **Related Programs:** EC-130Q/TACAMO; E-3; TRIDENT Fleet

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OASD(PA) DFOISR 86-T-0885

6. **Mission and Description:** The E-6A, previously ECX, is a manned strategic communications relay platform (replacement for the EC-130/TACAMO aircraft) and is a critical node in the Minimum Essential Emergency Communications Network (MEECN). The primary mission of the E-6A is to monitor multiple networks in the VLF, HF, and UHF frequency spectrum, process Single Integrated Operational Plan (SIOP) Emergency Action Messages (EAMs) originating under JCS Emergency Action Procedures (EAP), and provide survivable and enduring communications connectivity from the National Command Authority (NCA) to the Fleet Ballistic Missile Submarine Forces (SSBNs) during pre-, trans-, and post-attack phases of general nuclear exchange. A secondary mission is to provide a survivable relay for tactical Command, Control and Communications (C^3) capability between the NCA and other elements of the SIOP Plan/Secure Reserve Force including the Launch Control Centers (LCC), the Strategic Air Command (SAC) missile complex, and airborne command posts for Commander in Chief, Pacific (CINCPAC) and Commander in Chief U.S. Naval Forces, Europe (CINCUSNAVEUR).

7. **Program Highlights:**

a. Significant Historical Developments -- In December 1981 a NADEC Decision Memorandum approved the ECX PROGRAM. In January 1982, the Operational Requirement for TACAMO/ECX (OR W1438) was approved. On 11 February 1982, a Request for Quotation was released. A letter contract with Boeing Aerospace Company was signed on 29 April 1983 for the Full Scale Development effort and included options for fourteen (14) production aircraft. On 30 June 1983 ECX was formally designated as E-6A. FY 1986 President's Budget approved continuation of the development and procurement of the first two aircraft in FY-86.

b. Significant Developments Since Last Report — In July 1985 the contractor successfully completed its Critical Design Review. A Pre-CEB was completed in November 1985. The first EC-130 to be stripped of Mission Avionics was started in December 1985. The Class III mockup was completed in December 1985.

The E-6A is expected to satisfy the mission requirements.

8. **Decision Coordinating Paper (DCP) Threshold Breached:** DCP in process of being updated to latest approved program.

9. Schedule:

a. Milestones —

Milestones	Development/Approved Estimate/ Program	Current Estimate
Justification for Major Systems New Starts (JMSNS)(Substantiation with POM)	Jul 81/Jul 81	Jul 81
Program Initiation (NADEC Decision Memo)	Dec 81/Dec 81	Dec 81
Operational Requirement	Jan 82/Jan 82	Jan 82
Request for Quotations (RFQ)	Mar 82/Mar 82	Mar 82
Award of Full Scale Development Contract	May 83/Apr 83	Apr 83
Preliminary Design Review (PDR)	Oct 83/Nov 83	Nov 83
DNSARC III	Dec 83/TBD	Apr 85(CH-1)
Release Long Lead Production Funds	Dec 83/TBD	Jun 84
Critical Design Review (CDR)	Aug 84/Dec 84	Jul 85
First Test Flight	Aug 86/Nov 86	Jun 87
Navy Technical Evaluation (NTE)	Aug 87/Aug 87	Aug 87
Deliver Prototype Aircraft	Feb 87/Jan 88	Jan 89
Deliver First Production Aircraft	Aug 87/Jan 88	Jan 89
Initial Operational Capability (IOC)[1]	Sep 88/Dec 88	Feb 90
Full Operational Capability (FOC)	Jan 92/Sep 91	Feb 92(CH-2)

b. Previous Change Explanations --

Previous changes were due to program restructure to accommodate delay in receipt of FY-84 Advance Procurement Funds and deletion of FY-85 procurement funds.

c. Current Change Explanations --

(CH-1) DNSARC III scheduled for Apr 85 was cancelled. Will be rescheduled when SECNAV issues on E-6A, identified during Nov 85 Pre-CEB, are resolved.

(CH-2) Reflects new schedule change

d. References:

Development Estimate: Operational Requirement W1438 ~~(Secret)~~ 11 Jan 1982 Annex C to JSPD FY 84-91 ~~(Secret)~~ PE 11402N.

Approved Program: FY 1987 President's Budget

[1] IOC reflects one (1) squadron fully operational.

10. Technical/Operational Characteristics:

	Development/Approved Estimate/ Program	Demonstrated Performance	Current Estimate
a. Technical --			
Weight Empty (lbs)	165,125/167,800	N/A	167,800
Maximum Gross Weight (lbs)	342,000/342,000	N/A	342,000
Maintainability (manhours/flt hr)	16.5/ 16.5	N/A	16.5
Reliability (MFHBF)*	1.5/ 1.5	N/A	1.5
b. Operational			
Cruise Speed (Mach No.)	.75/ .75	N/A	.75
Endurance (hours)	14/ 14	N/A	14
Critical Field Length (feet)	7,500/ 7,500	N/A	7,500
Range (unrefueled: NM)	6,000/ 6,000	N/A	6,000
Extended Airborne Operations (hr)	72/ 72	N/A	72
EMP Hardened (Upset Margin - db)	30/ 30	N/A	30
Orbit Verticality of Trailing Wire Antenna (%)	70/ 70	N/A	70
Emergency Operations	Critical Engine Inoperative	N/A	Critical Engine Inoperative

c. Previous Change Explanations -- Weight Empty (lbs) change due to refined estimates by contractor. This change is reflected in the NDCP.

*reliability figure is based upon a combination of the E-6A aircraft and the existing EC-130/TACAMO mission avionics suite.

d. Current Change Explanations -- None

e. References --

Development Estimate: Operational Requirement W1438 ~~(Secret)~~ 11 Jan 1982 Annex C to JSPD FY 84-91 ~~(Secret)~~ PE #11402N.

Approved Program: FY 1987 President's Budget.

11. **Program Acquisition Cost** (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost —			
Development (RDT&E)	292.6	+32.6	325.2
Procurement	1,292.1	-36.1	1,256.0
Airframe	(653.7)	(+233.0)	(886.7)
Engines	(168.7)	(-168.7)	(-0-)
Avionics	(121.6)	(-62.6)	(59.0)
Total Flyaway	(944.0)	(+1.7)	(945.7)
Peculiar Support Equip.	(43.3)	(-1.6)	(41.7)
Other Wpn Sys Cost	(169.9)	(-5.3)	(164.6)
Initial Spares	(134.9)	(-30.9)	(104.0)
Construction (MILCON)	-0-	+41.3	41.3
Total FY 82 Base-Year $	1,584.7	(+37.8)	1,622.5
Escalation	667.0	-40.9	626.1
Development (RDT&E)	(61.6)	(-5.1)	(56.5)
Procurement	(605.4)	(-48.9)	(556.5)
Construction (MILCON)	(-0-)	(+13.1)	(13.1)
Total Then-Year $	2,251.7	-3.1	2,248.6
b. Quantities —			
Development (RDT&E)	1	-	1
Procurement	14	-	14
Total	15	-	15
c. Unit Cost —			
Procurement:			
FY 82 Base-Year $	92.3	-2.6	89.7
Then-Year	135.5	-6.0	129.5
Program:			
FY 82 Base-Year $	105.6	+2.6	108.2
Then-Year $	150.1	-.2	149.9

d. Approved Design to Cost Goal — None

e. Foreign Military Sales — None

f. Nuclear Costs — None

12. **Program Acquisition/Current Procurement Unit Cost Summary:** (Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition:			
(1) Cost	2,248.6	2,082.0	2,248.6
(2) Quantity	15	15	15
(3) Unit Cost	149.9	138.8	149.9
b. Current Procurement:	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	366.2	400.2	329.4
Less CY Adv Proc	55.9	58.3	72.9
Plus PY Adv Proc	100.7	97.7	55.9
Net Total	411.0	439.6	312.4
(2) Quantity	2	2	3
(3) Unit Cost	205.5	219.8	104.1

13. **Cost Variance Analysis:**
a. Summary — (Current (Then Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	354.2	1,897.5	-	2,251.7
Previous Changes:				
Economic	-4.2	-32.7	-	-36.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-		-
Estimating	+33.2	-105.2	+61.0	-11.0
Other	-	-	-	-
Support	+2.9	-124.7	-	-121.8
Subtotal	+31.9	-262.6	+61.0	-169.7
Current Changes:				
Economic	-1.5	-119.3	-1.5	-122.3
Quantity	-	-	-	-
Schedule	-	+57.9	-	+57.9
Engineering	-2.9	+199.6		+196.7
Estimating	-	+39.4	-5.1	+34.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-4.4	+177.6	-6.6	+166.6
Total Changes	+27.5	-85.0	+54.4	-3.1
Current Estimate	381.7	1,812.5	54.4	2,248.6

13. **Cost Variance Analysis (Cont'd):**
(FY 82 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	292.6	1,292.1	-	1,584.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-		-
Estimating	+26.8	-97.6	+45.0	-25.8
Other	-	-	-	-
Support	+8.2	-89.0	-	-80.8
Subtotal	+35.0	-186.6	+45.0	-106.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+32.9	-	+32.9
Engineering	-2.4	+96.4		+94.0
Estimating		+21.2	-3.7	+17.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2.4	+150.5	-3.7	+144.4
Total Changes	+32.6	-36.1	+41.3	+37.8
Current Estimate	325.2	1,256.0	41.3	1,622.5

b. Previous Change Explanations --

RDT&E
- Economic: revised escalation indices
- Estimating: communications suites integration and testing
- Support: increased field requirements

Procurement
- Economic: revised escalation rates
- Estimating: reduction caused by restructured; revised change order
- Support: refinement of Support Equipment Requirement Document

MILCON
- Estimating: hangar facility requirements

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

c. Current Change Explanations

	(Dollars in Millions) Base Year	Then Year
(1) RDT&E		
Revised escalation rates (Economic)	N/A	-1.5
Revised test program scope (engineering)	-2.4	-2.9
(2) Procurement		
Revised escalation rates (economic)	N/A	-119.3
Delivery schedule stretched out one year (schedule)	+32.9	+57.9
Revised mission avionics requirements (engineering)	+96.4	+199.6
Availability of independent cost estimate (estimating)	+21.2	+39.4
(3) MILCON		
Revised escalation rates (economic)	N/A	-1.5
Reduced hangar facility requirements (estimating)	-3.7	-5.1

d. References —

Development Estimate: Operational Requirement W1438 ~~(Secret)~~ 11 Jan 1982 Annex C to JSPD FY 84-91 ~~(Secret)~~ PE #11402N.

14. **Program Acquisition Unit Cost (PAUC) History:** (Millions of then-year dollars)

a. Initital SAR Estimate to Current Baseline Estimate
(1) Same as Current Baseline Estimate.

b. Current Baseline Estimate to Current Estimate

(Development Estimate)	Changes (Then Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
150.1	-10.6	-	+3.9	+13.1	+1.5	-8.1	-	-0.2	149.9

15. **Contract Information:** (Dollars in Millions)

a. RDT&E

FSD Aircraft:
Boeing Aerospace Co.,
Seattle, Washington
N00019-83-C-0176, Letter Contract
Award date: 29 April 1983
Definitization date: N/A

Initial Contract Price		
Target	Ceiling	Qty
308.8	308.1	1

Current Contract Price		
Target	Ceiling	Qty
297.2	322.7	1

Estimated Price At Completion	
Contractor	Program Manager
297.2	297.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change: N/A

15. **Contract Information (Cont'd):** (Then-Year Dollars in Millions)

b. Procurement —

Production Aircraft
Boeing Aerospace Co.,
Seattle, Washington
N00019-83-C-0176, Letter Contract
Award date: 30 June 1984
Definitization: N/A

Initial Contract Price		
Target	Ceiling	Qty
1,634.7	1,634.7	14

Current Contract Price		
Target	Ceiling	Qty
1,283.2	1,283.2	14

Estimated Price At Completion	
Contractor	Program Manager
1,181.8	1,181.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change: N/A

c. MILCON: N/A

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

a. Program Status —
(1) Percent Program Completed: 54.5% (6 yrs/11 yrs)
(2) Percent Program Cost Appropriated: 729.6/2,248.6 32.4%

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

Appropriation	Current & Prior Yrs (FY81-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Balance To Complete Beyond FYDP (FY92)	Total
RDT&E	262.7	81.7	37.3	-	381.7
Procurement	466.9	329.4	1,016.2	-	1,812.5
MILCON	-	25.3	29.1	-	54.4
Total	729.6	436.4	1,082.6	-	2,248.6

16. **Program Funding Summary (Cont'd)**

c. Annual Summary —

Fiscal Year	Qty	FY 82 Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Proc Debit	Credit	Total	Escl Rate (%)
Appropriation: RDT&E								
1981				.9			.9	10.6
1982				1.0			1.0	7.6
1983	1			34.8			37.2	4.9
1984				62.9			70.0	3.8
1985				58.7			67.6	3.6
1986				72.0			86.0	3.2
1987				65.9			81.7	4.1
1988				29.0			37.3	3.9
Subtotal	1			325.2			381.7	
Appropriation: Procurement								
1984				74.0	100.7		100.7	8.0
1985								4.1
1986	2	114.1	122.2	267.9	55.9	100.7	366.2	4.1
1987	3	2.6	165.0	232.4	72.9	55.9	329.4	4.1
1988	3	1.4	192.6	238.1	41.0	72.9	346.8	3.9
1989	3		146.3	239.3	42.0	41.0	357.6	3.4
1990	3		142.5	195.3	-	42.0	297.9	2.9
1991				8.9	-	-	13.9	2.3
Subtotal	14	118.1	768.6	1,256.0	312.5	312.5	1,812.5	
Appropriation: MILCON								
1987				19.8			25.3	4.1
1988							-	3.9
1989				21.5			29.1	3.4
Subtotal				41.3			54.4	

16. **Program Funding Summary (Cont'd)**

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1981	.9	.9	.9
1982	1.0	1.0	1.0
1983	37.2	37.2	32.5
1984	70.0	70.0	42.8
1985	67.6	67.6	15.9
1986	86.0	8.8	N/A
To Complete	119.0	N/A	N/A
Total	381.7	185.5	93.1
Appropriation: Procurement			
1984	100.7	99.9	80.7
1985	-	-	-
1986	366.2	-0-	N/A
To Complete	1,345.6	N/A	N/A
Total	1,812.5	99.9	80.7

17. **Production Rate Data:**

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1985	2	N/A	0	N/A
1986	3	N/A	2	N/A
1987	3	N/A	3	N/A
1988	3	N/A	3	N/A
1989	3	N/A	3	N/A
1990		N/A	3	N/A
1991				
1992				

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

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost BY$	N/A	N/A	1,622.5	N/A	N/A
TY$	N/A	N/A	2,248.6	N/A	N/A
PAUC BY$	N/A	N/A	108.2	N/A	N/A
TY$	N/A	N/A	149.9	N/A	N/A

c. Schedule Variance --

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	FEB/86	N/A	N/A
Duration (in Months)	N/A	N/A	35	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	JAN/89	N/A	N/A

d. Deliveries (Plan/Actual —

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

18. **Operating Support Costs:** N/A

A-5 ATACMS

~~SECRET~~

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823) (U)
PROGRAM: ARMY TACTICAL MISSILE SYSTEM

AS OF DATE: December 31, 1985

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85-022

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FOR OPEN PUBLICATION
MAR 20 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

2, 3, 4, 5, 6, 8, 10, 11

1. (U) Designation/Nomenclature: Not Assigned/Army Tactical Missile System (Army TACMS)

2. (U) DoD Component: Department of the Army

3. (U) Responsible Office and Telephone Number:

Army Tactical Missile System
AMCPM-AT
Redstone Arsenal, AL 35898-5650

COL Thomas J. Kunhart
Assigned: 15 Mar 85
Autovon: 746-1141

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

RDTE: 64324A Project D302
Procurement: SSN C9850000 APPN 2032
MCA: N/A

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18 MAR 1986
SECURITY

5. (U) Related Programs:

Multiple Launch Rocket System (MLRS)
Infrared Terminally Guided Submunitions (IRTGSM)

6. (U) Mission and Description:

(U) The Army has an urgent need for a long-range weapon that operates in near all weather, day or night, is air transportable and capable of effectively engaging high priority land targets at ranges beyond the capability of the cannons, rockets and the LANCE Missile System. The system will be used to attack tactical surface-to-surface missile sites, air defense systems, logistic elements, command/control/communication complexes, and second echelon maneuver units arrayed in depth throughout the corps area of influence.

86-0716

~~SECRET~~

~~CLASSIFIED BY: ARMY TACMS SCG~~
~~May 85~~
~~DECLASSIFY ON: OADR~~

(U) The Army Tactical Missile System (Army TACMS) will be developed and fielded to meet the Army's need. The system will be a ground-launched missile system consisting of a surface-to-surface guided ballistic missile with an Anti-Personnel/ Anti-Materiel (APAM) warhead configuration. A later phase of the program will be development of an advanced technology warhead. Army TACMS will be fired from the modified M270 Multiple Launch Rocket System (MLRS) launcher. The system shall utilize targeting systems, engagement systems, and command and control systems that are the same as MLRS.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- In 1981, the Army established a Special Task Force to initiate development of a Corps Support Weapon System (CSWS) to engage high priority targets at ranges beyond those of existing weapons. At approximately the same time, the Air Force initiated development of a Conventional Stand-Off Weapon (CSW) to attack high value, heavily defended, land and sea targets for global force employment. In June 1982, DoD directed the merger of these two programs into a joint development designated as the Joint Tactical Missile System (JTACMS). The objective of the program was to develop and field a common missile with maximum commonality to meet the requirements of both services. In 1983, a TRADOC study resulted in an Army decision to utilize the MLRS launcher to fire the JTACMS. In 1984, a joint service decision was made to abandon efforts to develop a common missile and DoD approved Army's request to develop an interim version of the JTACMS to counter Warsaw Pact second echelon forces.

b. (U) SignificantDevelopments Since Last Report --

(U) During FY85 the Army changed the name of the program from the Joint Tactical Missile System (JTACMS) to the Army Tactical Missile System (Army TACMS). In May 1985, a Required Operational Capability (ROC) was approved. In June 1985, the Secretary of the Army for Research Development and Acquisition (SARDA) approved the Acquisition Plan, Justification and Authorizations and the Request for Proposals (RFP) for the Full-Scale Development (FSD) program. Following SARDA approval, a competitive RFP was issued for FSD of the Missile/Launch Pod Assembly (M/LPA) and a sole source RFP was issued to the MLRS prime contractor for integration of the Army TACMS M/LPA with the MLRS launcher. Initial contractor proposals were received and formal source selection evaluation was initiated. Army System Acquisition Review Council (ASARC) approved Army TACMS program in December 1985. Defense System Acquisition Review Council (DSARC) is scheduled for February 1986. Army TACMS system testing is scheduled to start in FY 88 and these tests are expected to demonstrate that Army TACMS satisfies the mission requirements of the system.

c. (U) Changes Since "As of" date.

DSARC was held on 19 February 1986. Any program changes which resulted will be reflected in the FY88 Budget.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches:

(U) Not applicable at this time since the Army TACMS DCP is in draft form currently undergoing official staffing for approval.

9. (U) Schedule:

	Planning Estimate/ Approved Program	Current Estimate
a. (U) Milestones --		
(U) Began Assault Breaker Technology Demonstration	Apr 78	Apr 78
(U) Mission Element Need Statement (MENS) Approval	Apr 81	Apr 81
(U) Began Special Task Force	Mar 81	Mar 81
(U) Joint Program Directed	Jun 82	Jun 82
(U) Completed Assault Breaker Technology Demonstration	Dec 82	Dec 82
(U) ASARC I	Feb-Mar 84	N/A
(U) DSARC I	Mar-Apr 84	N/A
(U) Joint Services Operational Requirement (JSOR)	2d/3d/Q FY 84	N/A
(U) RFP Released	2d/3d Q FY 84	Jun 85 (Ch-1)
(U) ASARC II	Dec 85	Dec 85 (Ch-2)
(U) DSARC II	Feb 86	Feb 86 (Ch-2)
(U) FSD Contract Award	3d/4th Q FY 84	Mar 86 (Ch-3)

(b)(1)

b. (U) Previous Change Explanations -- AS AMENDED

(U) Based on the pre-FSD studies, Special Task Force efforts, Assault Breaker results, and technical maturity assessments, Army TACMS is considered suitable for entry into FSD, and the normal procedure for ASARC/DSARC I is not considered necessary. The Army TACMS will not include a JSOR. However, a ROC was approved in May 85.

c. (U) Current Change Explanations --

(U) (Ch-1) The delay in release of RFP was due to program redirection to use MLRS Ground Support Equipment, and also in obtaining ROC approval.

(U) (Ch-2) ASARC/DSARC II significant milestones have been added to the schedule.

(U) (Ch-3) The FSD contract awards were also impacted by actions defined in CH-1.

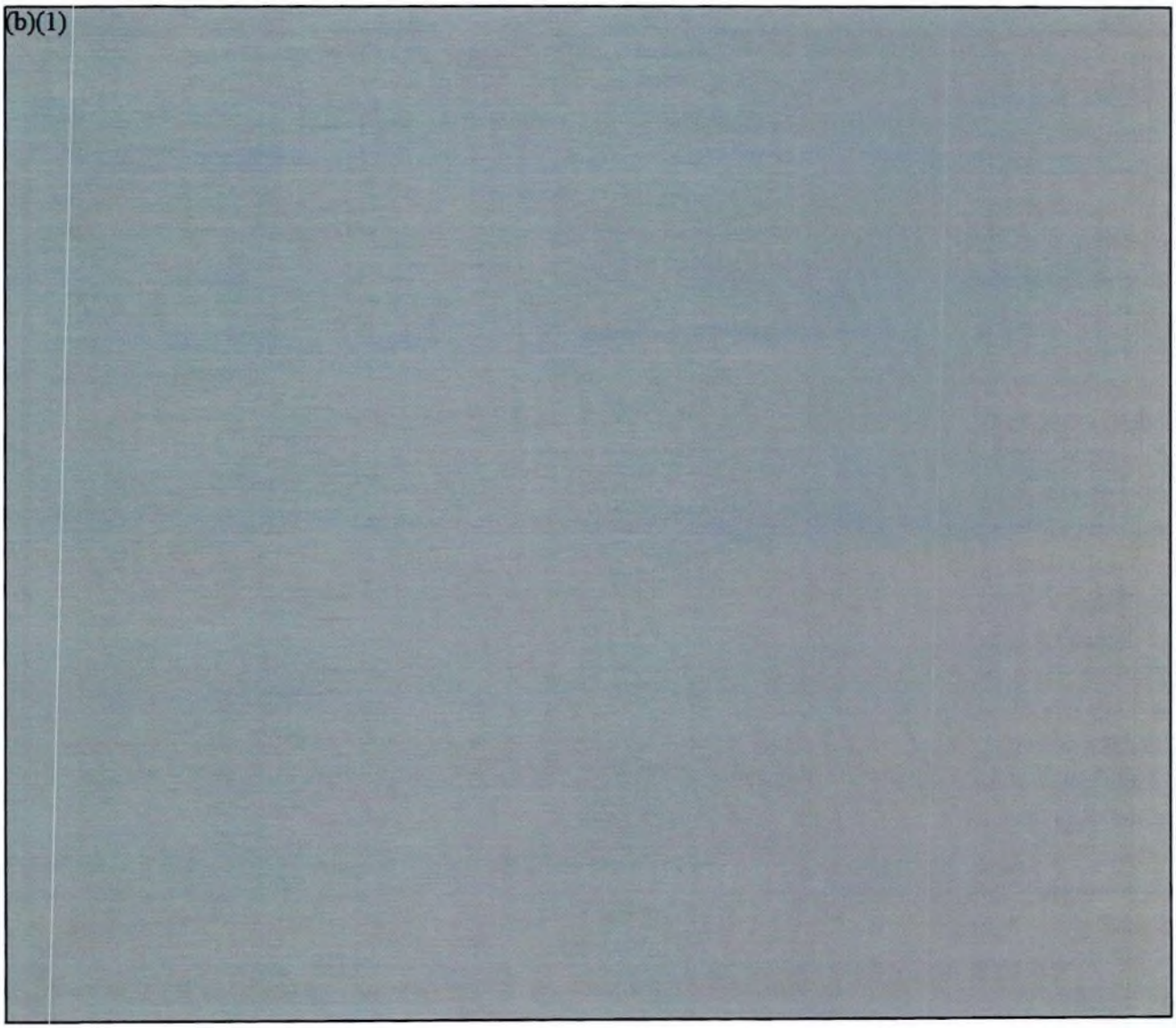
d. (U) References --

(U) Development Estimate/Approved Program: 1985 Congressional Descriptive Summary

(U) Current Estimate: Draft Decision Coordinating Paper (DCP).

10. (U) Technical/Operational Characteristics:

(b)(1)



11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. (U) Cost --

	Planning Estimate/ Approved Program	Changes	Current Estimate
Development (RDT&E)	$ 707.1	$ 24.5	$682.6
Procurement	2677.0	-2010.7	666.3
Missiles	(-)	(-)	(635.0)
Ground Support Eqpt	(-)	(-)	(1.0)
Total Flyaway	(-)	(-)	(636.0)
Other Weapon System Cost	(-)	(-)	(15.1)
Initial Spares	(-)	(-)	(15.2)
Construction (MILCON)	-0-	-0-	-0-
Total FY85 Base-Year	$ 3384.1	$-2035.2	$1348.9
Escalation	201.7	+54.2	255.9
Development (RDT&E)	(80.9)	(- 4.7)	(76.2)
Procurement	(120.8)	(+58.9)	(179.7)
Construction (MILCON)	(0)	(0)	(-0-)
Total Then-Year $	$ 3585.8	$ -1981.0	$1604.8

(b)(1) [redacted]

AS AMENDED

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

e. (U) Foreign Military Sales -- None

f. (U) Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. (U) Program Acquisition --			
(1) (U) Cost	1604.8	2187.4	1604.8
(b)(1)			
b. (U) Current Procurement --		N/A First Year of Procurement in FY89	

13. (U) Cost Variance Analysis:

a. (U) Summary --

(Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	788.0	2797.8	0.0	3585.8
Previous Changes	N/A			
Economic				
Quantity				
Schedule				
Engineering				
Estimating		-1598.4	+200.0	-1398.4
Other				
Support				
Subtotal		-1598.4	+200.0	-1398.4
Current Changes				
Economic	+10.0	- 97.8		- 87.8
Quantity		-700.4		-700.4
Schedule				
Engineering	-115.0	+260.4		+145.4
Estimating	+ 75.8	+184.4	-200.0	+60.2
Other				
Support				
Subtotal	- 29.2	-353.4	-200.00	-582.6
Total Changes	- 29.2	-1951.8	0.0	-1981.0
Current Estimate	758.8	846.0	0	1604.8

(U) Cost Variance Analysis (Cont):

(FY85 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	707.1	2677.0	0.0	3384.1
Previous Changes	N/A	N/A	N/A	N/A
Quantity				
Schedule				
Engineering				
Estimating	+14.7	-1768.1	+158.8	-1594.6
Other				
Support				
Subtotal	+14.7	-1768.1	+158.8	-1594.6
Current Changes				
Quantity		-665.3		-665.3
Schedule				
Engineering	-113.6	+247.1		+133.5
Estimating	+74.4	+175.6	-158.8	+91.2
Other				
Support				
Subtotal	- 39.2	-242.6	-158.8	-440.6
Total Changes	- 24.5	-2010.7	0.0	-2035.2
Current Estimate	682.6	666.3	0	1348.9

b. (U) Previous Change Explanations --

(1) (U) RDTE AND PROCUREMENT
Estimating: DoD program re-direction approval to develop deep strike semi-ballistic missile.

(2) (U) MILCON:
Estimating: Addition of MILCON not previously considered.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) (U) RDT&E		
Revised Jan 86 Economic Escalation Rates (Economic)	N/A	+10.0
Deleted Infrared Terminally Guided Submunitions Program which has been identified as a separate project. (Engineering)	-113.6	-115.0
A validated BCE reflects revised requirements for TRACE, Engineering Services and Initial Spares. (Support)	+ 74.4	+ 75.8
(2) (U) Procurement		
Revised Feb 86 Economic Escalation Rates (Economic)	N/A	- 97.8

	Reconfiguration of missile design and missile procurement and delivery rate. (Engineering)	+247.1	+260.4
	Deletion of HEMTT launchers (Quantity)	-665.3	-700.4
	A validated BCE refined the previous estimate and required adjustment of current and future estimates for added TRACE, Engineering Services and Initial Spares. (Estimating)	+175.6	+184.4
(3)	MILCON Revised force structure (no new units for Army TACMS) eliminated all program construction requirements. (Support)	-158.8	-200.0

(b)(1) [redacted]

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

(U) No Army TACMS major contracts have been awarded as of this date. Award of the full-scale development contracts for missile and integration is scheduled for 2d quarter FY86.

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

a. (U) Program Status --

(1) (U) Percent Program Completed: 40.0% (6 yrs/15 yrs)

(2) (U) Percent Program Cost Appropriated: 16.8% (269.3/1604.8)

b. (U) Appropriation Summary --

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

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs	Budget Year	Balance To Complete FYDP	Beyond FYDP	Total
	FY80-86	FY87	FY88-91		
RDTE	269.3	88.2	299.5	101.8	758.8
Procurement	-	-	659.2	186.8	846.0
MILCON	-	-	-	-	-
Total	269.3	88.2	958.7	288.6	1604.8

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

c. (b)(1) l Summary --

Fiscal Year	FY85 Base-Year Dollars Flyaway Nonrec	Rec	TOTAL	Then-Year Dollars Advance Proc Debit	Credit	TOTAL	Escl Rate (%)
			Appropriation: RDT&E				
1980			12.0			9.4	
1981			16.4			14.0	
1982			13.0			11.8	
1983			6.3			6.0	4.9
1984			50.8			50.2	3.8
1985			74.7			76.4	3.6
1986			95.7			101.5	3.2
1987			80.0			88.2	4.1
1988			85.6			97.7	3.9
1989			74.3			87.4	3.4
1990			55.7			67.2	2.9
1991			38.2			47.2	2.3
1992			47.9			60.5	2.3
1993			32.0			41.3	2.3
Subtota			682.6			758.8	

AS AMENDED

*Quantity column is the only classified item in this chart.

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

c. (b)(1) ual Summary -- (Cont'd)

Fiscal Year	FY85 Base-Year Dollars Flyaway Nonrec	Rec	TOTAL	Then-Year Dollars Advance Proc Debit	Credit	TOTAL	Escl Rate (%)
			Appropriation: Procurement				
1989			115.5			141.3	3.4
1990			171.2			214.3	2.9
1991			237.0			303.6	2.3
1992			142.6			186.8	2.3
Subtota			666.3			846.0	

AS AMENDED

* Quantity column is the only classified item in this chart.

Appropriation: Military Construction

N/A

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

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	TOTAL	OBLIGATED	EXPENDED
	Appropriation: RDT&E		
1980	9.4	9.4	9.4
1981	14.0	14.0	14.0
1982	11.8	11.8	11.7
1983 1/	6.0	5.7	5.6
1984	50.2	50.2	28.4
1985	76.4	35.7	5.0
1986	101.5	2.1	.1
1987	88.2	N/A	N/A
1988	97.7	N/A	N/A
1989	87.4	N/A	N/A
1990	67.2	N/A	N/A
1991	47.2	N/A	N/A
1992	60.5	N/A	N/A
1993	41.3	N/A	N/A
TOTAL	758.8	128.9	74.2

1/ The difference in the Total Program Value and the Obligated amount is a result of deobligation of expired funds that were turned in.

17. (U) Production Rate Data:

N/A

18. (U) Operating and Support Costs:

N/A

UNCLASSIFIED

SAR-85-065

N-41 V-22

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: V-22 (JVX)

AS OF DATE: December 31, 1985*

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1. **Designation/Nomenclature (Popular Name):** V-22 Joint Services Advanced Vertical Lift Aircraft (Osprey)

2. **DoD Component:** U.S. Navy

3. **Responsible Office and Telephone Number:**
Naval Air Systems Command
PMA-275
Washington, D.C.

PM: COL J.A. Creech, USMC
Assigned: May 4, 1981
(202) 692-5661
AUTOVON 222-5661

4. **Program Elements:**
RDT&E: PE 63203N
PE 64262N
PE 63256N
PROCUREMENT: APPN 1506 ICN 0163
PE 26497M
PE 26121M
MILCON: N/A

5. **Related Programs:** None

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

Mission and Description: The V-22 Osprey is a Department of the Navy program for purpose of developing, testing, evaluating, procuring and fielding a tilt rotor, vertical take off 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 combat search and rescue (CSAR) needs of the Navy, and the special operations needs of the Air Force. The Army has stated the USMC medium lift version will be procured by that service. The V-22 will replace the CH-46 in the Marine Corps, the HH-3A in the Navy, and supplement HH-53, HH-60 and C-130 in the Air Force. The V-22 will be capable of flying over 2000 nautical miles without refueling, giving the Services the advantage of a VSTOL aircraft that can rapidly self-deploy to any location in the world.

7. Program Highlights:

a. Significant Historical Developments -- Preliminary Design was initiated in April 1983 with contract award to the joint Bell Boeing team. Trade studies, wind tunnel tests, and mockups provided the information required to enter full scale development. Also effort was initiated for long leadtime tasks normally performed during full scale development to protect the schedule required by the Marine Corps. An initial effort to provide an interim engine for schedule protection was initiated and later terminated when the competitive proposals for the development of the production engine indicated all offerors could meet the required schedule dates. Allison Gas Turbine Division of General Motors Corp. was announced as the winning competitor, with award upon completion of DSARC II scheduled for March 1986.

b. Significant Developments Since Last Report -- On 9 September 1985, the program reviewed by the Navy Secretary at a DNSARC preparatory to a Milestone II decision request. At the DNSARC, Secretary Lehman directed the Program Manager to implement several acquisition initiatives prior to presenting the program to DSARC. The following initiatives have been implemented: fixed price development contracts for the engine and airframe, capped RDT&E program at $2.5B (TY), capped FSD aircraft development contract at $1.8B (TY), R&M values as good as the F-18, contractor investment in tooling, a not-to-exceed ceiling option for the first aircraft production run, agreement to obtain three additional not-to-exceed options following completion of critical design review, and four not-to-exceed ceiling options for the engine.

c. The V-22 system is expected to satisfy all the mission requirements.

d. Changes Since "As Of" Date: On 17 April 1986, the V-22 Program will be reviewed by the DSARC for the Milestone II decision. The procurement program portion of the program to be presented at the DSARC is delayed one year from the program in this SAR and reflects an increase of $499.9 million.

Decision Coordinating Paper (DCP) Threshold Breaches: Not applicable.

Schedule:

a. Milestones	Planning Estimate/ Approved Program	Current Estimate
Milestone 0	Dec 81/Dec 81	Dec 81
Milestone I	Dec 82/Dec 82	Dec 82
Preliminary Design Contract Award	Apr 83/Apr 83	Apr 83
Milestone II	May 85/May 85	Mar 86 (CH-1)
First Flight	Aug 87/Aug 87	Jun 88 (CH-2)
Development Testing IIC	Feb 89/Feb 89	Dec 89 (CH-3)
Operational Testing IIA	Jun 89/Jun 89	Aug 89 (CH-4)
Milestone IIIA	Jul 89/Jul 89	Oct 89 (CH-5)
First Fleet Deliveries	Jul 91/Jul 91	Dec 91 (CH-6)
IOC (5 Aircraft Training Detachment)	1991/1991	1992 (CH-7)

b. Previous Change Explanations --

First flight and Development Testing IIC rescheduled 6 months to allow incorporation of primary engine. Operational Testing IIA rescheduled 2 months to allow required time between completion of test and MS IIA.

c. Current Change Explanations --

(Ch-1) Milestone II rescheduled as a result of SecNav guidance to incorporate acquisition initiatives into program (+10 months)

(Ch-2) First Flight rescheduled since full scale development contract award has been delayed (+4 months)

(Ch-3) Rescheduled to accommodate first flight (+4 months)

(Ch-4) Rescheduled to accommodate first flight (+4 months)

(Ch-5) Rescheduled due to revised test schedule (+3 months)

(Ch-6) Fleet deliveries rescheduled based on revised contract award (+5 months)

(Ch-7) IOC moved due to reschedule of fleet deliveries (+5 months)

d. References --

Planning Estimate: R&D Descriptive Summary

Approved Program: FY 1987 President's Budget.

10 Technical/Operational Characteristics:

a. Technical	Planning Est/ Appr Program	Demonstrated Performance	Current Estimate
Shipboard Operational Spotting Factor (Maximum) (x H-46)			
Length, ft			
Width, ft			
Height, ft			
Empty Weight, lbs			
b. Operational			
Sustainability, days (operations under austere basing/support conditions)			
Readiness, mission capability rate			
Mission Complete Probability, rate (4 hours)			
Maintenance Man-Hours per Flight Hour, hrs (corrective and preventive, O&I level)			
Survivability, (Flight critical resistent at 90% muzzle velocity)			
World-wide Self-Deployment, nm/hrs (minimum distance/maximum flight time)			
Continuous Cruise Speed, kts (no less than)			
Dash Speed kts (no less than)			
Instantaneous G-Loading (positive/negative)			
Troop Capacity			
External Cargo, lbs			

The V-22 program is currently in the preliminary design phase of development. The operational/technical characteristics of the aircraft will be determined during this phase through wind tunnel testing, trade-off studies, and simulations. Conceptually, the V-22 is planned to be a vertical take-off and landing, shipboard compatible aircraft able to operate routinely from remote areas. It is planned to have a continuous cruise speed of not less than 250 KTAS, carry 24 troops, and carr external load of 10,000 pounds. These and other technical/operational characteristics will be established prior to the DSARC II Full Scale Development decision and documente in the Decision Coordinating Paper.

c. Previous Change Explanations -- N/A

d. Current Change Explanations -- N/A

e. References --

PLANNING ESTIMATE: R&D Descriptive Summary

APPROVED PROGRAM: FY 1987 President's Budget

Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Planning Estimate	Changes	Current Estimate
a. Cost —			
Development (RDT&E)	2044.9	+90.3	2135.2
Procurement	12941.7	-510.3	12431.4
Airframe	7757.7	+309.9	8067.6
Engine	1170.9	-193.1	977.8
Avionics	951.3	-112.0	839.3
Other Hardware	273.5	-100.4	173.1
Total Flyaway	10153.4	-95.6	10057.8
Other Wpn Sys Cost	1220.9	-288.8	932.1
Initial Spares	1567.4	-125.9	1441.5
Construction (MILCON)	-	-	-
Total FY 84 Base-Year $	14986.6	-420.0	14566.6
Escalation	9480.4	-4242.2	5238.2
Development (RDT&E)	364.2	-28.9	335.3
Procurement	9116.2	-4213.3	4902.9
Construction (MILCON)	-	-	-
Total Then-Year $	24467.0	-4662.2	19804.8
b. Quantities —			
Development (RDT&E)	7	-1	6
Procurement	602	-	602
Total	609	-1	608
c. Unit Cost —			
Procurement:			
FY 84 Base-Year $	21.498	-0.848	20.650
Then-Year $	36.641	-7.846	28.795
Program:			
FY 84 Base-Year $	24.609	-0.651	23.958
Then-Year $	40.176	-7.602	32.574

d. Approved Design to Cost Goal — N/A

e. Foreign Military Sales — None

f. Nuclear Costs — None

(Note: The above Current Estimate for procurement is based on the FY1987 President's budget but does not reflect the program currently depicted in the Decision Coordinating Paper (DCP) supporting the DSARC II decision. The procurement funding required to support the production program shown in the DCP is delayed one year and totals $17,834.2 million. The DSARC II is currently scheduled for 17 April 1986.

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	19804.8	23670.1	19804.8
(2) Quantity	608	608	608
(3) Unit Cost	32.6	38.9	32.6
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	N/A	N/A	N/A
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	N/A	N/A	N/A
(2) Quantity	N/A	N/A	N/A
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2409.1	22057.9	-	24467.0
Previous Changes:				
Economic	-35.4	-868.8	-	-904.2
Quantity	-	-	-	-
Schedule	+57.2	-	-	+57.2
Engineering	-	-	-	-
Estimating	-19.8	+155.4	-	+135.6
Support	-	-85.5	-	-85.5
Other	-	-	-	-
Subtotal	+2.0	-798.9	-	-796.9
Current Changes:				
Economic	-33.4	-3223.5	-	-3256.9
Quantity	-	-	-	-
Schedule	+104.8	-	-	+104.8
Engineering	-	-	-	-
Estimating	-12.0	-249.3	-	-261.3
Support	-	-451.9	-	-451.9
Other	-	-	-	-
Subtotal	+59.4	-3924.7	-	-3865.3
Total Changes	+61.4	-4723.6	-	-4662.2
Current Estimate	2470.5	17334.3	-	19804.8
Air Force (non-add)	(27.2)			(27.2)

17 Cost Variance Analysis (Cont'd):
(FY 1984 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2044.9	12941.7	-	14986.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	+42.4	-	-	+42.4
Engineering	-	-	-	-
Estimating	-18.0	+99.0	-	+81.0
Support	-	-66.3	-	-66.3
Other	-	-	-	-
Subtotal	+24.4	+32.7	-	+57.1
Current Changes:				
Quantity	-	-	-	-
Schedule	+86.3	-	-	+86.3
Engineering	-	-	-	-
Estimating	-20.4	-194.6	-	-215.0
Support	-	-348.4	-	-348.4
Other	-	-	-	-
Subtotal	+65.9	-543.0	-	-477.1
Total Changes	+90.3	-510.3	-	-420.0
Current Estimate	2135.2	12431.4	-	14566.6
Air Force (non-add)	(24.7)			(24.7)

b. Previous Change Explanations --

RDT&E

Economic: revised escalation indices
Schedule: program extended one year
Estimating: reprogramming to SH-60B Trainer program; Congressional reduction; and budget adjustments

Procurement

Economic: revised escalation indices
Estimating: Non-recurring adjustment and refined cost estimate for flyaway and engines
Support: Budget adjustments to accommodate FY90 controls and refined pricing for Support and Spares

c. Current Change Explanations --

	(Dollars in Millions) Base-Year $	Then-Year $
(1) RDT&E		
Revised Jan 86 Economic Escalation rates. (Economic)	N/A	-33.4
Program restructure due to delay in DSARC II Milestone decision (Schedule)	+86.3	+104.8
Congressional reductions to FY 1986 Budget request (Estimating)	-21.6	-23.7

13. Cost Variance Analysis Cont'd):

	(Dollars in Millions) Base-Year $	Then-Year $
(1) RDT&E (Con't)		
Decreases for reductions in CSS/NIF/ Pay Raise (Estimating)	-1.7	-1.8
Reprogramming to AMRAAM and OSD offset (Estimating)	-8.3	-8.8
Share of OP-05 Undistributed Congressional Reduction (Estimating)	-67.3	-76.0
Reprogramming to A-6 (Estimating)	-8.7	-9.6
Share of undistributed Congressional NIF adjustment (PBD 402) (Estimating)	-32.2	-36.7
Rephase of dollars in outyears to align program with requirements and to SecNav cap (Estimating)	+91.4	+111.2
Refinements in estimates (Estimating)	+28.0	+33.4
(2) APN		
Revised Jan 86 Economic Escalation Rates (Economic)	N/A	-3223.5
Reductions to match FY 1987 President's budget (Estimating)	-194.6	-249.3
Reductions to match FY 1987 President's budget (Support)	-348.4	-451.9
(3) MILCON -- N/A		

c. References -- Planning Estimate FY 1985 Descriptive Summary

(Note: The APN reduction shown above is based on the FY 1987 President's budget but does not reflect the program currently depicted in the DCP supporting the DSARC II decision. The DCP reflects a one year delay and an increase of $499.2 million.

14. Program Acquisition Unit (PAUC) History:

a. Initial SAR Estimate to Current Baseline Estimate

(1) Initial SAR Estimate is Current Baseline.

b. Current Baseline Estimate to Current Estimate

PAUC [illegible]ning [illegible]mate	CHANGES (Then Year Dollars in Millions)								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
+40.2	-6.8	-	+0.3	-	-0.2	-0.9	-	-7.6	+32.6

15. Contract Information: (Dollars in Millions)

a. RDT&E

Preliminary Design:
Bell-Boeing, Fort Worth, TX
N00019-83-C-0166, CPIF,
25 April 1983 (Stage I)

Initial Contract Price		
Target	Ceiling	Qty
$68.8	$79.1	N/A

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$69.2	$79.6	N/A	$79.2	$79.2

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$-8.9	$-5.0
Cumulative Variances to Date (11/30/85)	$-17.6	$-0.5
Net Change	$-8.7	$+4.5

Explanation of Change: The variances are attributable primarily to critical structures test, wind tunnel test, and associated fringe and overhead.

Preliminary Design:
Bell-Boeing, Fort Worth, TX
N00019-83-C-0166, CPIF,
31 May 1984 (Stage II)

Initial Contract Price		
Target	Ceiling	Qty
$84.5	$97.2	N/A

Current Contract Price			Estimated Price At Completion	
rget	Ceiling	Qty	Contractor	Program Manager
$122.1	$140.4	N/A	$130.3	$130.3

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$-2.6	$-3.6
Cumulative Variances to Date (11/30/85)	$-13.5	$-11.2
Net Change	$-10.9	$-7.6

Explanation of Change: Cost variance is primarily due to refabrication of tooling used in the wing assembly. Schedule variance reported is primarily due to airframe, systems test and evaluation, and associated fringe and overhead. Both stages of this contract are within the approved budget.

b. APN — N/A

c. MILCON — N/A

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

a. Program Status —

(1) Percent Program Completed: 31.0% (5 yrs/16 yrs)

(2) Percent Program Cost Appropriated: 4.2% ($827.6/$19804.8)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY82-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-97)	Total
RDT&E	827.6	386.9	1161.6	94.4	2470.5
Procurement	-	-	4424.2	12910.1	17334.3
MILCON	-	-	-	-	-
Total	827.6	386.9	5585.8	13004.5	19804.8

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1982	-			1.6			1.5	5.30
1983	-			4.9			4.8	4.90
1984	-			84.8			86.7	3.80
1985	6			167.5			177.3	3.60
1986	-			508.3			557.3	3.20
1987	-			339.6			386.9	4.10
1988	-			409.3			483.1	3.90
89	-			248.1			301.9	3.40
90	-			176.8			220.7	2.90
1991	-			122.1			155.9	2.30
1992	-			72.2			94.4	2.30
Subtotal	6			2135.2			2470.5	
Appropriation: APN								
1988	-	-	-	82.9	-	104.9	104.9	3.90
1989	18	-	582.3	710.8	104.9	168.0	903.5	3.40
1990	42	37.8	869.9	1062.5	168.0	199.7	1381.1	2.90
1991	58	124.8	1141.1	1531.1	199.7	238.0	2034.7	2.30
1992	82	10.5	1476.4	1910.0	238.0	221.1	2594.7	2.30
1993	90	-	1449.3	1828.4	221.1	189.6	2540.5	2.30
1994	80	-	1214.2	1559.7	189.6	180.2	2217.3	2.30
1995	78	-	1128.3	1431.1	180.2	177.2	2081.6	2.30
1996	78	-	1084.0	1294.2	177.2	156.9	1925.4	2.30
1997	76	-	939.2	1020.7	156.9	-	1550.6	2.30
Subtotal	602	173.1	9884.7	12431.4	1635.6	1635.6	17334.3	
Total	608	173.1	9884.7	14566.6	1635.6	1635.6	19804.8	

(Note: The above Current Estimate for procurement is based on the FY1987 President's budget but does not reflect the program currently depicted in the Decision dinating Paper (DCP) supporting the DSARC II decision. The procurement funding ired to support the production program shown in the DCP is delayed one year and totals 34.2. The DSARC II is currently scheduled for April 17, 1986.)

16. Program Funding Summary (Con't): (Current Estimate in Millions of Dollars)

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: RDT&E		
1982	1.5	1.5	1.2
1983	4.8	4.8	4.3
1984	86.7	86.5	80.1
1985	177.3	106.9	99.0
1986	557.3	15.3	0.4
To Complete	1642.9	N/A	N/A
	2470.5	215.0	185.0

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Planning Estimate	Production Estimate	Current Estimate	Maximum
[redacted]	18	N/A	18	N/A
[redacted]	42	N/A	42	N/A
1991	58	N/A	58	N/A
1992	82	N/A	82	N/A
1993	90	N/A	90	N/A
1994	80	N/A	80	N/A
1995	78	N/A	78	N/A
1996	78	N/A	78	N/A
1997	76	N/A	76	N/A

(Note: The quantities shown above reflect the approved program in the FY 1987 President's budget. The dollars in the budget do not support procurement of these quantities. See paragraph 7d, this SAR.

b. Cost Variance -- N/A, as the V-22 has not achieved Milestone II.

c. Schedule Variance -- N/A, as the V-22 has not achieved Milestone II.

d. Deliveries (Plan/Actual) --

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

Operating and Support Costs: N/A, not a new SAR.

AF-24 KC-10A

SAE-85-112

SELECTED ACQUISITION REPORT(RCS:DD-COMP(QA)823)

PROGRAM: KC-10A

AS OF DATE: December 31, 1985

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CLEARED
FOR OPEN PUBLICATION
MAR 10 1986 18
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. Designation and Nomenclature (Popular Name): KC-10A EXTENDER

2. DOD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

KC-10A Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433

PM: Col Gregory A. Keuhner
Assigned: 1 July 1983
AV: 785-2946 COMM: (513)255-2946

4. Program Elements/Procurement Line Items:

RDT&E: N/A
PROCUREMENT: APPN 3010 PE 27222F ICN C010AK (No shared funding)
MILCON: APPN 3300 PE 27222F (No shared funding)

5. Related Programs: None.

SAF/PAS
86-161 - T

OASD(PA) DEGISER 86-T-0553

6. Mission and Description: The KC-10 is a version of the intercontinental range DC-10-30 convertible freighter modified to provide increased mobility for U.S. forces in contingency operations by: refueling fighters and simultaneously carrying the fighters' support equipment and personnel on overseas deployments and resupply missions, refueling strategic offensive and reconnaissance aircraft during long-range conventional operations and augmenting the U.S. cargo-carrying capability. This FAA certified system, supported by contractor support, will augment the present KC-135 Tanker System.

7. Program Highlights

a. Significant Historical Developments - The need for additional aerial refueling capability was first documented by the Air Force in 1967 (SAC ROC 9-67). In 1969-1970 a wide ranging study of advanced tanker options with emphasis on new design aircraft capabilities and costs was done. Because the new designs were all found to be cost prohibitive, the Air Force, in 1972, conducted flight tests to demonstrate the feasibility of converting existing wide-body design aircraft to a tanker design. The Arab-Israeli war of late 1973 highlighted the need for improvement in both tanker and cargo capabilities and in 1974 the tanker and cargo requirements were combined. In 1975-1976, the Air Force cancelled a full scale development acquisition approach because of funding and initiated a program for competitive procurement of wide-bodied commercial derivative aircraft and logistics support. In December 1977, USAF awarded a contract to McDonnell-Douglas Corporation for long lead and preproduction planning with options to acquire up to 60 aircraft plus a contract for five years of logistics support. In 1978, production go ahead was authorized (DCP #148) and USAF ordered two aircraft. In 1979-1981, options were exercised for 14 more aircraft and their logistics support. In December 1982, USAF received Congressional approval to modify the remaining option of the current acquisition contract for a multiyear procurement of 44 aircraft through 1987.

b. Significant Developments Since Last Report - During this period, Seymour-Johnson AFB, N.C. was activated as the third main operating base (MOB) on 1 October 1985. Preliminary engineering work was done for the incorporation of wing hose pods.

The KC-10 meets current mission requirements.

c. Changes Since "As Of" Date - None.

8. Decision Coordinating Paper (DCP) Threshold Breaches - There are currently no DCP (dated 13 November 1978) threshold breaches.

9. Schedule:

	Production Estimate/ Approved Program	Current Estimate
a. Milestones		
DSARC III (Production)	Nov 78/Nov 78	Nov 78
Exercise Production Options		
(1) FY78 Option	Dec 78/Dec 78	Dec 78
(2) FY79 Option	Dec 78/Dec 78	Dec 78
(3) FY80 Option	Dec 78/Dec 79	Oct 79
(4) FY81 Option	Dec 80/Dec 80	Feb 81
(5) FY82 Option	Dec 81/Dec 81	Jan 82
(6) FY83-87 Option	Dec 82/Dec 82	Dec 82
Roll Out #1 Aircraft	Feb 80/Feb 80	Apr 80
Predelivery Test-Start	Apr 80/Apr 80	Jul 80
Complete	Oct 80/Oct 80	May 81
Aircraft Delivery-#1	Oct 80/Oct 80	Sep 81
#2	Dec 80/Dec 80	Mar 81
*IOC	Oct 80/Oct 80	Oct 80

b. Previous Change Explanations -

Program Office exercised FY80 option in October 79 within the window ending in December 79 to take advantage of available funding.
FY81 option delayed until contractor made satisfactory progress towards accomplishing predelivery milestone requirements.
FY82 option delayed due to lack of funding.
Rollout delayed because of the late delivery of parts by vendors and in-line changes.
Predelivery testing delayed because of slippage of first flight.
Initial aircraft deliveries delayed due to resolution of technical problems discovered during predelivery testing.
Aircraft #1 continued in delivery program while #2 began USAF OT&E program.

c. Current Change Explanations-

None

d. References -Production Estimate: DCP #148, Dated 13 November 78.
Approved Program: DCP #148, Dated 13 November 78.

*Denotes Initial Operating Capability (Activation of 1st Main Operating Base)

10. Technical/Operational Characteristics

	Production Estimate/ Approved Program	Demonstrated* Performance	Current Estimate
a. Technical			
Support Features (%)			
Probability of Mission Success	96/96	98.8	98
Full Mission Capable Rate	70/70	90.6	90
Not Mission Capable Supply	3/1	0.88	1
Partial Mission Capable Supply	7/1	0.46	1
b. Operational			
Critical Field Length (ft)	11000/11000	10300	10300
Fuel Transfer Rate (Gals/Min)			
Boom	1500/1500	1435	1435
Hose	600/600	600	600
Maximum Fuel Offload (lbs)			
3000 nm radius	127000/127000	127000	127000
5000 nm (1000 nm recovery)	109000/109000	109000	109000
Maximum Cargo Capacity (lbs) 4000 nm range	163000/163000	163000	163000

* Demonstrated performance entries represent average performance.

c. Previous Change Explanations - During flight testing of the KC-10, it was established the KC-10 can take off in less than 11,000 ft, a development goal for the program. The fuel transfer rate achieved with the KC-10A, 1435 GPM, is less than the design goal of 1500 GPM due to limitations of receiver aircraft to take on fuel. This demonstrated transfer rate does meet technical specification and program requirements. In the first one and one half years of operational experience, the KC-10 has consistently exceeded production estimates and contractual requirements for reliability and maintainability. Changes to Full Mission Capable Rate, Not Mission Capable Supply, and Partial Mission Capable Supply were based on FY 84 operational performance.

d. Current Change Explanations - None.

e. References - Production Estimate: DCP #148, Dated 13 November 78.
Approved Program: DCP #148, Dated 13 November 78.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Production Estimate	Changes	Current Estimate
a. Cost			
Development (RDT&E)	-0-	-0-	-0-
Procurement	2394.7	- 344.3	2050.4
Airframe	(1656.8)	(- 246.2)	(1410.6)
Engine	(460.3)	(- 100.8)	(359.5)
Other Flyaway	(85.9)	(- 11.4)	(74.5)
Total Flyaway	(2203.0)	(- 358.4)	(1844.6)
Other Wpn Sys Costs	(56.3)	(+ 18.6)	(74.9)
Initial Spares	(135.4)	(- 4.5)	(130.9)
Milcon	31.1	- 7.8	23.3
Total Cost in Constant FY76 $	2425.8	- 352.1	2073.7
Escalation	2796.2	- 993.8	1802.4
Development (RDT&E)	(-0-)	(-0-)	(-0-)
Procurement	(2768.7)	(- 990.2)	(1778.5)
Milcon	(27.5)	(- 3.6)	(23.9)
Total Program Cost in Then Year $	5222.0	-1345.9	3876.1
b. Quantities			
Development (RDT&E)	-0-	-0-	-0-
Procurement	72	-12	60
Total	72	-12	60
c. Unit Cost			
Procurement:			
Constant FY76$	33.260	+ 0.913	34.173
Current TY$	71.714	- 7.899	63.815
Program:			
Constant FY76$	33.692	+ 0.870	34.562
Current TY$	72.528	- 7.926	64.602

d. Approved Design to Cost Goal -- None.

e. Foreign Military Sales -- None.

f. Nuclear Costs -- None.

12. Program Acquisition/Current Procurement Unit Cost Summary (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition			
(1) Cost	3876.1	3954.6	3876.1
(2) Quantity	60	60	60
(3) Unit Cost	64.602	65.910	64.602
b. Current Procurement	(FY86)	(FY86)	(FY87)
(1) Cost	486.7	519.0	104.4
(2) Less CY Adv Proc	219.8	208.2	0.0
(3) Plus PY Adv Proc	524.2	524.2	395.9
Net Total	791.1	835.0	500.3
(2) Quantity	12	12	8
(3) Unit Cost	65.925	69.583	62.538

13. Cost Variance Analysis

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	--	5163.4	58.6	5222.0
Previous Changes				
Economic	--	- 256.2	+ 4.1	- 252.1
Quantity	--	- 983.2	--	- 983.2
Schedule	--	--	--	--
Engineering	--	--	+ 1.1	+ 1.1
Estimating	--	+ 12.5	- 20.6	- 8.1
Other	--	--	--	--
Support	--	- 25.1	--	- 25.1
Subtotal	--	-1252.0	- 15.4	-1267.4
Current Changes				
Economic	--	- 51.8	- 0.1	- 51.9
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	+ 4.1	+ 4.1
Estimating	--	- 109.1	--	- 109.1
Other	--	--	--	--
Support	--	+ 78.4	--	+ 78.4
Subtotal	--	- 82.5	+ 4.0	- 78.5
Total Changes	--	-1334.5	-11.4	-1345.9
Current Estimate	--	3828.9	47.2	3876.1

13. Cost Variance Analysis (Cont'd)
(FY 1976 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	--	2394.7	31.1	2425.8
Previous Changes				
Quantity	--	- 380.0	--	- 380.0
Schedule	--	--	--	--
Engineering	--	--	+ 0.5	+ 0.5
Estimating	--	+ 51.9	- 10.1	+ 41.8
Other	--	--	--	--
Support	--	- 7.2	--	- 7.2
Subtotal	--	- 335.3	- 9.6	- 344.9
Current Changes				
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	+ 1.8	+ 1.8
Estimating	--	- 30.3	--	- 30.3
Other	--	--	--	--
Support	--	+ 21.3	--	+ 21.3
Subtotal	--	- 9.0	+ 1.8	- 7.2
Total Changes	--	- 344.3	- 7.8	- 352.1
Current Estimate	--	2050.4	23.3	2073.7

b. Previous Change Explanations

RDT&E: None.

Procurement:
Economic: Revised economic escalation indices.
Quantity: Twelve aircraft deleted (from 72 to 60) to fund higher priority requirements.
Estimating: Additional ECO; change in advance buy inflation methodology.
Support: Spares and other support costs reduced due to aircraft reduction; revised estimate of support requirements.

MILCON:
Economic: Revised economic escalation indices.
Estimating: Revised estimates of HQ SAC construction requirements; funding for Centralized Aircraft Support System deferred to FY87 for phasing with program requirements; impact of escalation change on prior years.
Engineering: Modification of facilities (ramp improvements).

13. Cost Variance Analysis (Cont'd)

c. Current Change Explanations

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E: None.		
(2) PROCUREMENT:		
Revised program peculiar inflation indices. (ECONOMIC)	0.0	- 63.6
Correction of error in 31 Dec 84 SAR. (ECONOMIC)	0.0	+ 11.8
Correction of error in 31 Dec 84 SAR estimating calculations. (ESTIMATING)	0.0	- 11.8
Increase to flyaway due to economic price adjustment retention. (ESTIMATING)	+ 13.8	+ 28.7
Adjustment for prior year escalation. (ESTIMATING)	+ 26.7	+ 53.2
Reduction in ECO requirements. (ESTIMATING)	- 49.0	- 98.9
Reestimate of initial spares and support equipment requirements. (SUPPORT)	- 0.5	- 1.9
Adjustment to refine the mix of previous support and estimating category changes primarily related to the impact of economic escalation changes on current and prior years	0.0	0.0
o Decrease to Estimating Category (ESTIMATING)	(- 21.8)	(-80.3)
o Increase to Support Category	(+ 21.8)	(+80.3)
(3) MILCON:		
Revised economic escalation indices. (ECONOMIC)	0.0	- 0.1
Modification to facilities at 3rd MOB. (ENGINEERING)	+ 1.8	+ 4.1

d. References: FY 87 President's Budget

14. Program Acquisition Unit Cost (PAUC) History (TY $ in Millions)

a. Initial SAR Estimate to Current Estimate

PAUC (Initial SAR-PdE)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
72.528	-5.067	-1.881	--	+0.087	-1.953	+0.888	--	-7.926	64.602

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

a. RDT&E: None

b. PROCUREMENT:

(1)Contractor: Douglas Aircraft Company, Long Beach, California
Contract Title: KC-10 Acquisition Type: FFP W/EPA
Contract Number: F33700-78-C-0001
Award Date: 3 January 78 Definitization Date: 3 January 78

Initial Contract Price			Current Contract Price		
Target	Ceiling	Quantity	Target	Ceiling	Quantity
877.9	N/A	16	3356.3(Ch-1)	N/A	60

Estimated Price At Completion	
Contractor	Program Manager
3356.3(Ch-1)	3356.3(Ch-1)

(Ch-1): Change in price represents a decrease from last year's value due to decreased airframe and engine values resulting from reduced program peculiar inflation.

(2)Contractor: Douglas Aircraft Company, Long Beach, California
Contract Title: Contractor Logistics Support Type: FFP W/EPA
Contract Number: F33700-78-C-0003
Award Date: 3 January 78 Definitization Date: 3 January 78

Initial Contract Price			Current Contract Price		
Target	Ceiling	Quantity	Target	Ceiling	Quantity
61.2	N/A	--	267.0(Ch-1)	N/A	--

Estimated Price At Completion	
Contractor	Program Manager
267.0	267.0(CH-1)

(Ch-1): Change in price represents a decrease from last year's value due to a re-estimate of initial spares requirements for FY86.

(3)Contractor: American Airlines Corp., Dallas, Texas TYPE: FFP
Contract Title: Follow-On-Aircrew Training
Contract Number: F33700-80-C-0040
Award Date: 15 July 80 Definitization Date: 15 July 80

Initial Contract Price			Current Contract Price		
Target	Ceiling	Quantity	Target	Ceiling	Quantity
19.2	N/A	1.0	69.1	N/A	3

Estimated Price At Completion	
Contractor	Program Manager
69.1	69.1

c. MILCON: None.

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

a. Program Status

(1) Percent Program Completed: (8/9)=88.9%
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 96.96%
(Funds Appropriated To Date in Millions/Total Program Funding in Millions)

b. Appropriation Summary

(Then-Year Dollars in Millions)

Appropriation	Current Prior Yrs (FY79-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP	Total
RDT&E	--	--	--	--	--
PROCUREMENT	3724.5	104.4	--	--	3828.9
MILCON	33.6	13.6	--	--	47.2
Total	3758.1	118.0	--	--	3876.1

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

c. Annual Summary --

Fiscal Year	Qty	Base-Year Dollars			Then-Year Dollars			Escl Rate(%) 1/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation - RDT&E: Not Applicable								
Appropriation - PROCUREMENT								
1979	2	54.6	68.0	139.0	--	--	191.8	
1980	4	-0-	115.8	123.0	--	--	195.0	
1981	6	-0-	164.7	183.6	--	--	316.9	
1982	4	-0-	114.7	128.3	--	--	233.2	
1983	8	-0-	227.0	491.9	441.0	--	923.2	
1984	8	-0-	246.2	396.2	425.3	209.3	776.2	
1985	8	-0-	250.0	300.4	375.3	332.0	601.5	
1986	12	-0-	357.6	236.7	219.8	524.2	486.7	
1987	8	-0-	246.0	51.3	--	395.9	104.4	
Subtotal	60	54.6	1790.0	2050.4	1461.4	1461.4	3828.9	
Appropriation - MILCON								
1982				1.6			3.0	9.2
1983				--			--	10.3
1984				7.7			15.0	3.8
1985				7.2			14.5	3.6
1986				0.5			1.1	3.2
1987				6.3			13.6	4.1
Subtotal				23.3			47.2	
Total	60	54.6	1790.0	2073.7	1461.4	1461.4	3876.1	

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite rate. Procurement escalation rates are peculiar for the KC-10 acquisition. Construction escalation rates reflect OSD escalation rates. KC-10 procurement inflation indices are computed according to the contract EPA clause and the methodology does not provide raw inflation rates.

16. Program Funding Summary (Cont'd) (Current Estimate in Millions of Dollars)

d. Obligations and Expenditures

Then-Year Dollars (Current Estimate in Millions)

Fiscal Year	Total	Obligated*	Expended*
		Appropriation - RDT&E: Not Applicable	
		Appropriation - PROCUREMENT	
1979	191.8	191.8	191.8
1980	195.0	195.0	195.0
1981	316.9	316.9	316.9
1982	233.2	233.2	233.2
1983	923.2	923.2	923.2
1984	776.2	776.2	734.5
1985	601.5	334.9	89.2
1986	486.7	48.4	-0-
1987	104.4	-0-	-0-
Subtotal	3828.9	3019.6	2683.8
		Appropriation - MILCON	
1982	3.0	1.6	1.5
1983	-0-	-0-	-0-
1984	15.0	10.1	6.5
1985	14.5	12.0	5.6
1986	1.1	-0-	-0-
1987	13.6	-0-	-0-
Subtotal	47.2	23.7	13.6

*Reflects program office records as of 31 December 85.

17. Production Rate Data:

a. Annual Production Rates -- (NOTE: The annual production rates shown differ from the annual funded quantities because the funded delivery period is 5 mos for FY79; 9 mos for FY80; 11.4 mos for FY81; 7mos for FY82; 7mos for FY83 10.3 mos for FY84; 11.6 mos for FY85; 12 mos for FY86, and 8 mos for FY87.)

	Production Rates (Quantity/Year)		
Fiscal Year	Production Estimate	Current Estimate	Maximum Economic
1979	--	9.6	9.6
1980	16.0	8.3	8.3
1981	3.0	17.1	17.1
1982	2.1	7.2	7.2
1983	9.1	7.2	7.2
1984	10.1	10.1	10.1
1985	15.0	11.4	11.4
1986	12.5	12.0	12.0
1987	12.0	12.0	12.0
1988	12.0	--	--

b. Cost Variance -- Dollars in Millions

Item		Production Estimate	Change (Cur Est Less Prod Est)	Current Estimate	Change (Cur Est Less Max Econ)	Maximum Economic
Prog Acq Cost	(BY$)	2425.8	- 352.1	2073.7	--	2073.7
	(TY$)	5222.0	-1345.9	3876.1	--	3876.1
PAUC	(BY$)	33.692	+ 0.870	34.562	--	34.562
	(TY$)	72.528	- 7.926	64.602	--	64.602

c. Schedule Changes: None.

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement:	39/39

18. Operating and Support Costs: None

N-20 LCAC

SAR-85-039

[redacted]

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

AS OF DATE: * December 31, 1985

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1. (U) Designation/Nomenclature (Popular Name): LCAC/Landing Craft, Air Cushion

2. (U) DOD Component: Department of the Navy

3. (U) Responsible Office and Telephone Number:

Amphibious Warfare and Strategic Sealift Program Office (PMS-377)
Naval Sea Systems Command
Washington, DC

PM: E. E. Shoults
Assigned: April 29 1985
AUTOVON 222-8511
COMM (202) 692-8511

4. (U) Program Elements:

RDT&E: 64567N (shared funding)
PROCUREMENT: 24411N, APPN 1611, ICN 5105
MILCON: 24796N, 24786N, 65896N

5. (U) Related Programs: AALC; LHD; LSD41;

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Review for [redacted]: OADR

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OASD(PA) DPOISR 86-0855

6. (U) 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. (U) Program Highlights:

a. (U) Significant Historical Developments— In 1970 the first contracts for the design and construction of prototype Amphibious Assault Landing Craft (AALC), nicknamed JEFF Craft, were let to Aerojet General Corporation and Bell Aerospace, Textron. The two JEFF Craft, designated JEFF (A) (Aerojet) and JEFF (B) (Bell) were delivered in 1978 and 1979. These crafts have undergone an extensive testing program since delivery. Results from the test program were extremely successful, with the craft satisfying all established performance requirements.

Bell Aerospace, Textron was competitively selected and subsequently awarded contracts for production of six craft (three authorized in FY82 and three in FY83). An additional contract was awarded to Bell in November 1983 for Long Lead Material to support the six craft authorized in FY84. Bell Aerospace was subsequently awarded a Fixed Price Incentive (FPI) contract on March 9, 1984 for the construction of six additional LCAC.

The first LCAC successfully completed acceptance trials on December 7, 1984 at the Naval Coastal Systems Center (NCSC) in Panama City, Florida. During the initial phase of operational testing (OT-IIIA) early in 1985 the LCAC met all mission specifications; however, discrepancies affecting craft reliability were identified. Correction of these discrepancies has required analysis, system redesign, corrective action and evaluation. OT-IIIB scheduled for June 1986 will be expanded to include testing to validate OT-IIIA discrepancy correction.

The first fleet operating unit for LCAC, Assault Craft Unit 5, was established in October 1983 at NCSC. The unit continues to conduct training and support trial activities prior to relocation to permanent base facilities being constructed at Camp Pendleton, California in mid 1986.

b. (U) Significant Developments Since Last Report— In 1984, Bell Aerospace reported a potential cost growth of $11.1 Million on the FY 1982/1983 LCAC contract. This growth was associated with production facility start-up and material cost. On April 3, 1985, the Navy converted the FY 82/83 contract from a Cost Plus Award Fee (CPAF) to a Fixed Price Incentive (FPI) contract with a 50/50 share line to limit the Navy's liability for the projected cost overrun.

As a result of corrections of the deficencies identifed during OT-IIIA, LCAC deliveries have been delayed and there will be significant cost growth for the first twelve craft. The Navy share of cost growth is anticipated to be $20.6 Million.

A second source builder, Lockheed Shipbuilding Company, has been selected and a contract to produce two FY 85 craft was awarded on September 30, 1985. These craft are to be produced in Gulfport, Mississippi. Upon successful completion of OT-IIIB the remaining FY 85 craft and twelve FY 86 craft will be competitively awarded during late summer 1986 with a split between the Lead (Bell) and the Second Source (Lockheed).

c. (U) Changes Since "as of" Date —

LCAC 2 passed acceptance trials and was delivered 22 February 1986.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: Delivery schedule has slipped 6 months for LCAC 2 causing a breach in DCP (SECNAV memo dated December 21, 1981). This is due to craft reliability being below anticipated level and the time required to redesign the deficient subsystems and additional requirements for retrial.

9. (U) Schedule:

a. (U) Milestones —

	Production Estimate/Approved Program	Current Estimate
(U) SAIP	Feb 80/Feb 80	Feb 80
(U) MENS APPROVED	Oct 80/Oct 80	Oct 80
(U) DETAIL DESIGN/LONG LEAD MATERIAL CONTRACT	Jun 81/Jun 81	Jun 81
(U) APPROVAL OF LEAD PRODUCTION	Dec 81/Dec 81	Dec 81
(U) CONTRACT AWARD	Feb 82/Feb 82	Feb 82
(U) FIRST CRAFT DELIVERY	Dec 84/Dec 84	Dec 84
(b)(1) [redacted]		

*IOC - reflects date the lead craft are ready for operational deployment

b. (U) Previous Change Explanations — None

(b)(1) [redacted]

d. (U) 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: SECNAV Memo dated December 21, 1981, subject "LCAC Milestone IIIA DNSARC Decision Memorandum"; Approved LCAC NDCP dated May 25, 1983.

[redacted]

(U) Technical/Operational Characteristics:

a. (U) Technical —	Production Estimate/Approved Program	Demonstrated Performance	Current Estimate
(U) Operating Crew	5/5	5	5
(U) Troop Capacity (Internal)	24/24		24
(U) Cargo Deck Area (ft^2)	1,800/1,800	1,809	1,809 (CH-1)
(U) Length-On Cushion (ft)	88/88	87' 11"	87' 11" (CH-3)
(U) Beam-On Cushion (ft)	47/47	47'	47'
b. (U) Operational —			
(U) Speed (kts)	35+/35+	40+	40+ (CH-2)
(U) Design Payload (lbs)	120,000/120,000	120,000	120,000
(U) System Reliability	0.90/0.90	0.89	0.90
(U) Maintainability MMH/OH Total (CM+PM)	34/34	29.6	34

c. (U) Previous Change Explanations — None.

d. (U) Current Change Explanations —

(CH-1) Demonstrated performance for the cargo deck area exceeds the production estimate.

(CH-2) Trials have shown that the craft exceeds minimum speed requirements.

(CH-3) Demonstrated performance.

e. (U) References —

Production Estimate: Approved LCAC NDCP dated May 25, 1983.

Approved Program: LCAC NDCP dated May 25, 1983.

11. Program Acquisition Highlights -- (Current Estimate in Millions of Dollars)

	Production Estimate	Changes	Current Estimate
a. Cost			
Development (RDT&E)	21.2	4.8	26.0
Procurement (SCN)	1023.6	464.4	1488.0
(Sailaway)	(982.3)	(430.9)	(1,413.2)
(Ship System)	(3.3)	(0.3)	(3.6)
(Initial Spares)	(13.4)	(13.4)	(0.0)
(Outfitting/Post Delivery)	(24.6)	(46.6)	(71.2)
Construction (MILCON)	58.5	17.4	75.9
Total FY82 Base-Year $	1103.3	486.6	1589.9
Escalation	507.4	-68.4	439.0
Development (RDT&E)	(0.2)	(0.7)	(0.9)
Procurement (SCN)	(489.3)	(70.7)	(418.6)
Construction (MILCON)	(17.9)	(1.6)	(19.5)
Total Then-Year $	1610.7	418.2	2028.9
Quantities			
Development	0	0	0
Procurement	60	9	69
Total	60	9	69
c. Unit Cost			
Procurement:			
FY82 Base-Year $	17.1	4.5	21.6
Then-Year $	25.2	2.4	27.6
Program:			
FY82 Base-Year $	18.4	4.6	23.0
Then-Year $	26.8	2.6	29.4

d. Approved Design to Cost Goal -- None.

e. Foreign Military Sales -- None.

f. Nuclear Costs -- None.

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

(Current Dollars in Millions)	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	2028.9	2321.1	2028.9
(2) Quantity	69	81	69
(3) Unit Cost	29.4	28.7	29.4
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	322.8	316.2	4.1
Less CY Adv Proc	-30.8	-30.8	0.0
Plus PY Adv Proc	31.3	31.3	0.0
Less OF/PD	-15.8	-9.2	-4.1
Less PY Escal	-	-	-
Net Total	307.5	307.5	0.0
(2) Quantity	12	12.0	0.0
(3) Unit Cost	25.6	25.6	0.0

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

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

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate (PdE)	21.4	1512.9	76.4	1610.7
Previous Changes:				
Economic		-163.5	-3.6	-167.1
Quantity		620.6		620.6
Schedule		-0.4		-0.4
Engineering		-		-
Estimating	1.3	227.2	21.1	249.6
Other		-		-
Support		7.7		7.7
Subtotal	1.3	691.6	17.5	710.4
Current Changes:				
Economic		-205.6	-1.7	-207.3
Quantity		-277.9		-277.9
Schedule		-9.3		-9.3
Engineering		-		-
Estimating	4.2	170.4	3.2	177.8
Other		-		-
Support		24.5		24.5
Subtotal	4.2	-297.9	1.5	-292.2
Total Changes	5.5	393.7	19.0	418.2
Current Estimate	26.9	1906.6	95.4	2028.9

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

a. Summary -- (FY 1982 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate	21.2	1023.6	58.5	1103.3
Previous Changes:				
Quantity		378.7		378.7
Schedule		-5.8		-5.8
Engineering		-	-	
Estimating	1.2	159.4	15.9	176.5
Other				
Support		6.8		6.8
Subtotal	1.2	539.1	15.9	556.2
Current Changes:				
Quantity		-212.9	-	-212.9
Schedule		-15.8	-	-15.8
Engineering		-	-	0.0
Estimating	3.6	132.3	1.5	137.4
Other		-	-	-
Support		21.7	-	21.7
Subtotal	3.6	-74.7	1.5	-69.6
[redacted]1 Changes	4.8	464.4	17.4	486.6
Current Estimate	26.0	1488.0	75.9	1589.9

b. Previous Change Explanations --

RDT&E

Estimating: Refinement of estimates: qualification of second source for LCAC construction

Procurement - SCN

Economic: Revised ASD(C) escalation indices: correction to prior economic assumptions

Quantity: Addition of 9 craft in FY89: addition of 12 craft in FY90 and associated advance procurement

Schedule: Delay of 3 LCAC from FY85 to FY89: planned construction contract awarded 2 months early

Estimating: Offset to ASD(C) escalation indices to maintain controls: adjustment for inflation: correction to prior constant $ assumptions: congressional reduction to P.M. growth:

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

b. Previous Change Explanations --

re-estimation of contractor provisioning material: refinement of estiamtes: second source planning: repricing LCAC program
Support: Reduction to Outfitting and Post Delivery associated with delay of 3 LCAC from FY85 to FY89: repricing of Outfitting and Post Delivery requirements
Milcon
Economic: Revised ASD(C) escalation indices: correction to prior economic assumptions
Estimating: Offset to ASD(C) indices to maintain controls: refinement of estimates: correction to prior constant dollar assumptions: addition of Milcon projects

c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Repricing of contract design requirements for LCACs (Estimating)	3.6	4.2
(2) Procurement		
Revised Jan 86 economic escalation rates (Economic)	-	-205.6
Deletion of 12 craft in FY87 (Quantity)	-212.9	-277.9
Rescheduling 9 craft from FY88-FY90 to FY91 and associated advance procurement (Schedule)	-13.8	-9.3
Increase to outfitting and post delivery requirements (Support)	20.9	22.7
Increase to outfitting and post delivery associated with rescheduling of 9 craft (Support)	1.8	1.8
Adjustment for inflation (Estimating)	-48.3	-58.2
Reduction to engineering services (R&D/CAAS) (Estimating)	-2.8	-3.9
Additional funding for conversion of contract from CPAF to FPI (Estimating)	14.6	16.4
Revised program estimates (Estimating)	155.1	205.6
Addition of contract design funds	2.1	2.7
Major commodity escalation adjustment (Estimating)	5.6	7.8

c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(3) Milcon		
Revised Jan 86 economic escalation rates (Economic)	-	-1.7
Offset to ASD(C) 1/86 indices rates to maintain controls (Estimating)	1.3	1.7
Deferral of LCAC projects (Estimating)	0.2	1.5

c. References -- FY 1987 President's Budget

14. (U) Program Acquisition Unit Cost (PAUC) History

a. Initial SAR Estimate to Current Baseline Estimate (Same as Current Baseline Estimate)

b. Current Baseline Estimate to Current Estimate

PAUC (Baseline Est)	Changes (Then Year Dollars in Millions)							PAUC (Current Estimate)
(PdE)	Econ	Qty	Sch	Eng Est	Sot	Other	Total	
26.8	-5.4	1.5	-0.1	-	6.2	0.4	-	2.6	29.4

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

a. (U) RDT&E — N/A

b. (U) Procurement —

LCAC (1-6) 1/
Bell Aerospace, New Orleans, LA,
N00024-84-C-2055, FPI,
Award: June 6, 1981
Definitized: April 3, 1985

Initial Contract Price		
Target	Ceiling	Qty
$184.1	$217.6	6

Current Contract Price		
Target	Ceiling	Qty
$186.9	$220.5	6

Estimated Price At Completion	
Contractor	Program Manager
$191.8	$196.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-11.2	$-5.8
Cumulative Variances to Date (11/22/85)	$-10.5	$-4.7
Net Change	$+ .7	$+1.1

Explanation of Change: The favorable cost variance is primarily identified with labor, other direct costs and favorable escalation. The favorable schedule variance is due to the method of taking earnings for major subcontracts when invoices are processed and application of material burden and G&A rates to the discrete componets and commodities. The Program Manager's assessment takes into consideration the above variances.

LCAC (7-12)
Bell Aerospace, New Orleans, LA,
N00024-84-C-2055, FPI,
Award: March 9, 1984
Definitized: March 9, 1984

Initial Contract Price		
Target	Ceiling	Qty
$102.4	$117.7	6

Current Contract Price		
Target	Ceiling	Qty
$105.5	$121.2	6

Estimated Price At Completion	
Contractor	Program Manager*
$110.0	$123.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+ .5	$-4.3
Cumulative Variances to Date (11/22/85)	$+1.6	$-8.5
Net Change	$+1.1	$-4.2

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

b. (U) Procurement --

Explanation of Change: The favorable cost variance reported is primarily identified with labor, other direct costs and favorable escalation. The unfavorable schedule variance is primarily caused by the delay of craft to incorporate correction of trial deficiencies. The Program Manager's assessment takes into consideration the above variances.

LLTM (85) 2/
Bell Aerospace, New Orleans, LA,
N00024-84-C-2055, FPI,
Award: March 14, 1985
Definitized: March 14, 1985

Initial Contract Price		
Target	Ceiling	Qty
$78.9	$97.7	2

Current Contract Price		
Target	Ceiling	Qty
$79.1	$98.0	2

Estimated Price At Completion	
Contractor	Program Manager
$79.1	$93.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -	$ -
Cumulative Variances to Date (11/22/85)	$+.03	$+.8
Net Change	$+.03	$+.8

Explanation of Change: The favorable cost and schedule variances reported are a result of cost of raw materials being lower than estimated and earnings taken based on actual transferred from Lot 1C Craft to Lot 2 Craft. The Program Manager's assessment takes into consideration the above variances.

LLTM (85) 3/
Lockheed Shipbuilding Co.,
Seattle, WA
N00024-85-C-2148, FPI,
Award: September 30, 1985
Definitized: September 30, 1985

Initial Contract Price		
Target	Ceiling	Qty
$24.7	$31.3	2

Current Contract Price		
Target	Ceiling	Qty
$24.7	$31.3	2

Estimated Price At Completion	
Contractor	Program Manager*
$24.7	$26.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 0	$ 0
Cumulative Variances to Date (11/22/85)	$ 0	$ 0
Net Change	$ 0	$ 0

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

b. (U) Procurement —

Explanation of Change: None

1/ Contract was converted from CPAF to FPI on 3 April 1985 at the Initial Target Price indicated.

2/ Contract includes LL/IM for FY85 Craft plus LL/IM for 2nd Source FY85 Craft.

3/ Added

* PM's estimated price at completion includes the Navy estimated escalation for the contract.

c. (U) MILCON — N/A

16. (U) Program Acquisition Cost (Cont'd): (Current Estimate in Millions)

a. Program Status --
(1) Percent Program Completed: 10/16 = 62.5%
(2) Percent Program Cost Appropriated: $1057.1/2028.9 = 52.1%

b. Appropriation Summary
(Then Year Dollars in Millions)

Appropriation	Current & Prior yrs (FY77-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92)	Total
RDT&E	26.9	--	--	--	26.9
Procurement	974.0	4.1	922.6	5.9	1906.6
MILCON	56.2	--	19.3	19.9	95.4
Total:	1057.1	4.1	941.9	25.8	2028.9

c. Annual Summary

Fiscal Year	Qty	FY82 BASE YEAR DOLLARS: Railaway Nonrec.	Railaway Rec.	Total	THEN YEAR DOLLARS: Advanced Procurement Debit	Advanced Procurement Credit	Total	Escal Rate %
APPROPRIATION: RDT&E, N								
1977				0.2			0.2	8.58
1978				1.5			1.5	6.60
1979				1.5			1.5	8.40
1980				8.2			8.2	10.59
1981	N/A	N/A	N/A	4.7	N/A	N/A	4.7	10.61
1982				5.2			5.3	7.60
1983				1.0			1.1	4.90

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

c. Annual Summary --

Fiscal Year	Qty	FY82 BASE YEAR DOLLARS Sailaway Nonrec.	Sailaway Rec.	Total	THEN YEAR DOLLARS Advanced Procurement Debit	Advanced Procurement Credit	Total	Escal Rate %
APPROPRIATION: RDT&E, N								
1984				0.8			0.9	3.60
1985				0.6			0.7	3.60
1986				2.3			2.8	3.20
SUBTOTAL			--	26.0	--	--	26.9	--
APPROPRIATION: SCN								
1981				39.3	42.0		42.0	9.60
1982	3	55.0	82.4	103.0		40.5	114.1	7.50
1983	3		59.4	58.1		1.4	65.9	3.80
1984	6		107.8	137.6	34.3		161.9	3.60
985	9		181.6	221.7	68.6	83.0	267.4	2.10
1986	12		243.4	256.3	46.6	31.3	322.8	4.10
1987	0		0.0	3.3	4.1	--	4.1	4.10
1988	9		178.0	168.4	19.7	30.8	225.7	3.90
1989	9		166.0	168.4	20.7	17.2	231.3	3.40
1990	9		169.0	170.4	20.0	17.7	239.6	2.90
1991	9		168.5	157.2	2.4	18.4	226.0	2.30
1992	--	--	--	4.3	5.9	--	5.9	2.00
SUBTOTAL	69	55.0	1356.1	1468.3	264.3	160.4	1906.6	--

16. (U) Program Funding Summary:

c. Annual Summary --

Fiscal Year	Qty	FY82 BASE YEAR DOLLARS: Sailaway Nonrec.	Sailaway Rec.	Total	THEN YEAR DOLLARS: Advanced Procurement Debit	Advanced Procurement Credit	Total	Escal Rate %
APPROPRIATION: MILCON								
1984				19.1			21.9	3.8
1985				16.3			19.4	3.6
1986				12.1			14.9	3.2
1987	N/A	N/A	N/A	0.0	N/A	N/A	0.0	4.1
1988				14.7			19.3	3.9
1989				0.0			0.0	3.4
1990				0.0			0.0	2.9
1991				0.0			0.0	2.3
1992				13.7			19.9	2.3
SUBTOTAL	0	0	0	75.9	0	0	95.4	--
TOTAL	69	55.0	1356.1	1589.8	264.3	180.4	2028.9	--

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

d. Obligations and Expenditures --

APPROPRIATION: RDT&E

THEN YEAR DOLLARS (Current Estimate in Millions)

FY	Total	Oblig.	Expended
1977	0.2	0.2	0.2
1978	1.5	1.5	1.5
1979	1.5	1.5	1.5
1980	8.2	8.2	8.2
1981	4.7	4.7	4.7
1982	5.3	5.3	5.3
1983	1.1	1.1	1.1
1984	0.9	0.9	0.9
1985	0.7	0.6	0.5
1986	2.8	1.1	0.0
To Compl.	0.0	0.0	0.0
Total	26.9	25.1	23.9

APPROPRIATION: SCN

THEN YEAR DOLLARS (Current Estimate in Millions)

FY	TOTAL	OBLIGATED	EXPENDED
1981	42.0	42.0	42.0
1982	114.1	109.6	103.6
1983	65.8	58.9	52.8
1984	161.9	139.4	68.1
1985	267.4	110.7	1.0
1986	322.8	0.1	0.0
TO COMPL.	932.6	--	--
TOTAL	1906.6	460.7	267.5

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

d. Obligations and Expenditures --

APPROPRIATION: MILCON

THEN YEAR DOLLARS (Current Estimate in Millions)			
FY	TOTAL	OBLIGATED	EXPENDED
1984	21.9	21.9	16.7
1985	19.4	8.3	6.7
1986	14.9	0.0	0.0
TO COMPL.	39.2	--	--
TOTAL	95.4	30.2	23.4

17. Production Rate Data:

a. Annual Production Rates -:

	PRODUCTION RATES (Quantity/Year)			
FISCAL YEAR	Development Estimates	Production Estimates	Current Estimates	Maximum
1982		3	3	3
1983		3	3	3
1984		6	6	6
1985	N/A	12	9	9
1986		12	12	12
1987		12	0	0
1988		12	9	9
1989			9	9
1990			9	9
1991			9	9

17. Production Rate Data:

b. Cost Variance -- Dollars in Millions

ITEM	Production Estimates	Variance (CE less Pde)	Current Estimates	Variance (CE less Max)	Maximum
Prog Acq. Cos (BY$)	1103.3	486.6	1589.9	0.0	1589.9
(TY$)	1610.7	418.2	2028.9	0.0	2028.9
PAUC (BY$)	18.4	4.6	23.0	0.0	23.0
(TY$)	26.8	2.6	29.4	0.0	29.4

17. Production Rate Data (Cont'd):

c. Schedule Variance —

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	2/82	-	2/82	-	2/82
Duration (in Months)	71	+22	93	-	93
End Date (Mo/Yr)	1/88	+22	11/89	-	11/89

d. Deliveries (Plan/Actual) —

	TO DATE
RDT&E	0/0
Procurement	1/1

18. Operating and Support Costs: N/A

(S)
N-21 LHD

SAR-85-040

[redacted]

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: LHD 1 Class

AS OF DATE: * December 31, 1985

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1. (U) Designation/Nomenclature (Popular Name): LHD 1/Amphibious Assault Ship

AS AMENDED

CLEARED FOR PUBLICATION

APR 1 1986 11

2. (U) DOD Component: U.S. Navy

3. (U) Responsible Office and Telephone Number:

DIRECTORATE FOR INFORMATION AND SECURITY REVIEW DEPARTMENT OF DEFENSE

Amphibious Warfare and Strategic Sealift Program (PMS-377)
Naval Sea Systems Command
Washington, DC 20362

PM: E. E. Shoultes
Assigned: April 29, 1985
AUTOVON 222-8511
COMM (202) 692-8511

No Security Objection to Open Publication (AS AMENDED)
Date 8347
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Office of the Chief of Naval Operations
Dept. of the Navy

4. (U) Program Elements:

RDT&E: 63564N, 64526N, 64567N (shared funding)
PROCUREMENT: 24411N, APPN 1611, ICN 5105

5. (U) Related Programs: Landing Craft, Air Cushion (LCAC)

Classified by Form DD-254 dated 13 Apr 82
Contract #N000[redacted]-2180 and SEA 00
Review for DECLASSIFICATION on: OADR

(THIS PAGE IS UNCLASSIFIED)

[redacted]

OASD(PA) DPCIDR 8-F-0891

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.

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. Initially, the LHD was intended to be a traditional, new design ship development program with lead ship authorization in 1987. In the spring of 1981, in reponse to SECNAV direction to rapidly increase amphibious lift capability, the Navy accelerated the LHD program by moving lead ship authorization forward from 1987 to 1985. Subsequently, in June 1981, SECNAV proposed that the LHD have a convertible sea control mission; and, in November, directed that the Program be accelerated in a 1984 Authorization as a modified LHA design.

Baseline design of the LHD was completed in June 1982. Contract design was completed in November 1983. On 12 June 1982, the SAIP approved the LHD characteristics, which were certified by CNO on 2 December 1982. On 2 June 1983, SECNAV reviewed the LHD Program.

A detail design and construction contract was awarded to Ingalls Shipbuilding Division on 28 Feburary 1984 for the Lead Ship in the LHD Program. Actual construction was started on the LHD 1 on 9 July 1984, two months earlier that originally planned.

b. (U) Significant Developments Since Last Report— A keel laying ceremony was held on 30 May 1985 for the LHD 1 ship. This event occured two months earlier than originally planned.

The LHD 2/3/4 are being procured on a Multi-Year Procurement (MYP) basis. The RFP for the three ship procurement was released on 9 August 1985, with award scheduled for July 1986. The first ship will be fully funded in FY86, the second ship fully funded in FY88, and the third ship fully funded in FY89.

A detailed testing program is scheduled during construction to verify compliance with detail criteria. INSURV will conduct standard at-sea trials (Acceptance and Final Contract) at completion. Experience from the LHA Class has been utilized in the development of the LHD 1 Class design. A ship shock test will be performed on the lead ship to validate shock hardening criteria applied to the LHD 1 design and to identify deficiencies and develop corrective measures for follow ships of the class. No further OT&E is planned for the LHD 1 Class Hull System. The LHD 1 Program is expected to meet its mission requirements.

c. (U) Changes Since "as of" Date — None

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches:

There are currently no NDCP (dated August 15, 1985) threshold breaches.

9. (U) Schedule:

a. Milestones —	Development Estimate/Approved Program	Current Estimate
(U) SAIP	Jul 82/Jul 82	Jul 82
(U) Start Contract Design	Aug 82/Aug 82	Aug 82
(U) Award Lead Ship Contract	Dec 83/Dec 83	Feb 84
(U) Launch First Ship	Aug 87/Aug 87	Aug 87
(U) Acceptance Trials (Lead Ship)	Feb 89/Feb 89	Feb 89
(U) Lead Ship Delivery	Mar 89/Mar 89	Mar 89

(b)(1) [redacted]

b. (U) Previous Change Explanations —

The contract award date for the LHD 1 Class Lead Ship was updated to reflect actual date of February 28, 1984.

c. (U) Current Change Explanations —

(CH-1) Original date for the Initial Operating Capability for the LHD was improperly calculated. The SAR has been updated to reflect correct data.

d. (U) References —

Development Estimates: Top Level Requirements (TLR) dated 8 December 1983, CNO Ser 03/C387632 dated 2 December 1982.

Approved Program: Top Level Requirements (TLR) dated 8 December 1983, CNO Ser 03/C387632 dated 2 December 1982.

[redacted]

10. [redacted] Technical/Operational Characteristics:

	Development Estimate/Approved Program	Demonstrated Performance	Current Estimate
a. (U) Technical —			
(U) Troops	1,873/1,873	N/A	1,873
(U) Vehicle Square (Ft^2)	22,900/22,900	N/A	22,900
(U) Cargo Cube (Ft^3)	109,000/109,000	N/A	109,000
(U) LCAC	3/3	N/A	3
(U) Length (Ft)	840/840	N/A	844
(U) Beam (Ft)	106/106	N/A	106
(U) Draft (Full Load) (Ft) 1/	26/26	N/A	26'8"
(U) Displacement (Full Load) 1/	39,400/39,400	N/A	40,533
(U) Offload Capability (Tons/Hr)	300/300	N/A	300
(U) Propulsion	Steam/Steam	N/A	Steam
(U) Shaft HP/No. Screws	70,000/2/70,000/2	N/A	70,000/2
(U) Medical Facilities	6 ORs/6 ORs*		6 ORs
b. [redacted] Operational —			
(U) Speed (Kts)	22/22	N/A	22
(b)(1)			
(U) Armament			
- Close in Weapon Sys	3/3	N/A	3
- Self Defense Missile System	2/2	N/A	2

c. (U) Previous Change Explanation —

The 26/39,400 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.

d. (U) Current Change Explanations — None

e. (U) References —

Development Estimate: SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP; LHD 1 Class NDCP dated 15 August 1985.

Approved Program: SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP; LHD 1 Class NDCP dated 15 August 1985.

* Operating Room (ORs)

1/ Changes in Current Estimate will not be noted unless they exceed: Draft ± 3 inches; Displacement ± 1000 tons

[redacted]

11. (U) PROGRAM ACQUISITION COSTS (CURRENT ESTIMATE IN MILLIONS OF $)

	DEVELOPMENT ESTIMATES	CHANGES	CURRENT ESTIMATES
a. Cost			
Development	39.9	-2.2	37.7
Procurement	2891.9	1949.5	4841.4
(Sailaway)	(2,794.9)	(1,837.2)	(4,632.1)
(Ship System)	(10.1)	(0.9)	(11.0)
(Initial Spares)	(9.3)	(0.8)	(10.1)
(OF/PD)	(77.6)	(110.6)	(188.2)
Total FY82 BaseYear $	2931.8	1947.3	4879.1
Escalation	1519.2	-35.2	1484.0
(Development)	(3.7)	(-1.5)	(2.2)
(Procurement)	(1,515.5)	(-33.7)	(1,481.8)
Total ThenYear $	4451.0	1912.1	6363.1
b. Quantities			
Development	0	0	0
Procurement	3	2	5
Total	3	2	5
c. Unit Cost			
Procurement:			
FY82 Base Year $	964.0	4.3	968.3
Then Year $	1464.1	-199.5	1264.6
Program:			
FY82 Base Year $	977.3	-1.5	975.8
Then Year $	1483.7	-211.1	1272.6

d. Approved Design to Cost Goal -- None.

e. Foreign Military Sales -- None.

f. Nuclear Costs -- None.

(U) PROGRAM ACQUISITION COSTS/CURRENT PROCUREMENT UNIT COST SUMMARY:

(Current Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	6363.1	6769.1	6363.1
(2) Quantity	5	5	5
(3) Unit Cost	1272.6	1353.8	1272.6
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	1268.4	1507.2	235.6
Less CY Adv Proc	-165.6	-358.6	-232.0
Plus PY CY Adv Proc	39.2	39.2	0.0
Less OF/PD	-0.1	0.0	3.6
Less PY Escalation	-	-	-
c. Net Total (Sum) --	1141.9	1187.8	7.2
(2) Quantity	1	1	N/A
(3) Unit Cost	1141.9	1187.8	0.0

(U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
BASELINE ESTIMATE	43.6	4407.4	N/A	4451.0
PREVIOUS CHANGES:				
ECONOMIC	-1.0	-517.2		-518.2
QUANTITY		3075.0		3075.0
SCHEDULE			N/A	
ENGINEERING				
ESTIMATING	6.7	-322.5		-315.8
OTHER				
SUPPORT		77.1		77.1
SUBTOTAL	5.7	2312.4	N/A	2318.1

13. (U) Cost Variance Analysis:
a. Summary -- (Current (Then Year) Dollars in Millions) (Cont'd)

	RDT&E	PROC	MILCON	TOTAL
CURRENT CHANGES:				
ECONOMIC	.0	-683.3		-683.3
QUANTITY	--	--		--
SCHEDULE	--	-233.9		-233.9
ENGINEERING	--	--	N/A	--
ESTIMATING	-9.4	473.2		463.8
OTHER	--	--		--
SUPPORT	--	47.4		47.4
SUBTOTAL	-9.4	-396.6	N/A	-406.0
TOTAL CHANGES	-3.7	1915.8	N/A	1912.1
CURRENT ESTIMATE	39.9	6323.2	N/A	6363.1

(FY 1982 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
BASELINE ESTIMATE (DE)	39.9	2891.9	N/A	2931.8
PREVIOUS CHANGES:				
QUANTITY		1872.9		1872.9
SCHEDULE				
ENGINEERING				
ESTIMATING	5.5	-154.3	N/A	-148.8
OTHER				
SUPPORT		44.2		44.2
SUBTOTAL	5.5	1762.8	N/A	1768.3
	RDT&E	PROC	MILCON	TOTAL
CURRENT CHANGES:				
QUANTITY				
SCHEDULE		-187.4		-187.4
ENGINEERING				
ESTIMATING	-7.7	337.6	N/A	329.9
OTHER				
SUPPORT		36.5		36.5
SUBTOTAL	-7.7	186.7	N/A	179.0
TOTAL CHANGES	-2.2	1949.5	N/A	1947.3
CURRENT ESTIMATE	37.7	4841.4	N/A	4879.1

13. (U) Cost Variance Analysis:

a. Previous Change Explanations --

RDT&E

Economic: revised ASD(C) escalation indices
Estimating: increase to R&D design requirements: offset to ASD(C) escalation indices to maintain controls

PROCUREMENT

Economic: revised ASD(C) escalation indices: correction to prior SAR economic assumptions
Quantity: addition of 1 ship in FY90
Support: addition of outfitting and post delivery for FY90 ship: revised OF/PD estimates for multi-year procurement
Estimating: adjustments for inflation: offset to ASD(C) indices to maintain controls: correction to prior SAR constant dollar assumptions: revised estimates for multiyear procurement.

c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	--	0.0
Repricing of LHD design requirements (Estimating)	-5.1	-6.1
Deletion of contract design requirements (Estimating)	-2.6	-3.3
(2) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	--	-681.7
Correction to prior escalation assumptions (Economic).	--	-1.6
Net of rescheduling of FY90 ship and associated advance procurement to FY91 and changing the aquisition strategy from an annual to multiyear procurement (Schedule)	-187.4	-233.9
Increase in Outfitting to support FY91 ship (Support)	41.1	56.0
Decrease to Post Delivery associated with rescheduling of FY90 ship to FY91 (Support)	-4.6	-8.6
Adjustment for inflation (Estimating)	-153.0	-203.7
Revised program estimates (Estimating)	511.5	681.7

13. (U) Cost Variance Analysis:

c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
—Correction to prior Constant $ assumptions (Estimating)	1.6	1.6
Reduction for multi-year savings (Estimating)	-184.8	-231.5
Repricing of LHD program FY87-89 due to prior year reductions (Estimating)	138.9	192.6
Addition of contract design re—quirements (Estimating)	1.8	2.5
Major commodity escalation adjustment (Estimating)	21.6	30.0

c. References -- FY 1987 President's Budget

14. (U) Program Acquisition Unit Cost (PAUC) History:

a. Initial SAR Estimates to Current Baseline Estimate (same as Current Baseline Estimate)

b. Current Baseline Estimate to Current Estimate

PAUC (Baseline Est)	(DE)	Changes (Then Year Dollars in Millions) Econ	Qty	Sch	Eng	Est	Sat	Other	Total	PAUC (Current Estimate)
1483.7	-240.8	31.5	-46.8	--	29.5	24.9	--	-211.1	1272.6	

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

a. (U) RDT&E — N/A

b. (U) Procurement —

LHD 1
Ingalls Shipbuilding Division,
Pascagoula, MS
N00024-82-C-2260, FPI,
Award: February 28, 1984
Definitized: February 28, 1984

Initial Contract Price		
Target	Ceiling	Qty
$962.1	$1150.8	1

Current Contract Price		
Target	Ceiling	Qty
$956.3	$1143.8	1

Estimated Price At Completion	
Contractor	Program Manager*
$956.3	$1018.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+3.2	$- .8
Cumulative Variances to Date (12/30/85)	$+2.7	$+22.6
Net Change	$+ .5	$+21.8

Explanation of Change: The favorable cost and schedule variances reported is a result of material and inventory purchases being earlier than planned. The Program Manager's assessment takes into consideration the above variances.

LHD 2 1/
Ingalls Shipbuilding Division,
Pascagoula, MS
N00024-85-C-2020, CPFF,
Award: June 7, 1985
Definitized: June 7, 1985

Initial Contract Price		
Target	Ceiling	Qty
$38.9	$38.9	N/A

Current Contract Price		
Target	Ceiling	Qty
$38.9	$38.9	N/A

Estimated Price At Completion	
Contractor	Program Manager
$38.9	$38.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 0	$ 0
Cumulative Variances to Date (12/30/85)	$ 0	$ 0
Net Change	$ 0	$ 0

Explanation of Change: None

1/ Added

c. (U) Milcon — N/A

* PM'S estimated price of completion includes the Navy estimated escalation for the contract.

16. (U) Program Acquisition Cost (Cont'd): (Current Estimate in Millions)

a. Program Status --
(1) Percent Program Completed: 5/15 = 33.3%
(2) Percent Program Cost Appropriated: 2775.3/6363.1 = 43.6%

b. Appropriation Summary

(Then Year Dollars in Millions)

Appropriation	Current & Prior yrs (FY81-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92-95)	Total
RDT&E	39.9	-	-	-	39.9
Procurement	2735.4	236.1	3217.7	134.0	6323.2
Total:	2775.3	236.1	3217.7	134.0	6363.1

c. Annual Summary

FY	Qty	FY82 BASE YEAR DOLLAR Sailaway Nonrec.	Sailaway Rec.	Total	THEN YEAR DOLLARS Advanced Procurement Debit	Advanced Procurement Credit	Total	Escal Rate %
APPROPRIATION: RDT&E								
1981				0.9			0.9	10.61
1982				14.2			14.5	7.60
1983				19.2			20.6	4.90
1984				1.2			1.3	3.80
1985	N/A	N/A	N/A	1.8	N/A	N/A	2.1	3.60
1986				0.4			0.5	3.20
SUBTOTAL				37.7			39.9	

(U) Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

FY	Qty	FY82 BASE YEAR DOLLARS: Sailaway Nonrec.	Sailaway Rec.	Total	THEN YEAR DOLLARS: Advanced Procucement Debit	Advanced Procucement Credit	Total	Escal Rate %
APPROPRIATION: Procurement								
1982				40.6	45.0		45.0	7.50
1983				48.5	55.0		55.0	3.80
1984	1	150.0	1039.4	1121.4	25.0	100.0	1327.8	3.60
1985				32.0	39.2		39.2	2.10
1986	1		902.5	1001.3	165.7	39.2	1268.4	4.10
1987				181.1	235.6		236.1	4.10
1988	1		819.2	797.7	187.8	209.7	1068.9	3.90
1989	1		794.1	547.2	37.3	363.3	749.2	3.40
1990				43.4	59.5		60.1	2.90
1991	1		924.9	933.4	54.1	45.2	1339.5	2.30
1992				34.7	47.8		47.8	2.30
1993				19.0	26.8		26.8	2.30
1994				36.1	52.0		52.0	2.30
1995				5.0	7.4		7.4	2.30
SUBTO	5	150.0	4480.1	4841.4	1038.2	757.4	6323.2	--
TOTAL	5	150.0	4480.1	4879.1	1038.2	757.4	6363.1	--

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

d. Obligations and Expenditures --

APPROPRIATION: RDT&E

THEN YEAR DOLLARS (Current Estimate in Millions)			
FY	Total	Oblig.	Expended
1981	0.9	0.9	0.9
1982	14.5	14.4	14.4
1983	20.6	18.5	18.0
1984	1.3	1.2	1.1
1985	2.1	1.5	0.9
1986	0.5	--	--
To Compl.	N/A	N/A	N/A
Total	39.9	36.5	35.3

APPROPRIATION: SCN

THEN YEAR DOLLARS (Current Estimate in Millions)			
FY	TOTAL	OBLIGATED	EXPENDED
1982	45.0	45.0	44.6
1983	55.0	53.5	49.8
1984	1327.8	1005.7	346.9
1985	39.2	39.0	2.4
1986	1268.4	0.0	0.0
TO COMPL.	3587.8	N/A	N/A
TOTAL	6323.2	1143.2	443.7

17. Production Rate Data:

a. Annual Production Rates

	PRODUCTION RATES (Quantity/Year)			
FY	Development Estimates	Production Estimates	Current Estimates	MAXIMUM
1984	1		1	1
1985				
1986	1	N/A	1	1
1987				
1988	1		1	1
1989			1	1
1990				
1991			1	1

b. Cost Variance -- Dollars in Millions

ITEM	Production Estimates	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq. Cost (BY$)	N/A	N/A	4879.1	---	4879.1
(TY$)	N/A	N/A	6363.1	---	6363.1
PAUC (BY$)	N/A	N/A	975.8	---	975.8
(TY$)	N/A	N/A	1272.6	---	1272.6

17. Production Rate Data (Cont'd):

c. Schedule Variance —

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	N/A	-	2/84	-	2/84
Duration (in Months)	N/A	-	61	-	61
End Date (Mo/Yr)	N/A	-	3/89	-	3/89

d. Deliveries (Plan/Actual) —

	TO DATE
RDT&E	0/0
Procurement	0/0

18. Operating and Support Costs: N/A

(S) N-22 LSD-41

SAR-85-041

[redacted]

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: LSD 41 CLASS

AS OF DATE: * December 31, 1985

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1. (U) Designation/Nomenclature (Popular Name): LSD 41 Class/Dock Landing Ship

2. (U) DOD Component: Department of the Navy

3. (U) Responsible Office and Telephone Number:

Amphibious Warfare and Strategic Sealift Program Office (PMS-377)
Naval Sea Systems Command
Washington, DC

PM: E. E. Shoults
Assigned: April 29, 1985
AUTOVON 222-8511
COMM (202) 692-8511

4. (U) Program Elements:

RDT&E: 63564N, 63567N, 64567N (shared funding)
PROCUREMENT: 24411N, APPN 1611, ICN 5105

5. (U) Related Programs: LCAC

APR 01 1986

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

AS AMENDED

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Review for DECLASSIFICATION on: OADR

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[redacted]

OASD(PA) RPOI 86-0556

6. (U) Mission and Description: To conduct sustained combat operations, to gain/maintain sea control. To project naval power ashore by transporting landing force elements, landing craft (LCAC) and assault amphibians to the objective area, launching preloaded assault craft and amphibians to support amphibious assault and to operate in the amphibious warfare environment. The Dock Landing Ship (LSD 41) is a twin-screw, 22 knot, diesel propelled amphibious assault ship, with an overall length of 609 feet and a maximum beam of 84 feet. It also has accommodations for a total of 917 (413 crew and 504 troops, which includes 102 surge troops).

7. (U) PROGRAM HIGHLIGHTS:

a. (U) Significant Historical Developments— An Operational Requirement (OR) (OR-0863-AW) for a Dock Landing Ship (LSD 41) was established by the Chief of Naval Operations (CNO) on 2 November 1976. At Milestone I on 18 July 1977, the Ship Acquisition and Improvement Panel (SAIP) recommended and the CNO approved the LSD 41 general configuration of a wet-well, medium-speed diesel propulsion system design. On 1 November 1978 at Milestone II, the Secretary of the Navy approved the contract design characteristics. On 16 January 1981, Milestone III, for production and fleet introduction, was approved. A Ship Systems Design Support contract was awarded to Lockheed Shipbuilding (Seattle, WA) on 15 February 1980. The Lead Ship Detail Design and Contruction contract was awarded to Lockheed on 9 February 1981. The contract for the first follow-ship was awarded on 26 March 1982 and the second follow-ship 27 January 1983. On 21 November 1983, the Navy awarded a Fixed Price Incentive contract to Avondale Shipbuilding, Inc. for construction of the LSD 44. An option for the construction of two ships (LSD 45 & 46) was executed on 26 November 1984.

The LSD 41 successfully completed Acceptance Trials on 7 December 1984 and was delivered to the Navy on 8 January 1985. The LSD 42 was launched 29 June 1984 on schedule.

On 8 November 1984 the LSD 41 contract was renegotiated from Cost Plus Award Fee (CPAF) to Cost Plus Fixed Fee (CPFF) with ceiling limiting the government's liability for the overrun to $38.0M. The LSD 42 contract was converted from a CPAF to Fixed Price Incentive (FPI) with a 50/50 share ratio. Al remaining ships are being procured under FPI contracts.

b. (U) Significant Development Since Last Report— Final Contract Trials (FCT) for the LSD 41 were successfully completed during September 1985. Shock Testing was completed during October 1985. The ship entered Metro Machine Shipyard, Norfolk, VA and commenced a two month PSA on 18 November 1985.

Builder's Trials for the LSD 42 were conducted during October 1985. Acceptance Trials for the LSD 42 were held during December 1985. A retrial of the main propulsion plant was successfully completed during January 1986, with the ship delivering on 1 February 1986.

The Navy exercised a contract option for contruction of the LSD 47 & 48 on 11 December 1985. The two ships will be constructed by Avondale Industries, Inc. The LSD 41 Program is expected to meet its mission requirements.

c. (U) Changes Since "as of" Date —

Delivery of the LSD 42 occurred 1 February 1986 with commissioning scheduled for 8 February 1986. The LSD 43 was launched on 1 February 1986.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no NDCP (dated March 1985) threshold breaches.

9. (U) Schedule:

a. (U) Milestones —

	Production Estimate/Approved Program	Current Estimate
(U) SAIP APPROVAL	Nov 78/Nov 78	Nov 78
(U) APPROVAL FOR PRODUCTION	Jan 81/Jan 81	Jan 81
(U) LEAD SHIP AWARD	Feb 81/Feb 81	Feb 81
(U) LAUNCH LEAD SHIP	Jun 83/Jun 83	Jun 83
(U) ACCEPTANCE TRIALS (LEAD SHIP)	Oct 84/Oct 84	Dec 84
(U) DELIVERY LEAD SHIP	Nov 84/Nov 84	Jan 85

(b)(1) [redacted]

b. (U) Previous Change Explanations —

Delay in acceptance trials from 8 October 1984 to 7 December 1984 and delivery from 30 November 1984 to 8 January 1985 resulted from the shipbuilder overrunning his production man-hours to complete the ship.

c. (U) Current Change Explanations —

(CH-1) Delay in IOC of two months is the result of 2 month late delivery of the Lead Ship, coupled with extension of SCN period to conduct Shock Test, and LCAC/LSD interface trials, which delayed PSA start date.

d. (U) References —

Production Estimate: Revised NDCP, dated March 1985, subject LSD 41 Class.

Approved Program: Revised NDCP, dated March 1985, subject LSD 41 Class.

[redacted]

10. (U) Technical/Operational Characteristics:

a. (U) Technical —	Production Estimate/Approved Program	Demonstrated Performance 1/	Current Estimate
(U) ACCOMMODATIONS			
(1) TROOPS	338/338	338	338
(2) CREW	413/413	413	413
(3) STAFF	166/166	166	166
(U) VEHICLE SQUARE FT	12,800/12,800	12,800	12,800
(U) MARINE CARGO (CUBIC FT)	5,000/5,000	5,000	5,000
(U) HELICOPTER SPOTS (CH-46)	1 + 1/1 + 1	1 + 1	1 + 1
(U) LANDING CRAFT	4 LCAC/4 LCAC	4 LCAC	4 LCAC
(U) LENGTH (FT)	609/609	609	609
(U) BEAM (FT)	84	84	84
(U) DRAFT (FT)	19'5"/19'5"	19'5"	19'5"
b. (U) Operational —			
(U) SPEED (Kts)	22/22	22	22
(b)(1) [redacted]			

c. (U) Previous Change Explanations — None.

d. (U) Current Change Explanations — None.

e. (U) References —

Production Estimate: Revised NDCP, dated March 1985 subject LSD 41 Class.

Approved Program: Revised NDCP, dated March 1985 subject LSD 41 Class.

1/ LSD 41 successfully completed Acceptance Trials on December 7, 1984.

Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost --	Production Estimate	Changes	Current Estimate
Development (RDT&E)	46.9	-1.2	45.7
Procurement	3177.0	-1135.7	2041.3
(Sailaway)	(3.021.8)	(-1125.7)	(1.896.1)
(Ship System)	(5.3)	(-0.1)	(5.2)
(Initial Spares)	(3.5)	(-0.2)	(3.3)
(Outfitting/Post Delivery)	(146.4)	(-9.7)	(136.7)
Total FY81 Base-Year $	3223.9	-1136.9	2087.0
Escalation	1626.0	-1112.7	513.3
(Development)	(2.6)	(-0.6)	(2.0)
(Procurement)	(1.623.4)	(-1112.1)	(511.3)
Total Then-Year $	4849.9	-2249.6	2600.3
b. Quantities --			
Development (RDT&E)	0	0	0
Procurement	12	-4	8
Total	12	-4	8
c. Unit Cost --			
Procurement:			
FY81 Base-Year $	264.8	-9.6	255.2
Then-Year $	400.0	-80.9	319.1
Program:			
FY81 Base-Year $	268.7	-7.8	260.9
Then-Year $	404.2	-79.2	325.0

d. Approved Design to Cost Goal -- None

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

Program Acquisition/Current Procurement Unit Cost Summary:

(Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.	Program Acquisition --			
	(1) Cost	2600.3	2644.4	2600.3
	(2) Quantity	8	8	8
	(3) Unit Cost	325.0	330.6	325.0
b.	Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	376.8	426.5	20.6
	Less CY Adv Proc	--	--	0.0
	Plus PY Adv Proc	83.5	83.5	0.0
	Less OF/PD	-3.4	-12.1	-20.6
	Less PY Escal	--	--	--
	Net Total	456.9	497.9	0.0
	(2) Quantity	2	2	0
	(3) Unit Cost	228.5	249.0	0.0

Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate (PdE	49.5	4800.4	N/A	4849.9
Previous Changes:				
Economic	-0.2	-313.7		-313.9
Quantity		-1476.4		-1476.4
Schedule				
Engineering			N/A	
Estimating	0.7	-352.1		-351.4
Other				
Support		-63.8		-63.8
Subtotal	0.5	-2206.0	N/A	-2205.5

Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Current Changes:				
Economic	0.0	-131.3		-131.3
Quantity	-	-		0.0
Schedule	-	-		
Engineering	-	-	N/A	
Estimating	-2.3	76.9		74.6
Other	-	-		
Support	-	12.6		12.6
Subtotal	-2.3	-41.8	N/A	-44.1
Total Changes	-1.8	-2247.8	N/A	-2249.6
Current Estimates	47.7	2552.6	N/A	2600.3

(FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate (PdE)	46.9	3177.0	N/A	3223.9
Previous Changes:				
Quantity		-928.5		-928.5
Schedule				
Engineering				
Estimating	0.7	-238.0	N/A	-237.3
Other				
Support		-38.9		-38.9
Subtotal	0.7	-1205.4	N/A	-1204.7
	RDT&E	PROC	MILCON	TOTAL
Current Changes:				
Quantity	-	-		
Schedule	-	-		
Engineering	-	-	N/A	
Estimating	-1.9	60.6		58.7
Other	-	-		
Support	-	9.1		9.1
Subtotal	-1.9	69.7	N/A	67.8
Total Changes	-1.2	-1135.7	N/A	-1136.9
Current Estimates	45.7	2041.3	N/A	2087.0

Cost Variance Analysis (Cont'd):

b. Previous Change Explanations --

RDT&E

Economic: Revised ASD(C) escalation indices
Estimating: Reduction in RDT&E and contract design requirements.

Procurement

Economic: Revised ASD(C) escalation indices and correction of prior economic assumptions.
Quantity: Deletion of 4 ships and associated advanced procurement
Support: Repricing of outfitting and post delivery requirements.

Estimating: Adjustments for inflation: offset to ASD(C) indices to maintain controls: favorable negotiations on FY84-86 contract: refinement of estimates: reduction of cost growth requirements.

c. Current Change Explanations --

	($ in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Jan 86 economic escalation rate (Economic)	--	--
Reduction in contract design requirement (Estimating)	-2.0	-2.3
(2) Procurement		
Revised Jan 86 ASD(C) economic escalation rates (Economic)	--	-131.3
Adjustment for inflation (Estimating)	-44.5	-59.9
Adjustment of FY81 ship for projected final costs (Estimating)	-1.5	-1.9
Revised program estimates (Estimating)	101.4	131.3
Major commodity escalation changes (Estimating)	5.1	7.4
Repricing of outfitting and post delivery requirements (Support)	8.1	12.5

d. References -- FY 1987 President's Budget

(UNCLASSIFIED)

14. (U) Program Acquisition Unit Cost (PAUC) History

a. Initial SAR Estimate to Current Baseline Estimate

b. Same as Current Baseline Estimate

PAUC (Product. Estimate)	Changes (Then Year Dollars in Millions) Econ	Qty	Sch	Eng	Est	Sot	Other	Total	PAUC (Current Estimate)
404.2	-55.7	17.6	-	-	-34.7	-6.4	-	-79.2	325.0

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

a. (U) RDT&E -- N/A

b. (U) Procurement --

	Initial Contract Price 1/		
LSD 41 CONSTRUCTION	Target	Ceiling	Qty
Lockheed Shipbuilding Co., Seattle, WA	$380.8	$380.8	1
N00024-80-C-2080, CPFF,			
Award: February 9, 1981			
Definitized: November 8, 1984			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$384.4	$384.4	1	$384.4	$384.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-44.3	$-.1
Cumulative Variances to Date (9/29/85)	$-46.0	$-.5
Net Change	$- 1.7	$-.4

Explanation of Change: The unfavorable cost and schedule variances are a result of material inventory transfers and labor growth caused by warranty support and contract cleanup. The Program Manager's assessment takes into consideration the above variances.

	Initial Contract Price 2/		
LSD 42 CONSTRUCTION	Target	Ceiling	Qty
Lockheed Shipbuilding Co., Seattle, WA	$309.7	$336.3	1
N00024-83-C-2070, FPI,			
Award: March 26, 1982			
Definitized: November 8, 1984			

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager*
$312.9	$341.4	1	$317.9	$317.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-10.4	$-5.1
Cumulative Variances to Date (12/01/85)	$-12.5	$-1.0
Net Change	$- 2.1	$+4.1

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

b. (U) Procurement --

Explanation of Change: The unfavorable cost variance is primarily related to production craft labor. The favorable schedule variance is identified with the engineering areas of configuration management and trial agenda. The Program Manager's assessment takes into consideration the above variance.

LSD 43 CONSTRUCTION
Lockheed Shipbuilding Co.,
Seattle, WA
N00024-83-C-2070, FPI,
Award: January 27, 1983
Definitized: January 27, 1983

Initial Contract Price		
Target	Ceiling	Qty
$271.5	$318.0	1

Current Contract Price		
Target	Ceiling	Qty
$276.1	$321.3	1

Estimated Price At Completion	
Contractor	Program Manager*
$275.5	$301.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.4	$- 5.1
Cumulative Variances to Date (12/01/85)	$-1.4	$-16.0
Net Change	$ 0	$-10.9

Explanation of Change: The unfavorable cost and schedule variances are primarily related to production craft labor, material earnings adjustment and behind schedule labor hour progress. The Program Manager's assessment takes into consideration the above variances.

LSD 44 CONSTRUCTION
Avondale Industries, Inc.,
New Orleans, LA
N00024-84-C-2027, FPI,
Award: November 21, 1983
Definitized: November 21, 1983

Initial Contract Price		
Target	Ceiling	Qty
$166.6	$202.3	1

Current Contract Price		
Target	Ceiling	Qty
$178.3	$215.2	1

Estimated Price At Completion	
Contractor	Program Manager*
$185.4	$205.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$- .2	$-2.3
Cumulative Variances to Date (11/30/85)	$-10.6	$-4.1
Net Change	$-10.4	$-1.8

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

b. (U) Procurement —

Explanation of Change: The unfavorable cost and schedule variance are a result of engineering costs being higher than expected. The Program Manager's assessment take into consideration the above variances.

LSD 45/46 CONSTRUCTION
Avondale Industries, Inc.,
New Orleans, LA
N00024-84-C-2070, FPI,
Award: November 26, 1984
Definitized: November 26, 1984

	Initial Contract Price		
	Target	Ceiling	Qty
	$304.8	$394.9	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager*
$316.8	$407.7	2	$314.9	$360.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 0	$ 0
Cumulative Variances to Date (11/30/85)	$-.1	$-.7
Net Change	$-.1	$-.7

Explanation of Change: The unfavorable cost and schedule variances are a result of engineering costs being higher than expected. The Program Manager's assessment taken into consideration the above variances.

LSD 47/48 Construction
Avondale Industries, Inc.,
New Orleans, LA
N00024-84-C-2027, FPI,
Award: December 11, 1985
Definitized: December 11, 1985

	Initial Contract Price		
	Target	Ceiling	Qty
	$297.9	$386.0	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager*
$297.9	$386.0	2	$298.0	$352.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 0	$ 0
Cumulative Variances to Date (11/30/85)	$-.03	$-.2
Net Change	$-.03	$-.2

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

b. (U) Procurement --

Explanation of Change: Initial submission of Construction Contract in SAR. The unfavorable cost and schedule variances are a result of engineering costs being higher than expected. The Program Manager's assessment takes into consideration the above variances.

1/ Reflects renegotiated contract values of 8 Nov 1984. Original contract target was $338.6.

2/ Reflects renegotiated contract values of 8 Nov 1984. Original contract target was $304.0.

* PM's estimated price at completion includes the Navy estimated escalation for the contract.

c. (U) MILCON -- N/A

16. (U) Program Acquisition Cost (Cont'd): (Current Estimate in Millions)

Program Status --
(1) Percent Program Completed: 10/15 = 67%
(2) Percent Program Cost Appropriated: $2485.3/2600.3 = 95.6%

b. Appropriation Summary
(Then Year Dollars in Millions)

Appropriation	Current & Prior yrs (FY77-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92-)	Total
RDT&E	47.7	--	--	--	47.7
Procurement	2437.4	20.6	94.6	--	2552.6
Total:	2485.1	20.6	94.6	0.0	2600.3

c. Annual Summary

FY	Qty	FY84 BASE YEAR DOLLARS: Sailaway Nonrec.	Sailaway Rec.	Total	THEN YEAR DOLLARS: Advanced Proc. Debit	Advanced Proc. Credit	Total	Escal Rate %
APPROPRIATION: RDT&E, N								
1977				3.7			3.7	2.50
1978				10.3			10.3	6.80
1979				6.3			6.3	8.40
1980				9.7			9.7	10.59
1981	N/A	N/A	N/A	5.8	N/A	N/A	6.1	10.61
1982				3.3			3.6	7.60
1983				3.2			3.7	4.50
1984				2.0			2.4	3.80
1985				0.7			0.9	3.60
1986				0.7			1.0	3.20
SUBTOTAL			--	45.7	--	--	47.7	--

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

c. Annual Summary --

FY	Qty	FY84 BASE YEAR DOLLARS			THEN YEAR DOLLARS			Escal Rate %
		Sailaway		Total	Advanced Proc.		Total	
		Nonrec.	Rec.		Debit	Credit		
APPROPRIATION: SCN								
1980				37.1	41.0		41.0	9.60
1981	1	22.9	325.9	337.6	47.0	41.0	387.7	9.60
1982	1		291.1	257.9	0.2	47.0	306.9	7.50
1983	1		308.6	343.4	42.0		417.8	3.80
1984	1	N/A	248.8	316.7	103.3	37.8	400.9	3.60
1985	2		361.2	386.9	113.2	80.0	506.3	2.10
1986	2		337.6	277.0	3.4	83.5	376.8	4.10
1987				16.0	20.6		20.6	4.10
1988				17.5	23.2		23.2	3.90
1989				28.4	39.1		39.1	3.40
1990				22.2	31.4		31.4	2.90
1991				0.6	0.9		0.9	2.30
SUBTOTAL	8	22.9	1873.2	2041.3	465.3	289.3	2552.6	--
TOTAL	8	22.9	1873.2	2087.0	465.3	289.3	2600.3	--

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

APPROPRIATION: RDT&E, N

THEN YEAR DOLLARS (Current Estimate in Millions)

FISCAL YEAR	TOTAL	OBLIGATED	EXPENDED
1977	3.7	3.7	3.7
1978	10.3	10.3	10.3
1979	6.3	6.3	6.3
1980	9.7	9.7	9.7
1981	6.1	6.1	6.1
1982	3.6	3.6	3.6
1983	3.7	3.7	3.7
1984	2.4	2.4	2.3
1985	0.9	0.9	0.8
1986	1.0	0.4	
TOTAL	47.7	47.1	46.5

APPROPRIATION: SCN

1980	41.0	41.0	40.7
1981	387.7	387.0	380.0
1982	306.9	294.2	279.5
1983	417.8	337.8	234.4
1984	400.9	328.3	97.2
1985	506.3	345.4	9.3
1986	376.8	219.2	--
TO COMPL.	115.2	--	--
TOTAL	2552.6	1952.9	1041.1

17. Production Rate Data:

a. Annual Production Rates

FISCAL YEAR	PRODUCTION RATES (Quantity/Year)			
	Development Estimates	Production Estimates	Current Estimates	Maximum
1981		1	1	1
1982		1	1	1
1983		1	1	1
1984	N/A	1	1	1
1985		2	2	2
1986		2	2	2
1987		2		
1988		2		

b. Cost Variance -- Dollars in Millions

ITEM	Production Estimates	Variance (CE less PdE)	Current Estimates	Variance (CE less Max)	Maximum
Prog Acq. Cost (BY$)	3223.9	-1136.9	2087.0	0	2087.0
(TY$)	4849.9	-2249.6	2600.3	0	2600.3
PAUC (BY$)	268.7	-7.8	260.9	0	260.9
(TY$)	404.2	-79.2	325.0	0	325.0

17. Production Rate Data (Cont'd):

c. Schedule Variance —

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	2/81	-	2/81	-	2/81
Duration (in Months)	83	-25	58	-	58
End Date (Mo/Yr)	1/88	-25	12/85	-	12/85

d. Deliveries (Plan/Actual) —

	TO DATE
RDT&E	0/0
Procurement	2/2

18. Operating and Support Costs: N/A

AF130 PEACEKEEPER

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SAR-85-081

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

Program: Peacekeeper

AS OF DATE: December 31, 1985

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1. Designation and Nomenclature (Popular Name): LGM-118A/Land Based ICBM (Peacekeeper)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

Commander
Ballistic Missile Office
Norton AFB, CA 92409-6468

Maj Gen A. G. Casey
Assigned: 19 May 1982
AV 876-6448; COMM (714) 382-6448

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DEPARTMENT OF DEFENSE
86-0619

4. Program Elements/Procurement Line Items:

RDT&E: PE 64312F (Shared Funding)

PROCUREMENT: PE 11215F APPN 3020 ICN MMXOLG, MMXPYG

MILCON: PE 11215F

~~Classified by: Multiple Sources~~
~~Declassify on: OADR~~

SAF/PAS
86-155 -T

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5. Related Programs: Small ICBM

6. Mission and Description: The mission of the Peacekeeper weapon system is to enhance the deterrent posture of US strategic forces. Should deterrence fail, Peacekeeper must be able to effectively attack the full spectrum of designated targets with nuclear weapons. The system must provide a prompt retaliatory capability. The Peacekeeper missile has four powered stages consisting of three solid propellant stages and a liquid fueled post-boost vehicle capable of delivering 10 multiple independently targetable reentry vehicles. This system replaces 50 Minuteman III missiles, but does not replace the Minuteman system. An alternate basing mode is being explored to deploy 50 additional Peacekeepers.

7. Program Highlights:

a. DSARC I, held in 1976, selected Trench & Horizontal Multiple Protective Shelters for further validation. In 1978, at DSARC II, the Air Force recommended use of vertical multiple protective structures as the basing mode. The President, in 1979, approved M-X Full Scale Engineering Development of a SALT verifiable system based in horizontal multiple protective structures. The missile chosen for development was the 92-inch diameter missile. Additionally, a dash capability was to be provided. After initiation of Full-Scale Engineering Development, the engineering baseline was changed. Separate missile transporters and launchers replaced the transporter erector launcher and the size of the shelters was reduced. System Design Reviews for the system were completed in 1980 and the first Preliminary Design Review was held in 1981 prior to cancellation. In addition, construction of flight test facilities at Vandenberg AFB was begun, and assembling and check out planning for deployment was started.

In 1981, the horizontal multiple protective shelter basing mode was terminated and the President directed production of 100 M-X missiles and interim deployment of 40 missiles in existing Minuteman and Titan silos while long-term basing options including deep basing, defended fixed basing, defended deceptive basing and continuous patrol aircraft were studied. In early 1982, study on the continuous patrol aircraft option was discontinued. In late 1982, Minuteman silo basing was not approved and the President directed Closely Spaced Basing at F.E. Warren AFB, Wyoming, for which the M-X was named the "Peacekeeper." In April 1983, the President recommended deployment of 100 Peacekeeper missiles in 100 Minuteman silos at F.E. Warren AFB.

b. The Peacekeeper program has evolved from a development intensive operation to a production oriented one in short order. Ten of the scheduled 20 missile flights have been successfully launched from Vandenberg AFB. The increasing emphasis upon the operational test and evaluation was most evident with the highly successful milestone of the first silo launch in August 1985.

Direction was received in July 1985 to deploy not more than 50 missiles in Minuteman silos at F.E. Warren AFB. Deployment activities are well underway for an on schedule Initial Operational Capability date of December 1986.

Studies continue on several basing modes for the remaining 50 missile systems as outlined in a report given to DoD in December 1985.

The total program cost is estimated at $16.1 billion in FY 82 dollars which equates to $20.8 billion in then year dollars. (Alternate basing funding requirements not included.)

The Peacekeeper ICBM system is expected to fulfill all mission requirements.

c. Changes Since "As Of" Date -- On 13 March 1986, the Secretary of the Air Force provided notification and the required Unit Cost Exception Report to Congress concerning a unit cost breach of the FY 86 Peacekeeper current procurement unit cost threshold. This breach was caused by the Congress reducing the FY 86 procurement from 48 to 12 missiles.

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are no SDDM (dated 14 Feb 80) threshold breaches.

9. Schedule:

a. Milestones --

Milestones	Development Estimate/ Approved Program	Current Estimate
DSARC I	Mar 76/Mar 76	Mar 76*
DSARC II	Dec 78/Dec 78	Dec 78*
Systems Design Review	Feb 80/Feb 80	Feb 80*
Preliminary Design Review	Aug 80/Aug 80	Aug 80*
Stage Destruct Test Complete	Jul 82/Jul 82	Jul 82*
Ordnance Induced Shock Tests Complete	Dec 82/Dec 82	Dec 82*
First Flight	Jan 83/Jan 83	Jun 83*
Structure Load Tests Complete	Jun 83/Jun 83	Jun 83*
First Production Contract Award	Jan 84/Jan 84	Jan 84*
Propulsion Flight Proof Tests Complete	Apr 84/Apr 84	Jul 84*
Initial Operational Capability (IOC)	Dec 86/Dec 86	Dec 86

*Reflects actual dates of accomplishment.

b. Previous Change Explanations --

First flight delayed due to development problems and congressional restrictions which ran concurrently from January to June 1983. Propulsion Flight Proof Tests were completed late due to a redesign of the Stage IV propellant tank which required an additional flight proof test in July 1984.

c. Current Change Explanations --

There have been no milestone schedule changes since the last report (December 1984).

d. References: Development Estimate: SecDef Memorandum, dated February 14, 1980.
Approved Program: PMD 0075(15), dated 14 Sep 83.

(U) **Technical/Operational Characteristics:**

(b)(1);(b)(3):42 USC §2168(a) (1)(C)--(FRD)

[redacted]

d. (U) Explanation of Changes

(U) (Ch-1) Combined result of (Ch-2) and (Ch-3)

(b)(1)

[redacted]

(U) (Ch-3) Targeting efficiency change resulted from refinement of the SAC target data base, which is a continual process.

(U) (Ch-4) Demonstrated accuracy is based on 10 missile flights, 56 reentry vehicles with an average range of 4250 nautical miles.

e. (U) References: Development Estimate - SecDef Memorandum, dated February 14, 1980.

Approved Program - PMD 0075(15), dated 14 Sep 83.

1/ (U) The approved program directs only the MEF. Subelements are provided to explain how the MEF is derived.

2/ (U) MEF is defined as the product of countdown & flight reliability, weapon system availability and targeting efficiency for 10 MK21 reentry vehicles at F.E. Warren AFB (throw weight limited).

10. Technical/Operational Characteristics (Cont'd):

3/ (U) Countdown & flight reliability is the probability that a missile system which is available for commitment to launch sequence will respond to a valid launch command, successfully complete the launch and flight, and detonate a given warhead within 3.5 times the circular error probable requirement. (Includes launch critical operational support equipment and aerospace vehicle equipment.)

4/ (U) Weapon system availability is the percentage of the missile force, under the jurisdiction of the using command and committed to the wartime mission, which is capable of commitment to the launch sequence at any random point in time.

5/ (U) Targeting efficiency is a parameter defined to express the capability of a multiple warhead missile to have sufficient footprint to be effectively employed against a real set of targets. Targeting efficiency is a measure of the capability of the missile fleet containing a given missile configuration to access target sets. This measure of missile fleet performance assumes 100% coverage of a given target list. Targeting efficiency is calculated as the number of targets in the target list divided by the number of reentry vehicles employed. For example:

Targeting efficiency = (500 targets)/(55 missiles X 10 RVs per missile) = 0.91

6/ (U) Accuracy is defined in terms of Circular Error Probable (CEP), the radius of a circle within which 50% of the reentry vehicles will impact at a range of 5775 nm with 27.5 degree reentry angle, and applies to a mature system three to five years after IOC.

7/ (U) Demonstrated performance is based on mean.

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars) 1/

	Development Estimate	Changes	Current Estimate
a. (U) Cost --			
Development (RDT&E)	$6018.2	$-147.3	$5870.9
Procurement	10292.0	-256.4	10035.6
Total Flyaway	(6645.9)	(416.6)	(7062.5)
Other Weapon System Costs	(2546.2)	(-1400.2)	(1146.0)
Initial Spares	(304.2)	(-3.2)	(301.0)
Support	(795.7)	(730.4)	(1526.1)
Construction (MILCON) 2/	324.7	-121.7	203.0
Total FY 82 Base-Year $	16634.9	-525.4	16109.5
Escalation	5045.3	-343.2	4702.1
Development (RDT&E)	(878.9)	(-137.8)	(741.1)
Procurement	(4086.2)	(-169.6)	(3916.6)
Construction (MILCON)	(80.2)	(-35.8)	(44.4)
Total Then-Year $	$21680.2	$-868.6	$20811.6
b. (U) Quantities -- 3/			
Development (RDT&E)	20	0	20
Procurement	223	0	223
Total	243	0	243
c. (U) Unit Cost --			
Procurement:			
FY 82 Base Year $	46.152	-1.149	45.003
Then-Year $	64.476	-1.910	62.566
Program:			
FY 82 Base Year $	68.456	-2.162	66.294
Then-Year $	89.219	-3.575	85.644

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

e. (U) Foreign Military Sales -- None

(b)(1) [redacted]

1/ (U) The total costs identify the $16.1B estimate (FY 82 dollars), which equates to $20.8B in then-year dollars, for the current Peacekeeper program which is based on the Report by the President's Commission on Strategic Forces, April 1983, and the President's letter, 19 April 1983, transmitting Strategic Forces Technical Assessment Review (31 March 1983), to the Congress. Does not include $3199.5 in FY 82 and prior missile costs (development of flight test missiles and all equipment leading to first flight) or $1399.2 in FY 83 and prior spent on earlier basing modes (Multiple Protective Shelters, horizontal shelter system, interim deployment in 40 Minuteman silos, and Closely Spaced Basing) (then-year dollars in millions).

2/ (U) Construction figure does not include $86.1M in FY 82 and prior year funds (then-year dollars).

3/ (U) 223 production missiles equates to 100 deployment missiles, 108 operational test and evaluation missiles, and 15 aging and surveillance missiles.

2. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCER Baseline Estimate (28 Mar 85 UCER)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition —			
(1) Cost	20811.6	21647.2	20811.6
(2) Quantity	243	243	243
(3) Unit Cost	85.644	89.083	85.644
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	1776.8	3180.3	1473.5
Less CY Adv Proc	-	-	-
Plus PY Adv Proc	-	-	-
Net Total	1776.8	3180.3	1473.5
(2) Quantity	12	48	21
(3) Unit Cost	148.067	66.256	70.167

3. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	6897.1	14378.2	404.9	21680.2
Previous Changes:				
Economic	-115.3	58.0	-0.2	-57.5
Quantity				0.0
Schedule		274.5		274.5
Engineering			-97.1	-97.1
Estimating		29.4		29.4
Other				0.0
Support	-0.8	-152.4	-29.1	-182.3
Subtotal	-116.1	209.5	-126.4	-33.0
Current Changes:				
Economic	-10.1	-552.6	-0.8	-563.5
Quantity			-30.3	-30.3
Schedule		194.8		194.8
Engineering				0.0
Estimating	-158.9	540.4		381.5
Other				0.0
Support		-818.1		-818.1
Subtotal	-169.0	-635.5	-31.1	-835.6
Total Changes	-285.1	-426.0	-157.5	-868.6
Current Estimate	6612.0	13952.2	247.4	20811.6

13. Cost Variance Analysis (Cont'd):

(FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	6018.2	10292.0	324.7	16634.9
Previous Changes:				
Quantity				0.0
Schedule		17.6		17.6
Engineering			-72.5	-72.5
Estimating		31.5		31.5
Other				0.0
Support	-1.3	-89.8	-25.7	-116.8
Subtotal	-1.3	-40.7	-98.2	-140.2
Current Changes:				
Quantity			-23.5	-23.5
Schedule				0.0
Engineering				0.0
Estimating	-146.0	367.5		221.5
Other				0.0
Support		-583.2		-583.2
Subtotal	-146.0	-215.7	-23.5	-385.2
Total Changes	-147.3	-256.4	-121.7	-525.4
Current Estimate	5870.9	10035.6	203.0	16109.5

b. Previous Change Explanations --

Development

Economic: Revised economic escalation indices.

Support: Reduce development test data analysis to live within fiscal constraints. Reinstate essential development test data analysis previously reduced by fiscal constraints.

Procurement

Economic: Revised economic escalation indices.

Schedule: The procurement schedule was restructured as a direct result of Congressional action (-6 in FY 84) and the revised schedule contained in the President's Budget (-2 in FY 85) and adding the missiles back in FY 89 (+8).

Rephase of 19 missiles from FY 85 to FY 89 due to FY 85 Congressional action.

13. Cost Variance Analysis (Cont'd):

Estimating: Impact of revised economic escalation indices on prior years. Adjustment of prior years amounts to actuals.

Reestimate and realignment of funds to flyaway from support.

Support: Reduced quantity of initial spares to less than projected requirements. Lower quantities of spares increased risk of reduced weapon system availability to live within fiscal constraints. Impact of revised economic escalation indices on prior years.

Reestimate and realignment of funds from support to flyaway.

Construction

Economic: Revised economic escalation indices.

Engineering: Descope defense access roads due to reduced funding in FY 85 President's Budget. Will not allow completion of road program as scheduled and will impact FOC.

Descope defense access roads due to reduced funding in FY 86 President's Budget. Will not allow completion of road program as scheduled and will affect FOC.

Support: Removal of planning and design funds included in 30 June SAR. This change was directed by higher headquarters since these funds were not considered program unique.

13. 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	-10.1
Estimate refined as a result of high test success (Estimating)	-150.6	-164.6
Adjustment for current and prior year escalation change (Estimating)	+ 4.6	+ 5.7
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-552.6
Adjustment for current and prior year escalation change (Estimating)	+120.1	+161.1
Congressional action reduced missile buys resulting in stretchout of buys to FY 91.	+495.8	+919.0
Schedule changes required for stretchout of missile buys from FY 86 and FY 87 to FY 91 (Schedule)	(-)	(+194.8)
Increased Estimate for missile cost to reflect reduced FY 86 and FY 87 buys and stretchout to FY 91 (Estimating)	(+383.7)	(+560.5)
Increased Support cost based on reduced FY 86 and FY 87 missile buy and stretchout of buys to FY 91 (Support)	(+112.1)	(+163.7)
Reduced Assembly and Checkout estimate due to intense competition (Estimating)	-273.1	-378.2
Adjustments to refine the mix of previous support and estimating category changes primarily related to the impact of escalation on current and prior years	0.0	0.0
Increase to Estimating category (Estimating)	(+136.8)	(+197.0)
Decrease to Support category (Support)	(-136.8)	(-197.0)
Instrument and Flight Safety System revised estimates and delayed procurement to FY 89 (Support)	-39.4	-54.6
Congressional cut in spares (Support)	- 6.2	- 7.0
Reduction of 50 basing sets (Support)	-512.9	-723.2
(3) MILCON		
Revised economic escalation indices (Economic)	N/A	- 0.8
Reduction of 50 basing sets (Quantity)	-23.5	- 30.3

d. References -- Development Estimate: Report of the President's Commission on Strategic Forces, April 1983, and President's letter, 19 April 1983, transmitting Strategic Forces Technical Assessment.

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

Initial SAR/Development Estimate (DE) to Current Estimate (CE)

PAUC (Initial SAR/DE)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
89.219	-2.555	-0.125	1.931	-0.400	1.691	0.000	-4.117	-3.575	85.644

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

a. RDT&E

Assembly, Test & System Support:
Martin Marietta, Denver, CO
F04704-84-C-0048, CPIF/AF
Award: June 14, 1984
Definitized: June 14, 1984

Initial Contract Price		
Target	Ceiling	Qty
$671.6	N/A	N/A

Current Contract Price		
Target	Ceiling	Qty
$710.7	N/A	N/A

Estimated Price At Completion	
Contractor	Program Manager
$719.7	698.9 1/

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-2.6	$-8.2
Cumulative Variances to Date (11/30/85)	$+0.7	$-10.1
Net Change	$+3.3	$-1.9

Explanation of Change: The cost variance improved since the previous SAR due to favorable labor rates and lower than planned manpower requirements for missile assembly operations at Vandenberg AFB. The schedule variance change resulted from late subcontractor deliveries. No program or contract impact.

Basing Operational Support Equipment:
Boeing, Seattle, WA
F04704-83-C-0047, CPIF/AF
Award: October 1, 1983
Definitized: April 24, 1984

Initial Contract Price		
Target	Ceiling	Qty
$573.0	N/A	N/A

Current Contract Price		
Target	Ceiling	Qty
$650.0	N/A	N/A

Estimated Price At Completion	
Contractor	Program Manager
$663.4	663.8 1/

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-6.9	$-10.0
Cumulative Variances to Date (11/30/85)	$-22.1	$-3.2
Net Change	$-15.2	$+6.8

1/ Includes authorized undefinitized work. To prevent disclosure of our negotiating position, the authorized undefinitized work is valued at the contractor's estimate for purposes of this report.

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

Explanation of Change: The cost variance deteriorated due to design problems with the ground electrical power system and the launch control system and overtime to recover and maintain schedule at Vandenberg AFB. The schedule variance change was due primarily to schedule recovery at Vandenberg and resolution of ground electrical power system and launch control system design problems. No program or contract impact.

Guidance & Control:
Rockwell International
(Autonetics), Anaheim, CA
F04704-82-C-0020, CPIF/AF
Award: March 3, 1983
Definitized: January 18, 1983

Initial Contract Price		
Target	Ceiling	Qty
$394.6	N/A	20

Current Contract Price		
Target	Ceiling	Qty
$522.3	N/A	20

Estimated Price At Completion	
Contractor	Program Manager
$491.0	484.0 1/

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+5.2	$-11.3
Cumulative Variances to Date (11/30/85)	$+3.7	$-11.9
Net Change	$-1.5	$-0.6

Explanation of Change: The cost variance deteriorated due to unfavorable end of fiscal year indirect rate adjustments. The schedule variance change was due to delays in receiving subcontracted interface Test Adaptors. No program or contract impact.

Inertial Measurement Unit:
Northrop Electronics Division,
Hawthorne, CA
F04704-83-C-0023, CPIF/AF
Award: August 30, 1983
Definitized: August 30, 1983

Initial Contract Price		
Target	Ceiling	Qty
$396.8	N/A	18

Current Contract Price		
Target	Ceiling	Qty
$513.7	N/A	18

Estimated Price At Completion	
Contractor	Program Manager
$508.5	509.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+4.0	$-14.9
Cumulative Variances to Date (11/30/85)	$-9.9	$-16.4
Net Change	$-13.9	$-1.5

1/ Includes authorized undefinitized work. To prevent disclosure of our negotiating position, the authorized undefinitized work is valued at the contractor's estimate for purposes of this report.

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

Explanation of Change: The cost variance deteriorated due to increased activity to help recover schedule. The schedule variance deteriorated due to late release of Inertial Measurement Unit manufacturing kits caused by material shortages. No program or contract impact. The program manager's assessment is more pessimistic than the contractor's due to the tight development schedule.

Stage I:
Morton Thiokol, Brigham City, UT
F04704-83-C-0001, FPIF
Award: June 6, 1983
Definitized: May 15, 1983

Initial Contract Price		
Target	Ceiling	Qty
$310.6	$346.9	10

Current Contract Price		
Target	Ceiling	Qty
$320.3	$358.2	10

Estimated Price At Completion	
Contractor	Program Manager
$302.0	305.9 1/

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$+3.2	$-9.1
Cumulative Variances to Date (11/30/85)	$-3.0	$-9.3
Net Change	$-6.2	$-0.2

Explanation of Change: The cost variance deteriorated due to fabrication problems with the Ordnance Initiation System (OIS). The schedule variance deteriorated due to OIS vendor delays. No program or contract impact.

Stage IV:
Rockwell International
(Rocketdyne), Canoga Park, CA
F04704-83-C-0004, FPIF/CPIF
Award: June 1, 1983
Definitized: June 29, 1983

Initial Contract Price		
Target	Ceiling	Qty
$290.9	N/A	10

Current Contract Price		
Target	Ceiling	Qty
$299.3	N/A	10

Estimated Price At Completion	
Contractor	Program Manager
$288.3	283.9 1/

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-4.3	$-6.4
Cumulative Variances to Date (11/30/85)	$-10.4	$-3.7
Net Change	$-6.1	$+2.7

1/ Includes authorized undefinitized work. To prevent disclosure of our negotiating osition, the authorized undefinitized work is valued at the contractor's estimate for urposes of this report.

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

Explanation of Change: The cost variance deteriorated due to design and fabrication problems with the propellant storage assembly. The schedule variance improved due to catch up of subcontractor deliveries and prequalification test effort. No program or contract impact.

b. Procurement: N/A

c. MILCON: N/A

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

a. Program Status —

(1) Percent Program Completed: 44.4% (4 yrs/9 yrs)

(2) Percent Program Cost Appropriated: 61.2% ($12744.7/$20811.6)

b. Appropriation Summary —

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY83-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92)	Total
RDT&E	6120.2	352.3	139.5	0.0	6612.0
Procurement	6425.1	1473.5	6053.6	0.0	13952.2
MILCON	199.4	27.5	20.5	0.0	247.4
Total	12744.7	1853.3	6213.6	0.0	20811.6

6. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars) 1/

c. Annual Summary --

Fiscal Year	3/ Qty	FY 82 Base-Year Dollars			Then-Year Dollars			4/ Escl Rate %
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1983				1787.5			1912.6	4.9
1984				1763.3			1962.6	3.8
1985				1330.8			1530.4	3.6
1986				599.5			714.6	3.2
1987				284.3			352.3	4.1
1988				42.8			54.9	3.9
1989				31.9			42.2	3.4
1990				13.7			18.6	2.9
1991				17.1			23.8	2.3
Subtotal	20			5870.9			6612.0	
Appropriation: Procurement								
1984	21	219.7	1067.5	1709.6			2157.5	8.0
1985	21	7.6	876.4	1902.8			2490.8	4.1
1986	12	0.0	647.5	1307.4			1776.8	4.1
1987	21	0.0	783.7	1046.5			1473.5	4.1
1988	48	36.7	1201.8	1458.7			2116.6	3.9
1989	48	0.0	1161.6	1359.5			2024.3	3.4
1990	48	0.0	968.6	1081.6			1648.3	2.9
1991	4	0.0	91.4	169.5			264.4	2.3
Subtotal	223	264.0	6798.5	10035.6			13952.2	
Appropriation: MILCON 2/								
1983				14.9			16.7	4.9
1984				26.9			31.2	3.8
1985				79.6			95.7	3.6
1986				44.9			55.8	3.2
1987				21.3			27.5	4.1
1988				15.4			20.5	3.9
Subtotal				203.0			247.4	
Total	243			16109.5			20811.6	

1/ The total costs identify the $16.1B estimate (FY 82 dollars), which equates to $20.8B in then-year dollars, for the current Peacekeeper program which is based on the Report by the President's Commission on Strategic Forces, April 1983, and the President's letter, 19 April 1983, transmitting Strategic Forces Technical Assessment Review (31 March 1983), to the Congress. Does not include $3199.5 in FY 82 and prior missile costs (development of flight test missiles and all equipment leading to first flight) or $1399.2 in FY 83 and prior spent on earlier basing modes (Multiple Protective Shelters, horizontal shelter system, interim deployment in 40 Minuteman [redacted] and Closely Spaced Basing) (then-year dollars in millions).

2/ [redacted] struction figure does not include $86.1M in FY 82 and prior year funds (then-year dollars).

3/ [redacted] production missiles equates to 100 deployment missiles, 108 operational test and evaluation missiles, and 15 aging and surveillance missiles.

4/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

16. Program Funding Summary (Cont'd): 1/

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1983	1912.6	1912.6	1877.3
1984	1962.6	1962.6	1826.4
1985	1530.4	1415.6	616.8
1986	714.6	71.9	0.5
To Complete	491.8	N/A	N/A
Total	6612.0	5362.7	4321.0
Appropriation: Procurement			
1984	2157.5	1887.6	511.2
1985	2490.8 *	1463.5	119.0
1986	1776.8	31.2	0.0
To Complete	7527.1	N/A	N/A
Total	13952.2	3382.3	630.2
Appropriation: MILCON			
1983	16.7	13.1	12.0
1984	31.2	30.5	28.6
1985	95.7	60.6	41.4
To Complete	103.8	N/A	N/A
Total	247.4	104.2	82.0

* $1.5B not released until April 1985.

1/ Obligation and Expenditure figures reflect program office records as of 31 Dec 85.

Peacekeeper, December 31, 1985

17. Production Rate Data:

a. Annual Production Rates -- (NOTE: The Production Estimate and Current Estimate calculated by dividing the funded quantity of missiles for a given fiscal year by the number of months in the funded delivery period associated with that quantity, and multiplying the result by 12 months per year.) Peacekeeper missile is produced as a combined effort of at least 10 major associate contractors. These rates are the end product of all the associate contractors.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1984	19.4	14.4	14.4	48.0
1985	28.2	24.0	24.0	48.0
1986	30.3	17.0	17.0	48.0
1987	48.0	14.0	14.0	48.0
1988	48.0	34.0	34.0	48.0
1989	48.0	48.0	48.0	48.0
1990		48.0	48.0	48.0
1991		48.0	48.0	48.0

b. Cost Variance -- Dollars in Millions (NOTE: Maximum rates were calculated by computing average cost of missiles at maximum production rate of 48 per year and multiplying the remaining units to be purchased by the average cost and adding that to the cost to date.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	16109.5	-	16109.5	2461.9	13647.6
(TY $)	20811.6	-	20811.6	3166.4	17645.2
PAUC (BY $)	66.294	-	66.294	5.094	61.200
(TY $)	85.644	-	85.644	6.517	79.127

c. Schedule Variance --

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr) 1/	5/86		5/86	--	5/86
Duration (in Months)	85		85	31	54
End Date (Mo/Yr) 2/	5/93		5/93	29	10/90

1/ First missile delivery.

2/ Last missile delivery.

17. Production Rate Data (Cont'd):

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	11/11
Procurement	0/0

18. Operating and Support Costs: N/A

SAF-36 T-46A

SAR-85-118

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

PROGRAM: T-46A

AS OF: December 31, 1985

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1. Designation and Nomenclature (Popular Name): T-46A (Next Generation Trainer)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:
T-46A Program Office — Col Dalton N. Wirtanen
Aeronautical Systems Division — Assigned: March 1, 1985
Wright-Patterson AFB, OH 45433 — AV 785-5764; COMM (513)255-5764

4. Program Elements/Procurement Line Items:
RDT&E: PE 64313F (No Shared Funding)
PE 64227F (Shared Funding)
PROCUREMENT: APPN 3010 PE 84741F ICN TO46AD (No Shared Funding)
MILCON: NONE

5. Related Programs: None

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6. Mission and Description: The mission of the T-46A is to meet the Air Force need of providing a primary flight trainer as expressed in the 26 June 79 MENS for Primary Undergraduate Pilot Training. Deficiencies in the existing system are expressed in ATC GOR 01-78 and dictate initiation of the program as soon as possible to accommodate a FY87 Initial Operating Capability. The T-46A System will correct T-37 deficiencies listed in the MENS; these include high fuel consumption, weather limitation, limited range and endurance, outdated avionics and instruments, noise levels that exceed limits, high maintenance costs, and low performance. The aircraft is designed to the mission requirements and performance parameters stated in the ATC System Operational Concept dated Nov 83. Twin turbofan engines and side-by-side seating configuration are fundamental requirements. The T-46A must be capable of operating efficiently and safely within the current and projected operational training environment with emphasis on operational supportability.

7. Program Highlights:

a. Significant Historical Developments -- The requirement for the T-46A (Next Generation Trainer (NGT) Program) began with Air Training Command (ATC) General Operational Requirement (GOR) 01-78, dated 6 March 1978. On 2 July 1982 FSD Contracts were awarded to the Fairchild Republic Company (FRC) for air vehicle development and to the Garrett Turbine Engine Company (GTEC) for engine development. GTEC and FRC successfully completed their Critical Design Reviews (CDR) in October 1983 and December 1983 respectively. On 3 December 1983, the first complete F-109-GA-100 engine was run and achieved 100% static thrust during initial tests.

1984 -- Milestone II review by the Air Force System Acquisition Review Council (AFSARC) was held on 14 Feb 84; long lead funding for production lot 1 was released to contractors. A technical review was presented to the AFSARC on 6 Nov 84; full production funding for production lot 1 and long lead funding for production lot 2 was released. DT&E aircraft #1 major assembly was started on 1 Mar 84 with completion planned for second quarter FY85. Contract for the T-46A Operational Flight Trainer was awarded in Oct 84.

1985 -- Rollout of the first flight test aircraft occurred on 11 Feb 85. A Secretarial Program Review was conducted on 21 Feb 85. An Air Force Executive Review of the airframe contractor's capability to conduct the T-46A program was held after it became apparent that DT&E aircraft #1 was incapable of first flight on or about the contract date of 15 Apr 85. Subsequently, the contractor has committed additional resources, instituted management changes and presented a new schedule to the Air Force. The Initial Flight Release qualification of the F109 engine was completed on 16 Apr 85.

The first test aircraft was delivered to the Air Force and transported to Edwards AFB on 29 Aug 85. A Contractor Operations Review held by AFCMD at Fairchild Republic Company from 3-14 Jun 85 found the company unsatisfactory in all eight categories reviewed. Fifty percent of progress payments are being withheld pending satisfactory progress on corrective actions.

7. Program Highlights (Cont'd):

b. Significant Developments Since Last Report -- First flight was successfully completed on 15 Oct 85. Preliminary Airworthiness flights were completed with flutter tests next. Congress appropriated funds for FY86 Lot II production aircraft and Long Lead funds for Lot III. The Air Force cancelled the program in FY87 and out-years and OSD withheld FY86 production funding. This is considered to be the final T-46A SAR.

The T-46 is expected to satisfy mission requirements.

c. Changes Since 31 Dec 85 -- On 13 March 1986 Congress was notified of a T-46A Program Acquisition Unit Cost (PAUC) breach of more than 25% resulting from the decision to reduce the quantity from 652 to 12.

8. Decision Coordination Paper (DCP) Threshold Breaches: No DCP

9. Schedule:

	Development Estimate/ Approved Program	Current Estimate
a. Milestones--		
Full Scale Development Contract Award	Jul 82/Jul 82	Jul 82
Critical Design Review	Aug 83/Aug 83	Dec 83
AFSARC II (Limited Production Decision)	Nov 83/Nov 83	Feb 84
First Flight	Apr 85/Apr 85	Oct 85
First Production Aircraft Delivery	Apr 86/Apr 86	Nov 86
AFSARC III Full Rate Production Decision	Sep 86/Sep 86	N/A (Ch-1)
IOC 1/	Sep 87/Sep 87	N/A (Ch-1)

1/ IOC is receipt of 35 aircraft by ATC to initiate training with the T-46A.

b. Previous Change Explanations--

Critical Design Review (CDR) was delayed from Aug 83 to Sep 83 because the contractor experienced difficulty obtaining wind tunnel test data. CDR was subsequently delayed to Dec 83 because sufficient engineering data was not available. AFSARC II slipped from Nov 83 to Feb 84 to accommodate the CDR schedule slip. First Flight was delayed from Apr 85 to Aug 85 and subsequently to Oct 85, First Production Aircraft Delivery from Apr 86 to Aug 86, and AFSARC II from Sep 86 to Feb 87 because the engineering, test and manufacturing effort for the first test aircraft was underestimated and airframe contractor failed to apply required resources. Production deliveries were delayed from Aug 86 to Nov 86 as a result of structural mainframe fatigue on test aircraft and subsequent redesign/remanufacture. AFSARC III was delayed from Feb 87 to Sep 87 to accommodate slip in IOT&E and full-scale fatigue test as a result of structural mainframe fatigue failure on test article. IOC slipped from Sep 87 to Apr 88 due to initial production delivery slip.

c. Current Change Explanations--

(Ch-1) The FY87 PB cancelled the program after FY85. The AFSARC III Decision cannot be made and IOC will not occur due to insufficient aircraft.

d. References--

Development Estimate: PMD 8067 (9)/64313F, 19 Nov 82.
Approved Program: PMD 8067 (9)/64313F, 19 Nov 82.

10. Technical/Operational Characteristics

	Development Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. Technical--			
Maintainability (Man-hours/Flt Hr) 1/	4.75/4.75	N/A	4.75
Full Mission Capable Rate (%) 1/	83/83	N/A	83
Sustained Load Factor at 25,000 Ft (G) 2/	2.5/2.5	N/A	2.5
b. Operational--			
Takeoff Climb Gradient (Single Engine, %) 3/	3.5/3.5	N/A	3.2
Rate of Climb at 25,000 FT (FTM) 2/	2000/2000	N/A	2000
Critical Field Length (Ft) 3/ 4/	5000/5000	N/A	5000

1/ Value at maturity (250,000 fleet flying hours)
2/ Standard Day conditions
3/ Pressure altitude 5000 ft, temperature 100 degrees F.
4/ Ten Knot tail wind at takeoff gross weight and formation takeoff condition

c. Previous Change Explanations--

The takeoff climb gradient changed from 3.5 to 3.3 and subsequently to 3.2 based on estimated weight increase.

d. Current Change Explanations--None

e. References--

Development Estimate: PMD 8067/(9)/64313F, 19 Nov 82.
Approved Program: PMD 8067/(9)/64313F, 19 Nov 82.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost--	Development Estimate	Changes	Current Estimate
Development (RDT&E)	294.7	-2.3	292.4
Procurement	1825.9	-1730.2	95.7
Airframe	(1165.7)	(-1115.3)	(50.4)
Engine	(342.1)	(-325.9)	(16.2)
Avionics	(67.9)	(-66.9)	(1.0)
Total Flyaway	(1575.7)	(-1508.1)	(67.6)
Other Weapon System Cost	(190.0)	(-169.0)	(21.0)
Initial Spares	(60.2)	(-53.1)	(7.1)
Construction (MILCON)	--	--	--
Total FY81 Base Year $	2120.6	-1732.5	388.1
Escalation	1371.8	-1261.8	110.0
Development (RDT&E)	(77.8)	(-9.0)	(68.8)
Procurement	(1294.0)	(-1252.8)	(41.2)
Construction (MILCON)	--	--	--
Total Then-Year $	3492.4	-2994.3	498.1
b. Quantities --			
Development (RDT&E)	2	--	2
Procurement	650	-640	10
Total	652	-640	12
c. Unit Cost--			
Procurement:			
FY81 Base-Year $	2.809	+6.761	9.570
Then-Year $	4.800	+8.890	13.690
Program:			
FY81 Base-Year $	3.252	+29.090	32.342
Then-Year $	5.356	+36.152	41.508

d. Approved Design to Cost Goal -- None

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary
(Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.	Program Acquisition			
	(1) Cost	498.1	3532.7	498.1
	(2) Quantity	12	652	12
	(3) Unit Cost	41.508	5.418	41.508
b.	Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	0	222.2	0
	Less CY Adv Proc	0	63.3	0
	Plus PY Adv Proc	0	22.3	0
	Net Total	0	181.2	0
	(2) Quantity	0	33	0
	(3) Unit Cost	0	5.491	0

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	372.5	3119.9	--	3492.4
Previous Changes				
Economic	-7.9	-39.4	--	-47.3
Quantity	--	--	--	--
Schedule	--	+100.7	--	+100.7
Engineering	--	--	--	--
Estimating	+8.5	-2.3	--	+6.2
Other	--	--	--	--
Support	-10.1	-9.2	--	-19.3
Subtotal	-9.5	+49.8	--	+40.3
Current Changes				
Economic	-.7	+38.0	--	+37.3
Quantity	--	-2589.4	--	-2589.4
Schedule	--	-99.7	--	-99.7
Engineering	--	--	--	--
Estimating	+8.7	-2.0	--	+6.7
Other	--	--	--	--
Support	-9.8	-379.7	--	-389.5
Subtotal	-1.8	-3032.8	--	-3034.6
Total Changes	-11.3	-2983.0	--	-2994.3
Current Estimate	361.2	136.9	--	498.1

13. Cost Variance Analysis: (continued)

(FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	294.7	1825.9	--	2120.6
Previous Changes				
Quantity	--	--	--	--
Schedule	--	+11.8	--	+11.8
Engineering	--	--	--	--
Estimating	+6.6	+8.1	--	+14.7
Other	--	--	--	--
Support	-7.4	-6.3	--	-13.7
Subtotal	-0.8	+13.6	--	+12.8
Current Changes				
Quantity	--	-1516.8	--	-1516.8
Schedule	--	-9.1	--	-9.1
Engineering	--	--	--	--
Estimating	+6.0	-2.1	--	+3.9
Other	--	--	--	--
Support	-7.5	-215.8	--	-223.3
Subtotal	-1.5	-1743.8	--	-1745.3
Total Changes	-2.3	-1730.2	--	-1732.5
Current Estimate	292.4	95.7	--	388.1

b. Previous Change Explanations --

RDT&E

ECONOMIC: revised economic escalation indices

ESTIMATING: program reduction to fund depot maintenance for chase plane and peak demand period surcharges of engineering development center users; restored reduction in FY84 President's Budget; adjustments for prior year escalation; delayed engine spin tests and reduced management reserve to accommodate reprogramming of FY85 funds for small business investment research

SUPPORT: schedule acceleration to deliver simulator concurrent with A/C IOC; revised simulator estimate reflecting negotiated contract; reprogramming by USAF to simulator

Procurement

ECONOMIC: revised economic escalation indices

SCHEDULE: revised schedule reduced initial aircraft procurement rates because of funding constraints

ESTIMATING: one time change for correcting of methodology for computing inflation on advance procurement funding; adjustments for prior year escalation

SUPPORT: reduced spares requirement due to reduced initial aircraft procurement rates; adjustment to allow for simulator concurrency and refinement of previous estimate; reestimate of peculiar support equipment

MILCON -- None

13. 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	-.7
Fourth step engine durability test (Estimating)	+18.5	+25.6
Adjustment for current and prior year escalation change (Estimating)	+0.4	+0.5
Reduction of system test and evaluation and required ECP's (Estimating)	-12.9	-17.4
Reduction of flight simulator test and evaluation (Support)	-7.5	-9.8
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-212.5
Reduction in aircraft quantity from 650 to 10	-1761.2	-2846.1
Reduction in flyaway costs associated with program termination (Quantity)	(-1516.8)	(-2589.4)
Schedule changes applicable to the 640 T-46A's since baseline (Schedule)	(-9.1)	(-99.7)
Estimating changes applicable to the 640 T-46A's since baseline (Estimating)	(-3.2)	(-4.0)
Reduction in support costs associated with program termination (Support)	(-232.1)	(-403.5)
Economic adjustment associated with the reduction of 640 T-46A's (Economic)	(N/A)	(+250.5)
Adjustment for current and prior year escalation change (Estimating)	+4.0	+6.1
Reduction in estimate for ECO and EPA (Estimating)	-9.7	-14.4

13. Cost Variance Analysis (Cont'd):

Adjustment to refine the mix of previous support and estimating category changes primarily related to the impact of escalation on current and prior years	0.0	0.0
Changes to refine mix in estimating (Estimating)	(-15.0)	(-21.9)
Changes to refine mix in support (Support)	(+15.0)	(+21.9)
Advance buy for FY86 airframe, engine, and GFE (Estimating)	+21.8	+32.2
Increased initial spares and support requirements (Support)	+1.3	+1.9

d. References --

Development Estimate: FY 1984 President's Budget, January 1983

14. Program Acquisition Unit Cost (PAUC) History (TY $ in Millions)

a. Initial SAR/Development Estimate to Current Estimate

PAUC (Initial SAR-DE)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Othr	Total	
5.356	-0.833	+69.894	+0.083	--	+1.075	-34.067	--	+36.152	41.508

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

a. RDT&E --

Initial Contract Price

	Target	Ceiling	Qty
Airframe	104.0	125.3	2

Fairchild Republic Co.
Farmingdale, LI, NY
F33657-82-C-2128 FPIF
Award/Definitized: July 2, 1982

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
111.8(Ch-1)	134.3	2	206.2	206.7(Ch-2)

(Ch-1) (From 113.5 to 111.8)
The change in target price stems from an EPA reduction (-2.1) partially offset by an increase for coupon testing (+0.4).

(CH-2) (From 189.0 to 206.7)
The change in estimated price at completion stems from a seven month delay in the delivery of the first prototype to the test center and the resulting program stretchout.

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$-25.6	$-7.4
Cumulative Variances to Date(11/24/85)	$-41.8	$-6.2
Net Change	$-16.2	$+1.2

Explanation of Change-- The change in cost variance since the previous report is primarily in the Airframe and Development Test and Evaluation (DT&E) WBS elements. The airframe cost variance (55.9% of the total cumulative cost variance) results primarily from: (1) increased design engineering changes, and (2) manufacturing efforts such as parts growth, overtime expenses exceeding plan, and fuselage and wing-fix problems. The DT&E cost variance (29.9% of the total cumulative cost variance) results primarily from parts shortages and redesign efforts, investigation/incorporation of a corrective action plan for PDV #4 mainframe failure, and static and durability vehicle fix for problem.

15. Contract Information (Cont'd) (Then-Year Dollars in Millions)

The change in schedule variance since the previous report, although favorable, is not a true measure of schedule performance since FRC has not yet revised the schedule to show the first prototype schedule slip.

The cumulative Airframe schedule variance (55.4% of the total cumulative schedule variance) results primarily from the late delivery of detail parts for DT&E #2 fuselage and nacelle, and a delay in the processing of invoices for selector valves and initiators, a delay in receiving stress inputs, late vendor/production parts impacting PDV testing, and durability and static testing behind schedule.

Although the program manager's Estimate at Completion (EAC) is $72.4M higher than the ceiling price of $134.3M, the Air Force exposure will not exceed ceiling.

Engine
Garrett Turbine Engine Company
Phoenix, AZ
F33657-82-C-2129 FPIF
Award: July 2, 1982
Definitized: July 2, 1982

Initial Contract Price		
Target	Ceiling	Quantity
121.2	135.4	6

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Quantity	Contractor	Program Manager
124.4 (Ch-1)	139.2 (From 139.2 to 140.4)	19	139.5	140.4 (Ch-1)

The change in estimated price at completion stems from a seven month delay in the delivery of the first prototype to the test center.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-15.5	$-6.6
Cumulative Variance to Date(11/26/85)	$-17.2	$-5.6
Net Change	$- 1.7	$+1.0

Explanation of Change: The change in cost variance since the previous report is a result of three major contributors: (1) Core Engine - caused by the compressor and high pressure turbine redesign and fabrication. The account will overrun by 18 percent. (2) Controls - approximately 50 percent of the variance is due to AMC effort on ECU. This is expected to cause a significant account overrun. (3) Engine Integration - there has been difficulty in getting hardware on time due to numerous configuration changes.

The change in schedule variance since the previous report is based upon completion of Full Flight Release (FFR) on the core engine and fan. The increase in the Contractor's estimated cost at completion and the Program Manager's estimated cost at completion stems from a seven month delay in the delivery of the first prototype to the test center, therefore causing a reestimate of the FFR and ISR. Although the Program Manager's EAC is higher than ceiling price, the Air Force exposure will not exceed ceiling.

15. Contract Information (Cont'd) (Then-Year Dollars in Millions)

b. Procurement

Airframe (Lot I)
Fairchild Republic Co.
Farmingdale, L.I. NY,
F33657-82-C-2128 FPIF,
Award: Dec 1, 1984
Definitized: Dec 1, 1984

Initial Contract Price		
Target	Ceiling	Quantity
58.9	64.3	10

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Quantity	Contractor	Program Manager
58.1	65.8	10	$ 86.6	$ 90.3 (Ch-1)

(Ch-1) (From 67.4 to 90.3)

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$-3.4	$-3.9
Cumulative Variance to Date (10/27/85)	$-6.5	$-8.7
Net Change	$-3.1	$-4.8

Explanation of Changes: The change in cumulative cost variance since the previous report is predominantly in the Airframe WBS element (97.5% of the total cost variance). This variance results mainly from increased design engineering changes, increased tooling requirements, growth in manufacturing standards, increased Q/A efforts, and increased material/subcontract cost.
The change in cumulative schedule variance since the previous report is also predominantly in the Airframe WBS element (93.4% of the total schedule variance). The variance is attributed to changes in the delivery schedule which have not been incorporated into the performance measurement system.
Although the Program Manager's Estimate at Completion (EAC) is $24.5M higher than the ceiling price of $65.8M, the Air Force exposure will not exceed ceiling.

Engine (Lot I)
Garrett Turbine Engine Company
Phoenix, AZ
F33657-82-C-2129 FPIF
Award: January 1, 1985
Definitized: January 1, 1985

Initial Contract Price		
Target	Ceiling	Quantity
15.0	16.6	25

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Quantity	Contractor	Program Manager
$ 15.2	$ 16.8	25	$ 15.2	$ 16.8

	Cost Variance	Schedule Variance
Previous Cumulative Variance	$ 0.0	$ 0.0
Cumulative Variance to Date(11/26/85)	$-0.1	$+0.1
Net Change	$-0.1	$+0.1

Explanation of Change: The cost variance is due to an accounting adjustment not being made for return of material to a vendor.
No program/contract impact.

15. Contract Information (Cont'd) (Then-Year Dollars in Millions)

Airframe (Lot II Long Lead)
Fairchild Republic Co.
Farmingdale, L.I. NY
F33657-82-C-2128, FPIF
Definitized: Dec 1, 1984
Award: Dec 1, 1984

Initial Contract Price		
NTE	Ceiling	Qty
10.8	N/A	N/A

Current Contract Price		
NTE	Ceiling	Qty
10.8	N/A	N/A

Estimated Price at Completion	
Contractor	Program Manager
N/A	$10.8

Engine (Lot II Long Lead)
Garrett Turbine Engine Co.
Phoenix AZ
F33657-82-C-2129, FPIF
Definitized: Jan 10, 1985
Award: Jan 10, 1985

Initial Contract Price		
NTE	Ceiling	Qty
11.5	N/A	N/A

Current Contract Price		
NTE	Ceiling	Qty
11.5	N/A	N/A

Estimated Price at Completion	
Contractor	Program Manager
N/A	11.5

Explanation of Change--None

c. MILCON--None

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

a. Program Status--

(1) Percent Program Completed: 66.7% (6 yrs/9 yrs)
(2) Percent Program Cost Appropriated: 94.9% (472.7/498.1)

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

Appropriation	Current Prior Yrs (FY80-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP N/A	Total
RDTE	335.8	10.8	14.6	--	361.2
Procurement	136.9	0.0	0.0	--	136.9
MILCON	--	--	--	--	--
Total	472.7	10.8	14.6	--	498.1

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

c. Annual Summary --

Fiscal Year	Qty	FY81Base-Year Dollars Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl 1/ Rate(%)
Appropriation - RDT&E								
1980				2.0			1.9	9.4
1981				--			--	N/A
1982				13.1			14.6	9.2
1983				44.5			52.0	4.9
1984				100.9			122.6	3.8
1985				67.6			84.9	3.6
1986				46.0			59.8	3.2
1987				8.0			10.8	4.1
1988				8.3			11.7	3.9
1989				2.0			2.9	3.4
Subtotal	2			292.4			361.2	
Appropriation - Procurement								
1984				7.5	6.1		10.4	8.0
1985	10	3.0	64.6	88.2	31.0	6.1	126.5	4.1
Subtotal	10	3.0	64.6	95.7	37.1	6.1	136.9	
Appropriation - MILCON--None								
Total	12	3.0	64.6	388.1	37.1	6.1	498.1	

1/ Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

16. Program Funding Summary (Cont'd) (Current Estimate in Millions of Dollars)

d. Obligations and Expenditures --

Then-Year Dollars (Current Estimate in Millions)

Fiscal Year	Total	Obligated	Expended
Appropriation - RDT&E			
1980	1.9	1.9	1.9
1981	--	--	--
1982	14.6	14.6	14.6
1983	52.0	52.0	50.3
1984	122.6	122.6	106.8
1985	84.9	84.4	34.3
1986	59.8	14.2	1.1
To Complete	25.4	N/A	N/A
Subtotal	361.2	289.7	209.0
Appropriation - Procurement			
1984	10.4	10.0	4.3
1985	126.5	98.1	39.0
To Complete	0.0	N/A	N/A
Subtotal	136.9	108.1	43.3
Appropriation - MILCON -- None			
Total	498.1	397.8	252.3

Reflects program office records as of 15 Jan 86 for RDT&E and procurement. Initial spares expenditures were as of 30 Sept 85.

17. Production Rate Data --

a. Annual Production Rates -- (Note: The annual production rates shown differ from the annual funded quantities because the funded delivery period is 9 months for the FY86.)

Production Rates (Quantity/Year)

Fiscal Year	Development Estimate	Production Estimate	Current Estimate	Maximum
1985	21	N/A	13	N/A
1986	79	N/A	--	N/A
1987	125	N/A	--	N/A
1988	130	N/A	--	N/A
1989	144	N/A	--	N/A
1990	144	N/A	--	N/A
1991	7	N/A	--	N/A

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance	Current Estimate	Variance	Maximum
Prog Acq Cost (BY$)	N/A	N/A	388.1	N/A	N/A
(TY$)	N/A	N/A	498.1	N/A	N/A
PAUC (BY$)	N/A	N/A	32.342	N/A	N/A
(TY$)	N/A	N/A	41.508	N/A	N/A

c. Schedule Changes --

	Production Estimate	Variance	Current Estimate	Variance	Maximum
Start Date (Mo/Yr)	N/A	N/A	11/86	N/A	N/A
Duration (in Months)	N/A	N/A	9	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	7/87	N/A	N/A

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	1/1
Procurement	0/0

18. Operating and Support Costs -- None

SAR-85-080

AF-24 OTH-B

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SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: OVER-THE-HORIZON BACKSCATTER RADAR (OTH-B)

AS OF DATE: December 31, 1985

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MAR 12 1986 18
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD--PA)
DEPARTMENT OF DEFENSE

1. Designation/Nomenclature (Popular Name): AN/FPS-118/OTH-B Radar

2. DOD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

OTH-B Program Office	PM: Col James A. Lee
Electronic Systems Division	Assigned June 19, 1985
Hanscom AFB, MA 01731-5000	Autovon 478-5980, MITRE Ext 5387

4. Program Elements:

RDT&E: PE 12417F (No Shared Funding)
PROCUREMENT: PE 12417F APPN 3080 ICN 833120
MILCON: PE 12417F (No Shared Funding)

5. Related Program: NONE

6. Mission and Description:
The OTH-B radar system satisfies requirements for tactical early warning of an attack on North America by bombers and air-to-surface missiles. It will detect and track airborne vehicles at ranges between approximately 500-1800 nautical miles from the radar. OTH-B increases warning time for survival of retaliatory forces and provides decision

~~CLASSIFIED BY: OTH-B Security Classification Guide 20 OCT 84~~
~~DECLASSIFY BY: OADR~~

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6. Mission and Description: (Cont'd)
time for the National Command Authority consistent with ballistic missile warning requirements. The OTH-B will provide surveillance coverage of the East, West, Northwest and Southern approaches to North America. The OTH-B does not replace any existing radar systems.

7. Program Highlights:

a. Significant Historical Developments -- Following the successful demonstration of the Experimental Radar System, a fixed price incentive firm contract was awarded to General Electric Company for the Initial Operating Sector (IOS) of the East Coast Radar System in June 1982. During 1984, procurement contracts for Sectors 2 and 3 of the East Coast Radar System were negotiated. In 1984, West Coast Radar System of three 60 degree sectors, a Central Radar System of four 60 degree sectors, and an Alaskan Radar System of two 60 degree sectors were programmed. The two Alaskan Radar sectors and two of the Central sectors have been added since the 31 December 1983 SAR.

b. Significant Developments Since Last Report -- The option for Sector 3 of the East Coast Radar System (ECRS) was awarded on 15 February 1985.

The request for proposal for the West Coast Radar System (WCRS) was released 27 November 1985. Planning and site surveys for the Alaskan Radar System (ARS) and the Central Radar System (CRS) are underway.

The OTH-B Radar Program is expected to satisfy mission requirements.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 18 Janunary 1982) threshold breaches.

9. (U) Schedule:

(U) Milestones --	Development Estimate/ Approved Program	Current Estimate
(U) System Definition Complete	Nov 73/Nov 73	Nov 73
(U) Prototype Contract Award	Mar 75/Mar 75	Mar 75
(U) Initiate Program Restructure	Dec 76/Dec 76	Dec 76
(U) Conclude Technical Feasibility Test	Feb 81/Feb 81	Feb 81
(U) Conclude IOT&E	Jun 81/Jun 81	Jun 81
(U) AFSARC Review	Nov 81/Nov 81	Nov 81
(U) Development Decision	Jan 82/Jan 82	Jan 82
(U) Development Contract Award	Jun 82/Jun 82	Jun 82
(U) SAF/AL Program Review	Dec 83/Dec 83	Dec 83
(U) Award First Production Contract (ECRS)	Mav 84/May 84	May 84
(U) SAF/AL Program Review	Dec 85/Dec 85	Dec 85 (Ch-1)
(U) Award WCRS Production Contract	Jul 86/Jul 86	Jul 86 (Ch-1)
(U) Initial Operating Capability (IOC)		

(b)(1) [redacted]

b. (U) Previous Change Explanations--
(U) Congressional action to defer initial procurement of WCRS from FY85 to FY86 caused a slip in WCRS and CRS IOC dates. The ARS was added to the OTH-B program in 1984.

(b)(1) [redacted]

c. (U) Current Change Explanations--

(U) (Ch-1) Milestones included in SAR for first time.

(b)(1) [redacted]

d. (U) References --

(U) Development Estimate: DCP #49, Revision 2, dated 18 January 1982, Subject: "CONUS OTH-B Radar Program".

(U) Approved Program: FY 1987 President's Budget.

(U) Technical/Operational Characteristics:

		Dev Estimate/ Appr Program	Demonstrated Performance 2/	Current Estimate
a. (U)	Technical --			
(U)	Detection/Tracking Range (nm)	500-1800/ 500-1800	500-1800	500-1800
(b)(1)	[redacted]			
b. (U)	Operational --			
(b)(1)	[redacted]			
(U)	Mean Time Between Failures(hrs)	40/40	--	41

3/ (U) Probability/confidence level.

c. (U) Previous change explanations --
(U) The current estimate is based on an updated prediction by the prime contractor, General Electric.

d. (U) Current Change Explanations -- None

e. (U) References--

(U) Development Estimate: DCP #49, Revision 2, dated 18 Jan 1982, Subject: "CONUS OTH-B Radar Program"

(U) Approved Program: FY 1987 President's Budget, Jan 1986

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost--	Development Estimate	Changes	Current Estimate
Development (RDT&E)	$327.3	$+87.7	$415.0
Procurement	710.9	+647.1	1358.0
East Coast	(199.0)	(-7.6)	(191.4)
West Coast	(263.0)	(+15.4)	(278.4)
Central	(184.8)	(+189.3)	(374.1)
Alaskan	(---)	(+232.6)	(232.6)
P3I	(7.2)	(+124.8)	(132.0)
Spares	(56.9)	(+92.6)	(149.5)
Construction (MILCON)	107.1	+56.4	163.5
Total FY82 Base Year $	1145.3	+791.2	1936.5
Escalation	274.1	+309.4	583.5
Development (RDT&E)	(51.1)	(+26.6)	(77.7)
Procurement	(191.3)	(+260.6)	(451.9)
Construction (MILCON)	(31.7)	(+22.2)	(53.9)
Total Then-Year $	$1419.4	$+1100.6	$2520.0
b. Quantities--			
Development (RDT&E)	1		1
Procurement	7	+4	11
Total	8	+4	12
c. Unit Cost * --			
Procurement:			
FY 82 Base-Year $	$101.557	$+21.898	$123.455
Then-Year $	128.886	+35.650	164.536
Program:			
FY 82 Base-Year $	143.163	+18.212	161.375
Then-Year $	$177.425	$+32.575	$210.000

* Portion of the cost of a sector is determined by the specific site conditions

d. Approved Design to Cost Goal -- None

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.	Program Acquisition--			
	(1) Cost	2520.0	2432.6	2520.0
	(2) Quantity	12	12	12
	(3) Unit Cost *	210.000	202.717	210.000
b.	Current Procurement--	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	189.9	263.7	200.3
	Less CY Adv Proc	-40.0	N/A	0
	Plus PY Adv Proc	0	N/A	40.0
	Net Total	149.9	263.7	240.3
	(2) Quantity	1	2	2
	(3) Unit Cost *	149.900	131.850	120.129

* Portion of the cost of a sector is determined by the specific site conditions

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	378.4	902.2	138.8	1419.4
Previous Changes:				
Economic	-4.5	-15.5	-2.3	-22.3
Quantity	-	+540.4	+147.4	+687.8
Schedule	-	+7.3	-	+7.3
Engineering	-	-	-	-
Estimating	+90.0	+71.5	-35.5	+126.0
Other	-	-	-	-
Support	-	+214.4	-	+214.4
Subtotal	+85.5	+818.1	+109.6	+1013.2
Current Changes:				
Economic	-3.3	-37.0	-5.3	-45.6
Quantity	-	-	-	-
Schedule	-	+27.8	-2.6	+25.2
Engineering	+54.5	+124.9	-	+179.4
Estimating	-22.4	+49.4	-23.1	+3.9
Other	-		-	-
Support	-	-75.5	-	-75.5
Subtotal	+28.8	+89.6	-31.0	+87.4
Total Changes	+114.3	+907.7	+78.6	+1100.6
Current Estimate	492.7	1809.9	217.4	2520.0

(FY 1982 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	327.3	710.9	107.1	1145.3
Previous Changes:				
Quantity	-	+380.5	+107.0	+487.5
Schedule	-	+6.1	-	+6.1
Engineering	-	-	-	-
Estimating	+65.3	+46.8	-34.1	+78.0
Other	-	-	-	-
Support	-	+150.4	-	+150.4
Subtotal	+65.3	+583.8	+72.9	+722.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+37.5	+82.3	-	+119.8
Estimating	-15.1	+38.8	-16.5	+7.2
Other	-	-	-	-
Support	-	-57.8	-	-57.8
Subtotal	+22.4	+63.3	-16.5	+69.2
Total Changes	+87.7	+647.1	+56.4	+791.2
Current Estimate	415.0	1358.0	163.5	1936.5

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations--

(1) RDT&E
Economic: revised escalation indices
Estimating: increased costs associated with 4 additional radar sectors, operating the Program Office for 2 additional years and escalation change on prior years

(2) Procurement
Economic: revised escalation indices
Quantity: increased program by 4 radar sectors
Schedule: rescheduled Sector 4 from FY85 to FY86
Support: increase for spares and Other Weapons System cost to support 4 additional sectors and two added years in the program schedule

(3) MILCON
Economic: revised escalation indices
Quantity: increase in facilities costs to support 4 additional sectors
Estimating: reduction in West Coast Radar System facilities cost

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-3.3
P3I efforts directed towards improved small target detection capabilities (Engineering)	+22.0	+31.7
One time Correction to the 31 Dec 1984 SAR to more appropriately categorize the P3I addition as an engineering vs estimating change	0.0	0.0
Correction Entry (Engineering)	(+15.5)	(+22.8)
Correction Entry (Estimating)	(-15.5)	(-22.8)
Adjustment for impact of escalation change on current and prior years (Estimating)	+0.4	+0.4

13. Cost Variance Analysis (Cont'd):

(2) Procurement	(Dollars in Millions) Base-Year	Then-Year
Revised economic escalation indices (Economic)	N/A	-37.Ø
Increased costs associated with rescheduling the procurement of the last 9 sectors over 7 years instead of the prior 5 year schedule (Schedule)	N/A	+24.9
Increased costs associated with beginning P3I implementation in FY9Ø instead of FY88 (Schedule)	N/A	+2.9
One time Correction to the 31 Dec 1984 SAR to more appropriately categorize the P3I addition as an engineering vs estimating change	Ø.Ø	Ø.Ø
Correction Entry (Engineering)	(+46.8)	(+71.5)
Correction Entry (Estimating)	(-46.8)	(-71.5)
P3I efforts directed toward improved small target detection capabilities (Engineering)	+35.5	+53.4
Increase due to revised cost area factors for the Alaskan radar antenna sites (Estimating)	+24.1	+33.9
Adjustment for impact of escalation change on current and prior years (Estimating)	+3.5	+4.3
Increased cost due to re-phasing of spares requirement to match the current schedule (Support)	N/A	+7.Ø
Adjustment for impact of escalation change on current and prior years (Support)	+.2	+.2
Adjust to refine the mix of previous support and estimating changes primarily related to impact of escalation on current and prior years	Ø.Ø	Ø.Ø
Amount to be taken from support to balance to proper mix (Support)	(-58.0)	(-82.7)
Amount to be added to estimating to balance to proper mix (Estimating)	(+58.0)	(+82.7)

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanations (Cont'd) --

	(Dollars in Millions) Base-Year	Then-Year
(3) MILCON		
Revised economic escalation indices (Economic)	N/A	-5.3
Decreased costs associated with rephasing the procurement of the ARS from FY90 to FY88 (Schedule)	N/A	-2.6
Decreased cost due to reconfiguration of the Central Radar System from two to one operation centers. (Estimating)	-16.5	-23.1

d. Reference-- Development Estimate: FY 1985 President's Budget, January 1984

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

Initial SAR Estimate/Development Estimate to Current Estimate

PAUC (Initial SAR/ Development Estimate)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
177.425	-5.658	-1.825	+2.708	+14.950	+10.825	+11.575	0.000	+32.575	210.000

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

a. RDT&E --

Sector 1 (IOS):	Initial Contract Price Target	Ceiling	Qty
General Electric Co., Syracuse, NY F19628-82-C-0114, FPIF, Award: June 14, 1982 Definitized: June 6, 1983	$232.1	$239.0	1.0

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$229.8	$246.2	1.0	$246.2	$246.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances (As of 27 Dec 84)	$-8.4	$-4.7
Cumulative Variances to Date (As of 1 Dec 85)	$-11.6	$-8.1
Net Change	$-3.2	$-3.4

15. Contractor Information (Cont'd): (Then-Year Dollars in Millions)

Explanation of Change: The unfavorable cost variance is a result of unplanned computer software effort and related system engineering growth due to extended effort by software design and integration personnel. The unfavorable schedule variance is a result of delays in completing computer software integration and testing. No impact on contract cost--the program managers' estimate at completion remains at ceiling price and is within approved funding.

b. Procurement -- Sector 2:

	Initial Contract Price		
	Target	Ceiling	Qty
General Electric Co., Syracuse, NY F19628-82-C-0114, FPIF, Award: June 29, 1984 Definitized: December 28, 1984	$91.0	$96.6	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$99.4	$105.6	1	$98.4	$99.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances (As of 27 Dec 84)	$+4.1	$-1.0
Cumulative Variances to Date (As of 1 Dec 85)	$+3.7	$-2.8
Net Change	-.4	$-1.8

Explanation of Change: The cost variance change from last year is insignificant. The overall favorable variance is due to efficiences in receiver equipment fabrication and integration and test. The unfavorable schedule variance was caused by delays in receipt of transmitter and receiver equipment. There is no impact to contract cost or to program at completion.

c. Procurement Sector 3:

	Initial Contract Price		
	Target	Ceiling	Qty
General Electric Co., Syracuse, NY F19628-82-C-0114, FPIF, Award: February 14, 1985 Definitized: October 29, 1985	$83.0	$88.1	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$84.1	$89.2	1	$81.8	$84.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances (As of 27 Dec 84)	--	--
Cumulative Variances to Date (As of 1 Dec 85)	$+2.6	$-1.4
Net Change	$+2.6	$-1.4

15. Contractor Information (Cont'd): (Then-Year Dollars in Millions)

Explanation of Change: The favorable cost variance is due to efficiencies in receiver equipment fabrication and integration and test. The unfavorable schedule variance was caused by delays in receipt of transmitter and receiver equipment. There is no impact to contract cost or to program at completion.

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

a. Program Status --

(1) Percent Program Completed: 38.46% (5yrs/13yrs)

(2) Percent Program Cost Appropriated: 30.04% 757.0/2520.0

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY82-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92-94)	Total
RDT&E	317.4	33.9	96.3	45.1	492.7
Procurement	419.3	200.3	854.9	335.4	1809.9
MILCON	20.3	26.0	171.1	-	217.4
Total	757.0	260.2	1122.3	380.5	2520.0

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

c. Annual Summary --

Fiscal Year	Qty	FY 82 Base-Year Dollars: Flyaway Nonrec	Flyaway Rec	Total	Then-Year Dollars: Advance Proc Debit	Advance Proc Credit	Total	Escl Rate (%) 1/
Appropriation: RDT&E								
1982				16.3			16.7	9.2
1983				72.1			77.2	4.9
1984				87.1			96.9	3.8
1985				53.0			60.9	3.6
1986				55.1			65.7	3.2
1987				27.3			33.9	4.1
1988				36.2			46.5	3.9
1989				11.1			14.7	3.4
1990				15.4			20.8	2.9
1991				10.4			14.3	2.3
1992				10.4			14.7	2.3
1993				10.3			15.0	2.3
1994				10.3			15.4	2.3
Subtotal	1			415.0			492.7	
Appropriation: Procurement 2/								
1984	1		80.8	85.7			98.7	3.8
1985	1		102.5	109.5			130.7	3.6
1986	1		139.7	153.4	40.0		189.9	3.2
1987	2		146.8	156.2		40.0	200.3	4.1
1988	2		195.1	212.5			280.9	3.9
1989	1		118.1	127.5			173.1	3.4
1990	1		118.8	136.7			190.0	2.9
1991	1		125.9	148.3			210.9	2.3
1992	1		141.3	157.1			228.4	2.3
1993			20.1	35.9			53.4	2.3
1994			19.4	35.2			53.6	2.3
Subtotal	11		1208.5	1358.0	40.0	40.0	1809.9	

1/ Since the spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

2/ Total procurement column includes replenishment spares. Therefore, amounts do not directly match the procurement totals reflected in the 1987 President's Budget.

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

c. Annual Summary --

Fiscal Year	Qty	FY 82 Base-Year Dollars			Then-Year Dollars			
		Flyaway		Total	Advance Proc		Total	Escl Rate (%) 1/
		Nonrec	Rec		Debit	Credit		
Appropriation: MILCON								
1983				1.1			1.2	4.9
1984				8.7			10.1	3.8
1985								3.6
1986				7.2			9.0	3.2
1987				20.2			26.0	4.1
1988				77.2			102.6	3.9
1989				17.3			23.6	3.4
1990				17.4			24.3	2.9
1991				14.4			20.6	2.3
1992								2.3
1993								2.3
1994								2.3
Subtotal				163.5			217.4	
Total	12		1208.5	1936.5	40.0	40.0	2520.0	

1/ Since the spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. Obligations and Expenditures * --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
		Appropriation: RDT&E	
1982	16.7	16.7	16.7
1983	77.2	77.2	77.2
1984	96.9	95.8	69.1
1985	60.9	58.6	23.0
1986	65.7	12.5	0.6
To Complete	175.3	0.0	0.0
Total	492.7	260.8	186.6
		Appropriation: Procurement	
1984	98.7	94.6	54.7
1985	130.7	96.5	48.5
1986	189.9	0.0	0.0
To Complete	1390.6	0.0	0.0
Total	1809.9	191.1	103.2
		Appropriation: MILCON	
1983	1.2	1.2	1.2
1984	10.1	6.2	4.8
1985	-	-	-
1986	9.0	0.0	0.0
To Complete	197.1	0.0	0.0
Total	217.4	7.4	6.0

*Reflects Program's Office Records as of 5 Jan 1986

17. Production Rate Data: N/A — OTH-B is not a typical unit production program. Sectors are site unique and vary in costs, therefore production rate data is not applicable.

18. Operating and Support Costs: N/A

(3)

A-18 RPV

~~CONFIDENTIAL~~

SAR-85-094

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823) (U)
PROGRAM: Remotely Piloted Vehicle (RPV)

AS OF DATE: December 31, 1985

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1. (U) Designation and Nomenclature (Popular Name): YMQM-105 Tactical Airborne Remotely Piloted Vehicle/Drone Systems (AQUILA).

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

3. (U) Responsible Office and Telephone Number:

Office of the Project Manager Tactical
Airborne Remotely Piloted Vehicle/
Drone Systems (RPV)
U.S. Army Missile Command
Redstone Arsenal, Alabama 35898-5791

COL David W. Keating
Assigned: 26 Aug 85
AV 746-3945; COMM (205)876-3945

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

RDTE: PE 63725A Project DK61
PE 64730A Project D040
PE 64730A Project D041
PE 64705A Project D207

PROCUREMENT: APPN 2035 SSNA02900

MILCON: PE TBD

5. (U) Related Programs: None.

Concur in Classification as marked

18 MAR 1986

SECURITY REVIEW

CLEARED FOR OPEN PUBLICATION

AS AMENDED mp 5/12

MAR 21 1986

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

CLASSIFIED BY: RPV SCG
DECLASSIFY ON: DIR 30 Jul 84
OADR

5

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86-0728

6. (U) Mission and Description:

This program will develop a Remotely Piloted Vehicle (RPV) System with both daylight and Forward Looking Infrared (FLIR) sensor packages to perform target acquisition, designation, aerial reconnaissance, artillery adjustment, and battlefield post-strike assessment. Laser designation will be provided for all Army and Air Force laser-guided munitions. The RPV System designation will extend the attack capability of commanders beyond the forward line of troops to the full range of artillery and close air support weapons. It focuses on the area beyond 5km where forward observers, ground systems, and helicopters are ineffective and the risk to manned systems is high because of the enemy's sophisticated air defense systems.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- Since 31 Dec 83, the contractor failed to maintain an acceptable level of cost and performance and fell behind in schedule. Excessive flight failures during Engineering Development Testing - Contractor (EDT-C) led to a Blue Ribbon Panel review of Apr 84. After a series of ASARC level reviews, a restructured program was approved in Dec 84. The full scale development (FSD) schedule was extended to 79 months. EDT-C testing results improved and the contractor entered Prototype Qualification Testing (PQT). A successful technical feasibility demonstration of the RPV engaging targets with COPPERHEAD was conducted in Dec 84. In May 84, Ford Aerospace was awarded a full-scale development (FSD) contract for a FLIR mission payload. An Early Operational Capability (EOC) section was transferred to Army troops at Fort Hood, TX in Sep 84.

b. (U) Significant Developments Since Last Report -- Due to critical performance problems which surfaced during the contractor portion of PQT, a Red Team was convened to determine system readiness. The Red Team determined that required performance was not demonstrated, that the program had inadquate quantities of hardware for completion of necessary testing and that logistics and training needed substantial effort. Army leadership directed a transition of management for the AQUILA program to the U.S. Army Missile Command (MICOM). Transfer of function occurred on 26 Aug 85. The MICOM Project Management Office (PMO) and Lockheed worked to address the recommendations of the Red Team. The FSD program was restructured and the FSD schedule was extended to 92 months. In order to prove that AQUILA was ready for DT II, Lockheed proposed a flight demonstration program at no cost to the Government. The program was restructured to address Red Team technical performance issues and to incorporate the Lockheed Austin Division Demonstration (LAD Demo). The restructured program approved by the Under Secretary of the Army and the Vice Chief of Staff, Army extended FSD from 79 to 92 months.

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

c. (U) Changes Since "As of Date" -- The formal LAD was successfully completed on 30 Jan 86. The demonstration was followed by a special joint RPV/COPPERHEAD live fire exercise (Eagle Strike) against stationary and moving tank targets. In nine trials, direct hits were achieved on four moving and four stationary targets. One munition failure was confirmed. Data analysis by a joint Government/contractor team was performed and results briefed to the Under Secretary of the Army and Vice Chief of Staff, Army 11 Feb 86. The Army concluded that Red Team issues had been sufficiently resolved to continue full scale development. On 3 Jan 86, a memo was issued by the Under Secretary of the Army and Vice Chief of Staff establishing an AQUILA program including war reserve and training attrition. Subsequent development of the FY 87 President's Budget created major programmatic perturbations. Funding ceilings imposed by the President's Budget submittal limits procurement to four batteries. This program does not meet the Army's requirement for RPV. A restructured program is being developed based upon HQDA guidance. The restructured program will support FY 86 Congressional language concerning cost reductions and alternative solutions and the development of an Army plan for a family of unmanned aerial vehicles to be presented in the FY 88-92 POM.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches:

(U) There are currently no DCP (draft dated May 81) threshold breaches.

9. (U) Schedule:

a. (U) Milestones--

RPV System with Day Mission Payload Subsystem (MPS) Only

	Development Estimate/ Approved Program	Current Estimate
Milestone II (IPR)	Sep 78/Sep 78	Sep 78
FSD Contract Award	Aug 79/Aug 79	Aug 79
First Flight	Nov 83/Nov 83	Nov 83
DT/OT-II Complete	Mar 85/Mar 85	Dec 86 (Ch-1)
ASARC III	Jun 85/Jun 85	Mar 87 (Ch-1)
Type Class Std	Jun 85/Jun 85	Mar 87 (Ch-1)
DSARC III	Jun 85/Jun 85	May 87 (Ch-1)
Prod Cont Awd	Jul 85/Jul 85	Jun 87 (Ch-1)
Initial Operational Capability	Sep 87/Sep 87	Dec 90 (Ch-2)

9. (U) Schedule (Cont'd)

RPV FLIR System with Day and FLIR MPS Capability

	Development Estimate/ Approved Program	Current Estimate
Milestone II (IPR)	Feb 84/Feb 84	Feb 84
FSD Contract Awd (FMPS Only)	Apr 84/Apr 84	Apr 84
ASARC-IIIA	Dec 86/Dec 86	Sep 88 (Ch-3)
DT/OT-II Completed	Apr 87/Apr 87	Jan 89 (Ch-3)
ASARC-III B	Jul 87/Jul 87	Mar 89 (Ch-3)
Type Class Std	Jul 87/Jul 87	Mar 89 (Ch-3)
Prod Cont Awd	Aug 87/Aug 87	Apr 89 (Ch-3)
Initial Operational Capability	Mar 89/Mar 89	Nov 91 (Ch-3)

b. (U) Previous Change Explanations --

RPV System with MPS: All changes represented a revised FSD schedule from 70 to 79-months as approved by the VCSA in Dec 84.

RPV FLIR System: All changes were implemented due to a number of replanning and reprogramming exercises. These actions were the result of either a direct reduction in FSD funds by higher headquarters, or PMO management decisions related to the overall program, between Jan 84 and Dec 84.

c. (U) Current Change Explanations --

(Ch-1) Schedule changes resulted from restructure of the FSD program to incorporate Red Team recommendations and LAD Demonstration.

(Ch-2) IOC was rescheduled from Dec 88 to Dec 90 due to FSD program restructure and funding limitations in the FY 87 President's Budget.

(Ch-3) FLIR schedule changes are due to AQUILA Program restructure as a result of Red Team report and incorporation of LAD Demonstration.

d. (U) Reference--

Development Estimate: HQ DA (DAMO-FDI) Action Memorandum, 16 Aug 83, subject: Remotely Piloted Vehicle (RPV), Organizational and Operational (O&O) Concept.

Approved Program: Same as Development Estimate.

RPV, December 31, 1985

10. (U) Technical/Operational Characteristics (U):

	Dev Est/ Appr Pgm	Demonstrated Performance	Current Estimate
(b)(1)			

	Dev Est/ Appr Pgm	Demonstrated Performance	Current Estimate
b. (U) Operational (U)			
(b)(1)			
(2) (U) Reliability System (3 hr flight):	0.91/0.91	N/A	0.91
System (3 hr mission):	0.82/0.82	N/A	0.82
(3) (U) Maintainability Org. (90% of failure):	0.50hr/0.5hr	N/A	0.50hr
Dir Support (10% of failure):	2.00hr/2.0hr	N/A	2.00hr
(4) (U) Availability:	0.89/0.89	N/A	0.89
(5) (U) Manning (Direct)	975MY/975MY	N/A	TBD(Ch-2)

c. (U) Previous Change Explanation -- None.

(b)(1)

(U) (Ch-2) - Manning requirements have not been developed for the 4-battery program. Approved program contained 13-batteries.

e. (U) References--

Development Estimate: ROC, dated Sep 78.

Approved Program: Same.

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. (U) Cost -- Development (RDT&E)	Development Estimate	Changes	Current Estimate
	1012.0	$-119.3	$892.7
RPV Day Program	470.9	+149.3	620.2
MICNS Datalink	86.0	- 16.1	69.9
RPV-Payload-FLIR	90.9	+ 18.0	108.9
RPV-Drones Adv Dev	142.7	- 49.0	93.7
Preplanned Product Improvement	221.5	-221.5	-
Procurement	1119.9	-588.1	531.8
Air Vehicle	158.4	-110.3	48.1
Mission Payload (Day TV)	71.0	- 33.4	37.6

	Development Estimate	Changes	Current Estimate
Ground Control Station	90.7	- 42.9	47.8
Launch Subsystem	22.4	- 5.3	17.1
Recovery Subsystem	21.7	- 4.2	17.5
Air Data Terminal	111.4	- 73.9	37.5
Ground Data Terminal	62.1	- 14.9	47.2
Mission Payload (FLIR)	136.0	- 84.9	51.1
Maintenance Shelter	11.8	- 4.7	7.1
Training Interface Unit	10.2	- 4.7	5.5
Inert Air Vehicle	.9	- .6	.3
Common GFE	42.0	- 27.7	14.3
Total Flyaway	738.6	-407.5	331.1
Other Wpn Sys Cost	255.4	-101.8	153.6
Initial Spares	125.9	- 78.8	47.1
Construction (MILCON)	16.2	+ .6	16.8
Total FY 84 Base-Year $	2148.1	-706.8	1441.3
Escalation			
Development (RDT&E)	7.4	- 44.3	-36.9
Procurement	252.0	-129.9	122.1
Construction (MILCON)	2.5	+ .8	3.3
Total Then-Year $	$2410.0	$-880.2	$1529.8

b. (U) Quantities --1/			
Development (RDT&E)	1.4	-	1.4
Procurement	16.0	-11.2	4.8
Total	17.4	-11.2	6.2

1/ Equivalent Battery Sets (Number of Ground Control Stations Divided by five).

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars) (Cont'd)

	Development Estimate	Changes	Current Estimate
c. (U) Unit Cost --			
Procurement:			
FY 84 Base-Year $	$ 70.0	$ +40.8	$ 110.8
Then-Year $	$ 85.7	$ +50.5	$ 136.2
Program:			
FY 84 Base-Year $	$123.4	$+109.1	$ 232.5
Then-Year $	$138.5	$+108.2	$ 246.7

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

(Average Unit Flyaway Cost)

	Dev Estimate/ Appr Program 1/	Current Estimate 2/	Latest Approved Threshold
@ Qty: 16.0			
@ Peak Rate: 15 AV/2 GS			
FY 84 Base-Year $	46.2	46.2	N/A
Then-Year $	56.5	56.5	

1/ This cost represents a weighted unit flyaway including war reserves, training attrition, and training base. A typical RPV battery costed for only equipment that is indigenous to that battery; $26.4M (84 $ DE) - 5 Ground Control Stations, 5 Ground Data Terminals, 13 Air Vehicles, 13 Air Vehicle Containers, 9 Forward-Looking Infrared (FLIR) Mission Payload Subsystems, 5 Daylight (Television) Mission Payload Subsystems; 13 Air Data Terminals, 2 Launcher Subsystems, 2 Recovery Subsystems, 1 Maintenance Shelter and one set of Common Support Equipment.

2/ Design to Cost Goal has not been redefined to reflect reduced quantities.

e. (U) Foreign Military Sales -- None.

f. (U) Nuclear Costs -- None.

RPV, December 31, 1985

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. (U)	Program Acquisition --			
(1) (U)	Cost	1529.8	2426.7	1529.8
(2) (U)	Quantity	6.2	16.8	6.2
(3) (U)	Unit Cost	246.7	144.4	246.7

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
b. (U)	Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) (U)	Cost	30.7	147.0	124.5
	Less CY Adv Proc	0	0	0
	Plus PY Adv Proc	0	0	0
	Net Total	30.7	147.0	124.5
(2) (U)	Quantity	0	.6	.4
(3) (U)	Unit Cost	-	245.0	311.3

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1019.4	1371.9	18.7	2410.0
Previous Changes:				
Economic	- 7.3	-17.2	- .1	- 24.6
Quantity		-14.2		- 14.2
Schedule	- 11.1	+32.1	+1.4	+ 22.4
Engineering	+ 49.7			+ 49.7
Estimating		-17.5	+ .9	- 16.6
Other				
Support				
Subtotal	+ 31.3	-16.8	+2.2	+ 16.7
Current Changes:				
Economic	- 9.1	- 37.8	- .8	- 47.7
Quantity		-632.3		-632.3
Schedule		- 13.6		- 13.6
Engineering	-160.3			-160.3
Estimating	- 25.5	- 17.5		- 43.0
Other				
Support				
Subtotal	-194.9	-701.2	- .8	-896.9
Total Changes	-163.6	-718.0	+1.4	-880.2
Current Estimate	855.8	653.9	20.1	1529.8

(FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1012.0	1119.9	16.2	2148.1
Previous Changes:				
Quantity		-36.0		- 36.0
Schedule	- 9.9	+ 2.9		- 7.0
Engineering	+111.6			+111.6
Estimating		-11.5	+ .6	- 10.9
Other				
Support				
Subtotal	+101.7	-44.6	+ .6	+ 57.7
Current Changes:				
Quantity		-536.5		-536.5
Schedule		- 10.4		- 10.4
Engineering	-128.3			-128.3
Estimating	- 92.7	+ 3.4		- 89.3
Other				
Support				
Subtotal	-221.0	-543.5	-0-	-764.5
Total Changes	-119.3	-588.1	+ .6	-706.8
Current Estimate	892.7	531.8	16.8	1441.3

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

b. (U) Previous Change Explanations --

RDT&E
Economic: Revised January 1985 economic escalation rates.
Schedule: FLIR slipped due to DA funding reductions.
Engineering: Producibility Enhancement Initiative dropped; future enhancements added

Procurement
Economic: Revised January 1985 economic escalation rates.
Quantity: Reduced quantity 548-543 for AV/ADT; 80-77 for GCS
Schedule: Program slipped to FY 86 start.
Estimating: Warranty added

MILCON
Economic: Revised January 1985 economic escalation rates.
Schedule: Shifting of MCA projects to out years.
Estimating: Added company admin and supply bldg at Fort Hood.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) (U) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	N/A	- 9.1
Quantity reduction eliminated planned future enhancements (Extended Range, Multiple AQUILA Control, Alt Msn Payloads). (Engineering)	-128.3	-160.3
Revised MICNS estimate and restructure of FSD program with LAD assuming some financial liability. (Estimating)	- 92.7	- 25.5
(2) (U) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	- 37.8
Program quantities reduced from 13 to 4.8 Batteries; 543 Air Vehicles (AV) to 84 AV; elimination of War Reserve. (Quantity)	-536.5	-632.3

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

	(Dollars in Millions) Base-Year	Then-Year
Revised Estimate for added Environmental Stress Screening, cost of DMWRS, revised FAT, added simulator effort, Pre-Production Proofing, EOC Refurbishment, funds for UAV, MICOM in-house effort, others; reductions for deleted warranty and revised TRACE-P. (Estimating)	+ 3.4	- 17.5
Production start slipped from FY 86 to FY 87; span of production reduced from 5 to 3 years. (Schedule)	- 10.4	- 13.6

(3) (U) MILCON

Revised Jan 86 economic escalation rates. (Economic)	N/A	- .8

d. (U) References --

Development Estimate: FY 85 President's Budget, Dec 83.

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

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

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
138.5	-11.7	+145.9	+1.4	-17.8	-9.6			+108.2	246.7

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

a. (U) RDT&E --

Lockheed Missile and Space Company
Sunnyvale, CA
DAAK50-79-C-0025, CPIF
AWARD: 31 August 1979
Definitized: 31 August 1979

Initial Contract Price		
Target	Ceiling	Qty
$290.9	$290.9	1.4

Current Contract Price		
Target	Ceiling	Qty
$213.5	$360.6	1.4

Estimated Price At Completion	
Contractor	Program Manager
$360.6	(b)(4)

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-15.8	0
Cumulative Variances to Date	$- 4.1	-4.4
Net Change	$+11.7	-4.4

Explanation of Change: As a result of the restructuring of the RPV Program, all contract costs from 1 Sep 85 to 31 Jan 86 are to be borne by Lockheed. The contract cost performance reporting is suspended during this period. The contract cost data for this report is as of 31 Aug 85. The change in variances to date is the result of program restructuring as a result of Red Team's recommendations and the LAD Demo Test.

Ford Aerospace and Comm Corp.
Aeronutronic Division
Newport Beach, CA 92660
DAAK20-84-C-0404, FPI
Award: May 1984
Definitized: May 1984

Initial Contract Price		
Target	Ceiling	Qty
$40.8	$48.8	9

Current Contract Price		
Target	Ceiling	Qty
$40.8	$48.8	9

Estimated Price At Completion	
Contractor	Program Manager
$59.9	(b)(4)

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$- 1.1	-2.1
Cumulative Variances to Date	$-13.0	-3.9
Net Change	$-11.9	-1.8

Explanation of Change:
Cost Variance - The increase was caused primarily in prime mission equipment. The biggest contributors to the variance are the FLIR sensor, I&IPE, Gimbal mechanical and the FMPS electronics.

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

Schedule Variance - The unfavorable variance is primarily caused by Honeywell not completed rebaselining. Principal contributors are FLIR sensor, FMPS, electronics, Gimbal mechanical and I&IPE.

b. (U) Procurement -- Not Applicable.

c. (U) MILCON -- Not Applicable.

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

a. (U) Program Status --

(1) (U) Percent Program Completed: 72.2% (13 yrs/18 yrs).

(2) (U) Percent Program Cost Appropriated: 49.2% ($752.5/$1529.8)

b. (U) Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY74-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	719.2	100.1	32.6	3.9	855.8
Procurement	30.7	124.5	472.4	26.3	653.9
MILCON	2.5	1.2	16.4	0	20.1
Total	752.4	225.8	521.4	30.2	1529.8

c. (U) Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1974				1.9			.9	
1975				10.3			5.5	

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

c. (U) Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E (Cont'd)								
1976				21.1			12.0	
197T				3.7			2.2	
1977				9.2			5.5	
1978				12.6			8.1	
1979				29.9			20.9	
1980				70.4			54.3	
1981				72.0			61.4	
1982				104.4			95.8	
1983				111.4			107.3	
1984				145.4			148.9	3.8
1985				111.1			117.6	3.6
1986				71.7			78.8	3.2
1987				87.7			100.1	4.1
1988				16.4			19.4	3.9
1989				7.5			9.2	3.4
1990				2.5			3.1	2.9
1991				.7			.9	2.3
1992				3.0			3.9	2.3
SUBTOTAL	1.4			892.7			855.8	

RPV, December 31, 1985

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

c. (U) Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1986				19.1			21.9 1/	3.2
1987	.4	29.3	49.0	99.2			117.7	4.1
1988	2.4	1.9	121.9	158.2			193.3	3.9
1989	2.0	7.1	107.6	133.2			166.9	3.4
1990				27.4			35.1	2.9
1991				13.6			17.8	2.3
1992				19.6			19.9	2.3
SUBTOTAL	4.8	38.3	278.5	470.3			572.6	
Appropriation: Procurement (Spares and GFE)								
1986				7.7			8.8	3.2
1987			1.9	21.7			23.5	4.1
1988			7.2	26.2			31.3	3.9
1989			5.2	13.6			17.7	3.4
SUBTOTAL			14.3	61.5			81.3	

1/ Contains $11.6M for UAV Program.

RPV, December 31, 1985

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

c. (U) Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: MILCON								
1982				2.7			2.5	
1983								
1984								
1985								
1986								
1987				1.0			1.2	4.1
1988				7.1			8.6	3.9
1989								3.4
1990				1.6			2.0	2.9
1991				4.4			5.8	2.3
SUBTOTAL				16.8			20.1	
TOTAL	6.2	38.3	292.8	1441.3			1529.8	

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

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
83	107.3	105.4	102.9
84	148.9	148.0	129.9
85	117.6	110.7	58.9
86	78.8	10.8	.4
To Complete	136.6		
Total	589.2	374.9	292.1

17. (U) Production Rate Data:

a. (U) Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
FY 86	.6	N/A	-	N/A
FY 87	4.0	N/A	.4	N/A
FY 88	4.8	N/A	2.4	N/A
FY 89	6.0	N/A	2.0	N/A

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

b. (U) Cost Variance -- Dollars in Millions (NOTE: Subject to limitations on production rates above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	1441.3	N/A	N/A
(TY $)	N/A	N/A	1529.8	N/A	N/A
PAUC (BY $)	N/A	N/A	232.5	N/A	N/A
(TY $)	N/A	N/A	246.7	N/A	N/A

c. (U) Schedule Variance -- (NOTE: Subject to the limitations on production rates above.)

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	7/87	N/A	N/A
Duration (in Months)	N/A	N/A	50	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	9/91	N/A	N/A

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	1.4/1.4
Procurement	0/0

18. (U) Operating and Support Costs: N/A

N-29 SH-60F

(6)

SAR-85-011

~~CONFIDENTIAL~~

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

PROGRAM: Aircraft Carrier Inner Zone Anti-Submarine Warfare Helo (SH-60F)

AS OF DATE: December 31, 1985 *

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1. Designation and Nomenclature (Popular Name): Aircraft Carrier Inner Zone Anti-Submarine Warfare Helo (SH-60F)

OSD RELEASE FOR OPEN PUBLICATION

AS AMENDED APR 01 1986

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

2

2. DoD Component: U.S. Navy

3. Responsible Office and Telephone Number:

Aircraft Carrier Inner Zone Anti-Submarine Warfare Helo
Naval Air Systems Command
Washington, D.C. 20361

PM: Capt R.G. Harrison
Assigned: May 23, 1984
AV 286-1534; COMM (202)746-1534

4. Program Elements/Procurement Line Items:

RDT&E,N: PE 64228N PE 64229N
PROCUREMENT: APPN 1506 ICN 0183 PE 24243N, PE 24262N
MILCON: PE 24696N (Shared funding)

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OASD(PA) DPOISR 86-T-0866

5. Related Programs: Army UH-60A BLACK HAWK; Army EH-60A Quickfix; Air Force HH-60A NIGHT HAWK; Navy SH-60B SEAHAWK; SH-60F Trainer.

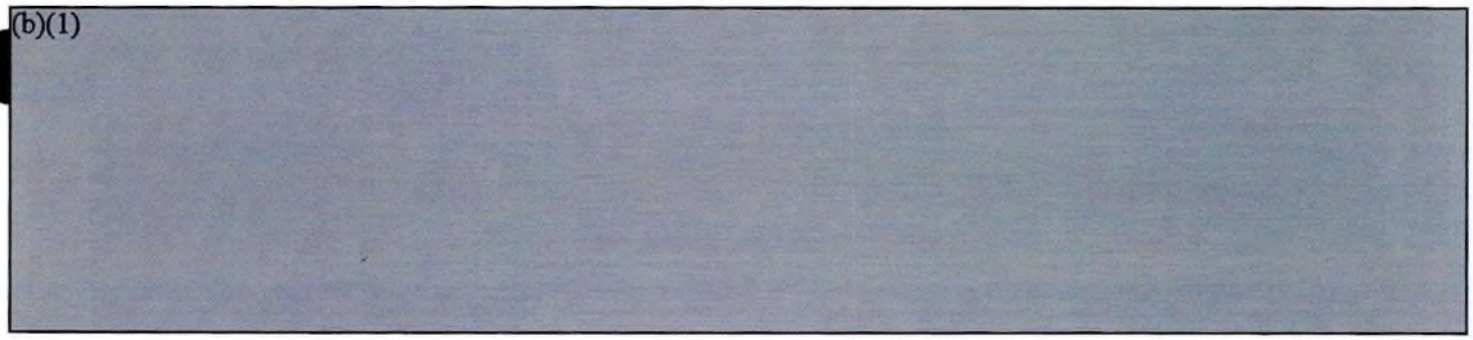
6. Mission and Description: The Carrier Inner Zone Anti-Submarine Warfare (ASW) Helo provides Carrier Battle Groups (CVBG) with quick reaction inner zone ASW protection (up to 50 NM) using manned helicopters with an improved tethered sonar. This vehicle will replace the aging SH-3H. Secondary missions will include plane guard, Search and Rescue (SAR), logistics support, MEDEVAC and chaff launching.

7.(U) Program Highlights:

(U) Program Highlights (First Report):

(U) Program will provide CVBG with quick reaction, inner zone, ASW protection using manned SH-60F helicopters equipped with the improved AQS-13F dipping sonar. The SH-60F will replace the existing SH-3H ASW helicopters which are becoming insufficient in number and capability to counter the Soviet submarine threat to the CVBG. Other missions which the SH-60F will be required to perform are Anti-Air Warfare (chaff); Command, Control and Communications; Logistics, Fleet Support Operations (including plane guard, MEDEVAC and Search and Rescue); non-combat operations and surveillance.

(b)(1)



8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (unsigned) or SDDM (dated February 22, 1985) threshold breaches.

(U) Schedule:

a. (U) Milestones --	Development Estimate/ Approved Program	Current Estimate
(U) Justification for Major System New Start (JMSNS) Submitted	Aug 82/Aug 82	Aug 82
(U) SECDEF Approved FY 1984 New Start	Aug 82/Aug 82	Aug 82
(U) Milestone I (DSARC)	Jun 83/Jun 83	Jun 83
(U) SECDEF Decision Memorandum (SDDM) MS I Approval	May 84/May 84	May 84
(U) Request for Proposal Release	Jun 84/Jun 84	Jun 84
(U) Proposals Received	Aug 84/Aug 84	Aug 84
(U) Defense System Acquisition Review Council	Jan 85/Jan 85	Jan 85
(U) SDDM Milestone II Approval	Feb 85/Feb 85	Feb 85
(U) Contract Award for the SH-60F	Feb 85/Feb 85	Feb 85
(U) Award Production Lots I & II Long Lead Contracts	Jan 86/Jan 86	Jan 86
(U) Award Production Lots I & II and Lot III Long Lead Contracts	Jan 87/Jan 87	Jan 87
(U) Operational Evaluation	Nov 87-Dec 87/ Nov 87-Dec 87	Nov 87-Dec 87
(U) Milestone III	Mar 88/Mar 88	Mar 88

(b)(1)

b. Previous Change Explanations -- Not Applicable.

c. Current Change Explanations -- No Change.

First Report.

d. References --

Development Estimate: SDDM, dated May 2, 1984, subject, "Carrier (CV) Inner Zone Helicopter Program." SDDM, dated February 22, 1985, subject "Inner Zone Helo Program."

Approved Program: FY 87 President's Budget.

10. (U) Technical/Operational Characteristics:

a. (U) Technical --	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(U) Weight (Lbs)(Maximum Gross)	21,884/21,884		21,884
(U) Dimensions			
(U) Length (Ft)			
Overall	64.8/64.8		64.8
Folded	41.1/41.1		41.1
(U) Width (Ft)			
Normal (W/O Main Rotor)	14.3/14.3		14.3
Folded	10.8/10.8		10.8
(U) Height (Ft)			
Normal	17.2/17.2		17.2
Folded	13.2/13.2		13.2

(b)(1) [redacted]

b. (U) Operational --

(b)(1) [redacted]

(U) Prob of Completing 4 Hr Mission W/O Critical Failure	.8/.8		.8
(U) MFHBCF	18/18		18
(U) MTTR Airframe (Hrs)	2.0/2.0		2.0
(U) MTTR Engine (Hrs)	4.8/4.8		4.8
(U) MTTR Avionics (Hrs)	1.0/1.0		1.0
(U) MTTR Sonar (Hrs)	3.0/3.0		3.0
(U) DMMH/FH (Hrs)	16.0/16.0		16.0
(U) Availability A_o	.8/.8		.8

c. Previous Change Explanations -- Not Applicable.

d. Current Change Explanations -- No Change.

First Report.

e. References --

Development Estimate: SDDM, dated May 2, 1984, subject "Carrier (CV) Inner Zone Helicopter Program." SDDM, dated February 22, 1985, subject "Inner Zone Helo Program."

Approved Program: FY 87 President's Budget.

[redacted]. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E,N)	$ 56.4	-	$ 56.4
Procurement	2277.1	-	2277.1
Airframe	(1569.3)	(-)	(1569.3)
Engine	(142.0)	(-)	(142.0)
Avionics	(56.7)	(-)	(56.7)
Total Flyaway	(1768.0)	(-)	(1768.0)
Other Wpn Sys Cost	(440.4)	(-)	(440.4)
Initial Spares	(68.7)	(-)	(68.7)
Construction (MILCON)	19.8	-	19.8
Total FY 85 Base-Year $	2353.3	-	2353.3
Escalation	722.9	-	722.9
Development (RDT&E,N)	(1.6)	(-)	(1.6)
Procurement	(715.7)	(-)	(715.7)
Construction (MILCON)	(5.6)	(-)	(5.6)
Total Then-Year $	$3076.2	-	$3076.2
b. Quantities --			
Development (RDT&E,N)	-	-	-
Procurement	175	-	175
Total	175	-	175
c. Unit Cost --			
Procurement:			
FY 85 Base-Year $	$13.0	-	$13.0
Then-Year $	17.1	-	17.1
Program:			
FY 85 Base-Year $	13.4	-	13.4
Then-Year $	$17.6	-	$17.6

d. Approved Design to Cost Goal -- None Established.

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	3076.2	3076.2	3076.2
(2) Quantity	175	175	175
(3) Unit Cost	17.6	17.6	17.6
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	No Current Year Procurement		179.4
Less CY Adv Proc			-29.4
Plus PY Adv Proc			+30.0
Net Total			180.0
(2) Quantity	N/A	N/A	7
(3) Unit Cost	N/A	N/A	25.7

13. Cost Variance Analysis:

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

	RDT&E,N	PROC	MILCON	TOTAL
Development Estimate	58.0	2992.8	25.4	3076.2
Previous Changes:	-	-	-	-
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	58.0	2992.8	25.4	3076.2

. Cost Variance Analysis (Cont'd):
(FY 1985 Constant (Base-Year) Dollars in Millions)

	RDT&E,N	PROC	MILCON	TOTAL
Development Estimate	56.4	2277.1	19.8	2353.3
Previous Changes:	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	56.4	2277.1	19.8	2353.3

b. Previous Change Explanations -- Not Applicable.

c. Current Change Explanations -- Not Applicable.

d. References --

Development Estimate: SDDM, dated May 2, 1984, subject "Carrier (CV) Inner Zone Helicopter Program." SDDM, dated February 22, 1985, subject "Inner Zone Helo Program."

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

a. Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
17.6	--	--	--	--	--	--	--	--	17.6

b. Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
17.6	--	--	--	--	--	--	--	--	17.6

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

a. RDT&E,N --

Airframe:

Sikorsky Aircraft Division,
Stratford, CT,
N00019-85-C-0148, Ltr Contract, To Be
Definitized As Firm Fixed Price Contract
Award: February 28, 1985
Definitized: Est. May 1986

Initial Contract Price		
Target	Ceiling	Qty
$50.9	N/A	N/A

Current Contract Price		
Target	Ceiling	Qty
$50.9	N/A	N/A

Estimated Price At Completion	
Contractor	Program Manager
$50.9	$50.9

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

Explanation of Change: Not Applicable.

b. Procurement -- Not Applicable.

c. MILCON -- Not Applicable.

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

a. Program Status --

(1) Percent Program Completed: 18.8% (3 yrs/16 yrs)

(2) Percent Program Cost Appropriated: 2.6% ($79.9/$3076.2)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY82-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-00)	Total
RDT&E,N	49.9	8.1	-	-	58.0
Procurement	30.0	179.3	1100.3	1683.2	2992.8
MILCON	-	-	-	25.4	25.4
Total	79.9	187.4	1100.3	1708.6	3076.2

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

c. Annual Summary --

Fiscal Year	Qty	FY 85 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E,N								
1984		18.6		18.6			18.4	3.8
1985		18.7		18.7			19.1	3.6
1986		11.7		11.7			12.4	3.2
1987		7.4		7.4			8.1	4.1
Subtotal		56.4		56.4			58.0	
Appropriation: Procurement								
1986				26.1	30.0		30.0	4.1
1987	7	11.9	101.4	155.4	29.4	30.0	179.3	4.1
1988	18		179.9	249.8	30.6	29.4	296.6	3.9
1989	18		174.1	283.4	31.8	30.6	345.1	3.4
1990	18		176.9	217.0	23.1	31.8	270.4	2.9
1991	12		120.4	147.4	23.9	23.1	188.2	2.3
1992	12		120.3	154.5	25.4	23.9	201.8	2.3
1993	12		120.2	149.8	26.0	25.4	200.1	2.3
1994	12		120.2	141.5	24.5	26.0	193.5	2.3
1995	11		110.5	151.8	52.9	24.5	212.9	2.3
1996	24		230.3	259.1	54.3	52.9	370.9	2.3
1997	24		230.3	229.3	17.3	54.3	335.1	2.3
1998	7		71.6	79.0		17.3	117.9	2.3
1999				16.9			25.8	2.3
2000				16.1			25.2	2.3
Subtotal	175	11.9	1756.1	2277.1	369.2	369.2	2992.8	
Appropriation: MILCON								
1992		19.8		19.8			25.4	2.3
Subtotal		19.8		19.8			25.4	
Total				2353.3			3076.2	

Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E,N			
1984	18.4	18.4	9.8
1985	19.1	19.0	6.2
1986	12.4	.4	
1987	8.1		
To Complete	N/A	N/A	N/A
Total	58.0	37.8	16.0

Procurement -- Not Applicable.

MILCON -- Not Applicable.

II Production Rate Data:

a. Annual Production Rates -- The maximum economic production rate is the combination of SH-60F/SH-60B.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1987	7	N/A	7	60
1988	18	N/A	18	60
1989	18	N/A	18	60
1990	18	N/A	18	60
1991	12	N/A	12	60
1992	12	N/A	12	60
1993	12	N/A	12	60
1994	12	N/A	12	60
1995	11	N/A	11	60
1996	24	N/A	24	60
1997	24	N/A	24	60
1998	7	N/A	7	60

17. Production Rate Data (Cont'd):

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE Less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	2353.3	N/A	N/A
(TY $)	N/A	N/A	3076.2	N/A	N/A
PAUC (BY $)	N/A	N/A	13.4	N/A	N/A
(TY $)	N/A	N/A	17.6	N/A	N/A

c. Schedule Variance --

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (mo/yr)	N/A	N/A	7/87	N/A	N/A
Duration (in months)	N/A	N/A	149	N/A	N/A
End Date (mo/yr)	N/A	N/A	12/99	N/A	N/A

d. Deliveries (Plan/Actual) --

	To Date
RDT&E,N	N/A
Procurement	0/0

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

This O&S estimate is based on each aircraft flying 660 hours, or an operational squadron, of 6 aircraft, flying 3960 hours a year. The maintenance concept for both the SH-60F and the antecedent system is for organic support at all three levels of maintenance. Estimates for the SH-60F avionics assumed a 50% increase in the reliability of the AQS-13F over the AQS-13E onboard the SH-3H.

Personnel costs are for all people assigned to the squadron required to operate and maintain the aircraft. This cost also includes the cost of administrative and staff personnel required for the operational control of the squadron. The O&S consumable cost is for fuel, training expendables and other consumables used in the direct support of the weapons system. Direct depot maintenance contains the cost of scheduled depot level maintenance (SDLM), engine repair/rework and components repair. The sustaining investment cost is for replenishment spares, support equipment maintenance, simulator maintenance and software support. No other direct costs could be estimated. Indirect costs are for base operating and health care support personnel and the materials required by these two groups.

Assumptions and ground rules for the SH-60F and the SH-3H are the same, unless otherwise stated.

Operating and Support Costs (Cont'd):

b. Costs --

(FY 1985 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per SH-60F Squadron	Avg Annual Cost Per SH-3H Squadron (Antecedent)
Personnel	7.276	7.462
O&S Consumables	1.764	2.017
Direct Depot Maintenance	1.362	2.098
Sustaining Investment	.929	.718
Other Direct Costs		
Indirect Costs	.310	.321
Total	11.641	12.616

SELECTED ACQUISITION REPORT (SAR): RCS: DD-COMP(QA)823
PROGRAM: SINGLE CHANNEL GROUND AND AIRBORNE RADIO SYSTEM
(SINCGARS)

A-20 SINCGARS

AS OF DATE: December 31, 1985

85-014

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MAR 21 1986

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

No SECURITY Objec to PUBLIC RELEASE

13 MAR 1986

SECURITY REVIEW, OASD

1. **Designation/Nomenclature (Popular Name):**

   AN/PRC-119()(V); AN/VRC-87()(V) thru AN/VRC-92()(V) and AN/ARC-201() / Single Channel Ground and Airborne Radio System (SINCGARS)

2. **DoD Component:** U.S. Army

3. **Responsible Office and Telephone Number:**

   Project Manager, SINCGARS
   USA CECOM
   Fort Monmouth, NJ

   PM: COL Edward R. Baldwin, Jr.
   Assigned: April 1981
   AUTOVON 8-992-3317

   85-3061

4. **Program Elements:**

   RDTE: PE 3.34.01 Project D491 (FY76-78 only) (Shared funding)
   PE 6.37.07 Project D437 (FY76-78 only) (Shared funding)
   PE 6.37.46A (No shared funding)
   PE 6.47.51 Project D282 (Shared funding)

   PROCUREMENT: APPN 2035 SSN B00500, B45500, T99500, BA950A, BA970A
   APPN 1410 SSN AZ3500, AA0974

5. **Related Programs:** None.

86-0720

. Mission and Description:

The SINCGARS will replace the current AN/VRC-12 family, AN/PRC-77, and AN/ARC-114 radios. The new family of radios will provide the primary means of command and control for infantry, armor and artillery units, and will be capable of transmission of voice, tactical data, and record traffic. Manpack, vehicular and airborne configurations will be securable with VINSON or other COMSEC devices and will be capable of operating in an electronic warfare environment.

7. Program Highlights:

a. Significant Historical Developments -- The ROC for SINCGARS was approved at DA in Dec 74. In Jun 77, the VCSA directed the project manager to reduce the program schedule by two to three years, resulting in a decision to proceed from AD directly into production (decision reaffirmed at Dec 77 DAPR). At a Dec 81 briefing to the VCSA, the decision was made to further accelerate development through early delivery of Advanced Development Models for limited DT/OT.

At ASARC III in Sep 83, the SINCGARS ground production hardware was type classified standard, the production decision and source selection of ITT Aerospace/Optical Div. were ratified. Although the initial production contract had been envisioned as a four year multiyear procurement, lack of approval by the HAC resulted in the award of a single year contract with follow-on options for a total buy of 44100 RT units which was awarded on 2 Dec 83. An option for second-source quantities of 9475 RT's was also included. Successful results of development testing and an operational assessment of modified ADM's resulted in DSARC approval to award Option 1 (3200 RT's) on the ground radio production contract, awarded in Nov 84. In May 85, the initial SINCGARS airborne radio production contract (single year with three options) was awarded for first program year quantity of 150 RT's and Option 2 on the ground radio production contract was awarded for third program year quantity of 8250 RT's.

First Article Test on the SINCGARS ground radio began in Aug 85. First phase of testing indicated problems for which corrective actions were being identified and implemented. The FAT problems caused a stretch-out of the test schedule which impacted on several schedule milestones.

b. Significant Developments Since Last Report -- Based upon continued contractor FAT problems, projected delays in production deliveries, and OSD requirement to conduct follow-on evaluation (FOE) prior to going full scale production rate quantity, the exercise of Option 3 for ground radios was projected to slip from FY-86 to FY-87. As a result, the FY-86 procurement dollars for prime contractor award was declared excess and offered for withdrawal. A Current Procurement Unit Cost threshold breach report as of 18 Oct 1985 was filed based upon the best estimate of the FY-86 program available at that time.

Negotiations are on-going to establish new contractor milestone dates. Upon completion of negotiations, full impact to the program schedule will be assessed.

Second Source Request For Proposal (RFP) was released to industry by ITT on 4 Dec 85.

The SINCGARS is expected to satisfy mission requirements.

c. Changes Since "As of" Date -- At the 13 Jan 86 Production Status Review, ITT announced a five month slip in the airborne radio production schedule. This issue is currently under review by the PM Office.

. Decision Coordinating Paper (DCP) Threshold Breaches:

Approved Decision Coordinating Paper (DCP) #156, Cover Sheet #2, dated 5 July 1984. A quarterly SAR was submitted as of 30 September 1985 which notified OSD of anticipated breach in schedule milestone thresholds for First Article Test Completion and Production Delivery Begins. It is currently unknown if threshold for IOC is in danger of being breached.

9. Schedule:

a. Milestones --

	Production Estimate/ Approved Program	Current Estimate
ROC Approval	Dec 74/Dec 74	Dec 74
ASARC I	Oct 75/Oct 75	Oct 75
DSARC I	Feb 76/Feb 76	Feb 76
DA Program Review	Jun 77/Jun 77	Jun 77
Award AD Contracts	Apr 78/Apr 78	Apr 78
DA Program Review	Dec 81/Dec 81	Dec 81
Final Design Reviews	Apr 82/Apr 82	Apr 82
Complete DT/OT - I/II	Dec 83/Dec 83	Dec 83
Begin Limited DT/OT	Aug 82/Aug 82	Aug 82
Complete Limited DT/OT	Dec 82/Dec 82	Dec 82
Begin Maturity DT/OT	Jul 83/Jul 83	Jul 83
Complete Maturity DT/OT	Dec 83/Dec 83	Dec 83
ASARC III	Sep 83/Sep 83	Sep 83
Initial Prod Cont Award	Dec 83/Dec 83	Dec 83
First Article Test Complete	Jun 85/Jun 85	TBD 1/
Production Delivery Begins	Aug 85/Aug 85	TBD 1/
IOC (1st Div Equipped)	Oct 87/Oct 87	TBD 1/

b. Previous Change Explanations --

Late start of First Article Test (FAT) plus problems encountered during the first phase of testing indicated that previous estimates of FAT completion and start of Production Delivery would not be met. Impact on IOC and determination of new dates for the effected milestones was under review by the PM Office.

c. Current Change Explanations -- N/A

d. References --

Production Estimate: Draft Decision Coordinating Paper (DCP) #156, dated September 1983, for the Single Channel Ground and Airborne Radio System (SINCGARS).

Approved Program: Approved Decision Coordinating Paper (DCP) #156, Cover Sheet #2, dated Feb 1984, approved 5 Jul 1984, for the Single Channel Ground and Airborne Radio System (SINCGARS).

1/ New dates for affected milestones have not yet been determined. Negotiations between the contractor and Government to establish contractor milestones dates are still in-process. Full impact to program schedule will be assessed upon completion of negotiations.

10. Technical/Operational Characteristics: 1/

a. Technical --	Prod Estimate/ Appr Program	Demonstrated Performance 2/ (Ch-1)	Current Estimate
Frequency Band	30-87.975 MHz/ 30-87.975 MHz	30-87.975MHz 3/	30-87.975 MHz
Number of Channels	2320/2320	2320 3/	2320
Channel Spacing	25 KHz/25 KHz	25 KHz 3/	25 KHz
Weight(Manpack w/COMSEC)	22.5 Lbs/ 24 Lbs	See Note 4/	22.5 Lbs
Power Requirements	28 Vdc/28 Vdc	28 Vdc 3/	28 Vdc
Communications Range: (Voice & Data @ 16Kbps @ 10^{-1} Ber)			
Manpack	8 KM/8 KM	8 KM 5/	8 KM
Vehicular	35 KM/35 KM	27.5 KM 6/	35 KM
Airborne	TBD/35 KM	10/	35 KM
(Data @ 16 Kbps @ 10^{-3} Ber)			
Manpack	4.5 KM/4 KM	2 KM 7/	4.5 KM
Vehicular	17.5 KM/17 KM	19 KM 8/	17.5 KM
Airborne	TBD/17 KM	10/	17 KM
b. Operational --			
Mean Time Between Failure			
Manpack	1300 Hrs/1300 Hrs	696 Hrs 9/	1300 Hrs
Vehicular	1250 Hrs/1250 Hrs	517 Hrs 8/	1250 Hrs
Airborne	750 Hrs/750 Hrs	TBD	750 Hrs
ECCM	3500 Hrs/3500 Hrs	2228 Hrs 9/	3500 Hrs
Mean Time To Repair (MTTR):			
Organizational Level	15 Min/15 Min	35.7 Min 9/	15 Min
Direct Support (DS)	45 Min/45 Min	63.9 Min 9/	45 Min
General Support (GS)	2 Hrs/2 Hrs	1.78 Hrs 9/	2 Hrs

c. Previous Change Explanations -- N/A

d. Current Change Explanations --

(Ch-1) - Demonstrated performance of development models will be displayed until completion of FAT and FOE.

e. References --

Production Estimate: Draft Decision Coordinating Paper (DCP) #156, dated September 1983, for the Single Channel Ground and Airborne Radio System (SINCGARS).

Approved Program: Approved Decision Coordinating Paper (DCP) #156, Cover Sheet #2, dated Feb 1984, approved 5 July 1984, for Single Channel Ground and Radio System (SINCGARS).

10. Technical/Operational Characteristics: (Continued)

FOOTNOTES:

1/ Technical/operational characteristic parameters are not yet available for the integrated COMSEC radio.

2/ Data for specified technical and operational demonstrated performance on production models will be available subsequent to completion of First Article Tests or follow-on evaluation.

3/ First Article Test (FAT) models were used.

4/ The weight of manpack radio with COMSEC requirement was for SINCGARS with VANDAL COMSEC. This requirement now applies to the Integrated COMSEC (I/C) SINCGARS. The weight of the First Article Test model AN/PRC-119 without VANDAL is 17.5 lbs. Demonstrated weight of ADM AN/PRC-119 with VANDAL was 22.5 lbs.

5/ Fire Support Team - Vehicle (FIST-V)/SINCGARS Test (Jul 1985) using Modified Advanced Development Models (MADM) radio. This was maximum range tested.

6/ SINCGARS Operational Assessment (Aug-Sep 1984) using MADM radios. Operational Assessment testing was limited to 27.5 KM due to path restrictions. Development testing successfully completed links in excess of 40 KM (no line-of-sight restrictions).

7/ Maturity Development Test (MDT) (Jul-Dec 1983) using ADM model radios. Although these results are not indicative of later model radios, this test is not scheduled to be rerun until production radios are available.

8/ Tactical Command, Control and Communications Vehicle (TC3V)/SINCGARS Customer Test (Feb 85) using MADM radios with OE-254 antennas. Since purpose of this test was not to verify this technical characteristic, longer ranges and use of whip antennas were not attempted. Earlier testing of this characteristic is not indicative of the performance of SINCGARS. Testing to verify this performance is not scheduled to be rerun until production radios are available.

9/ Maturity Operational Test (MOT) (Oct-Dec 1983) using ADM model radios.

10/ No test results are available at this time for either development or production models of the airborne radio.

Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost --	Production Estimate	Changes	Current Estimate
Development (RDT&E)	154.4 1/	+14.6	169.0
Procurement	4013.3	+48.1	4061.4
Weapon System	(3609.5)	(+303.1)	(3912.6)
Flyaway	(3583.6)	(+302.5)	(3886.1)
Major System Equip	(3151.8)	(+505.1)	(3656.9)
Ancillary Equip	(431.8)	(-202.6)	(229.2)
Other Weapon System	(25.9)	(+0.6)	(26.5)
Initial Spares	(403.8)	(-255.0)	(148.8)
Construction (MILCON)	0.0	0.0	0.0
Total FY84 Base-Year $	4167.7	+62.7	4230.4
Escalation	1444.0	-147.1	1297.1
Development (RDT&E)	(-19.0)	(+2.0)	(-17.0)
Procurement	(1463.0)	(-148.9)	(1314.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Total Then-Year $	5611.7	-84.2	5527.5

1/ Does not match initial SAR due to pre-base year amounts included as actuals, not base year dollars, in initial SAR.

b. Quantities --			
Development (RDT&E)	62	+53 1/	115
Procurement	292853	-1329	291524
Total	292915	-1276	291639

1/ Of the 53 unit increase, 45 are new prototypes under the integrated COMSEC effort. The other 8 units, first reported in the 31 Dec 84 SAR, were actually a correction to the Production Estimate (PdE). The dollars associated with the 8 prototypes were included in the PdE but the development quantity did not include these units.

c. Unit Cost --			
Procurement:			
FY84 Base-Year $	.0137	+.0002	.0139
Then-Year $	.0187	-.0003	.0184
Program:			
FY84 Base-Year $	.0142	+.0003	.0145
Then-Year $	.0192	-.0002	.0190

d. Approved Design to Cost Goal -- None

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current [Then Year] Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (31 Dec 84)	UCR Baseline Estimate
a. Program Acquisition —			
(1) Cost	5527.5	5953.8	5527.5
(2) Quantity	291639	291594	291639
(3) Unit Cost	.0190	.0204	.0190
b. Current Procurement —	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	146.2	279.7	250.7
Less CY Adv Proc	0	0	0
Plus PY Adv Proc	0	0	0
Net Total	146.2	279.7	250.7
(2) Quantity	1120	17120	17200
(3) Unit Cost 1/	.1305	.0163	.0146

1/ The Secretary of the Army was notified of an increase in FY 86 Current Procurement Unit Cost (CPUC) of more than 25% in an exception report dated 18 Oct 85.

13. Cost Variance Analysis:
a. Summary — (Current [Then-Year] Dollars in Millions)

	RDT&E	PROC	TOTAL
Production Estimate	135.4	5476.3	5611.7
Previous Changes:			
Economic	-.5	-110.6	-111.1
Quantity	-	-49.3	-49.3
Schedule	-	+110.2	+110.2
Engineering	-	-	-
Estimating	-2.5	+394.8	+392.3
Other	-	-	-
Support	-		
Subtotal	-3.0	+345.1	+342.1
Current Changes:			
Economic	-0.4	-307.1	-307.5
Quantity	+11.3	-	+11.3
Schedule	-	+217.6	+217.6
Engineering	+8.7	-	+8.7
Estimating	-	-5.0	-5.0
Other	-	-	-
Support	-	-351.4	-351.4
Subtotal	+19.6	-445.9	-426.3
Total Changes	+16.6	-100.8	-84.2
Current Estimate	152.0	5375.5	5527.5

j. Cost Variance Analysis (Cont'd):

(FY 84 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	TOTAL
Production Estimate	154.4	4013.3	4167.7
Previous Changes:			
Quantity	-	-33.3	-33.3
Schedule	-	-	-
Engineering	-	-	-
Estimating	-2.1	+268.8	+266.7
Other	-	-	-
Support	-		
Subtotal	-2.1	+235.5	+233.4
Current Changes:			
Quantity	+9.7	-	+9.7
Schedule	-	+20.3	+20.3
Engineering	+7.0	-	+7.0
Estimating	-	+47.3	+47.3
Other	-	-	-
Support	-	-255.0	-255.0
Subtotal	+16.7	-187.4	-170.7
Total Changes	+14.6	+48.1	+62.7
Current Estimate	169.0	4061.4	4230.4

b. Previous Change Explanations —

RDTE

Economic: Revised escalation indices.
Estimating: Reduction in FY 86 and FY 87 PBG for engineering development effort.

PROC

Economic: Revised escalation indices.
Quantity: Decreased user requirement.

Schedule: Stretchout of two years in procurement.
Estimating: Additional cost for warranty.

. **Cost Variance Analysis (Cont'd):**

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDTE		
Revised Jan 86 escalation rates. (Economic)	N/A	-0.4
Change to integrate COMSEC		
o Addition of 45 prototypes (Quantity)	+16.7	+20.0
o Redesign radio and COMSEC device (Engineering)	(+9.7)	(+11.3)
	(+7.0)	(+8.7)
(2) PROC		
Revised Jan 86 escalation rates. (Economic)	N/A	-307.1
Ten month schedule slip, delay in PAT, adjustments for reduced production, FY92-97 (33,500/yr to 25,500/yr) to provide for spares and SRCU production. (Schedule)	+20.3	+217.6
Revised warranty costs and revised estimates for airborne radio.(Estimating)	+47.3	-5.0
Reclassification of initial spares from procurement to Army Stock Fund.. (Support)	-255.0	-351.4

d. References --

Production Estimate -- Draft Decision Coordinating Paper (DCP) #156, dated September 1983, for the Single Channel Ground and Airborne Radio System (SINCGARS).

Approved Program -- Approved Decision Coordinating Paper (DCP) #156, Cover Sheet #2, dated 5 July 1984, for the Single Channel Ground and Airborne Radio System (SINCGARS).

14. **Program Acquisition Unit Cost (PAUC) History:** (Millions of then-year dollars)

Initial SAR Estimate to Current Estimate --

PAUC (Production Estimate)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
.0192	-.0014	.0000	+.0010	+.0001	+.0013	-.0012	0	-.0002	.0190

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

a. RDT&E —

SINCGARS Development:

ITT Corp., A/OD, Ft. Wayne, IN,
DAAB07-78-C-0150, CPIF,
Award: 4 Apr 1978
Definitized : N/A

Initial Contract Price		
Target	Ceiling	Qty
$5.4	N/A	43

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$38.9	N/A	39	$38.9	$38.9

	Cost Variance	Schedule Variance
Previous Cum Variances	0	0
Cumulative Variances to Date (10/28/85)	0	0
Net Change	0	0

Explanation of Change: N/A

b. Procurement —

SINCGARS (Ground):

ITT Corp., A/OD, Ft. Wayne, IN,
DAAB07-84-C-K503, FFP, 1/
Award: 2 Dec 1983
Definitized : N/A

Initial Contract Price		
Target	Ceiling	Qty
$53.8	N/A	650

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$193.2	N/A	12,100	$193.2	$193.2

SINCGARS (Airborne)

ITT Corp., A/OD, Ft. Wayne, IN,
DAAB07-85-C-K561, FFP, 1/
Award: 31 May 1985
Definitized : N/A

Initial Contract Price		
Target	Ceiling	Qty
$19.5	N/A	150

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$19.5	N/A	150	$19.5	$19.5

FOOTNOTE:

1/ Cost/schedule variances are not reported for Firm Fixed Price contracts.

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

a. Program Status --

(1) Percent Program Completed: 54.5% (12 yrs/22 yrs)

(2) Percent Program Cost Appropriated: 9.2% ($508.6/$5527.5)

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

Appropriation	Current & Prior Years (FY76-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-97)	Total
RDT&E	128.5	12.0	3.4	8.1 1/	152.0
Procurement	380.1	250.7	2021.9	2722.8	5375.5
APA	39.9	22.1	159.4	56.8	278.2
OPA	340.2	228.6	1862.5	2666.0	5097.3
Total	508.6	262.7	2025.3	2730.9	5527.5

FOOTNOTE:

1/ Beyond FYDP RDTE reflects requirements for the portion of the approved integrated COMSEC effort which is unfunded in the FYDP.

- **Program Funding Summary (Cont'd):**

c. Annual Summary —

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Adv Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E 1/								
1976				.8			.5	6.6
197T				.2			.2	2.9
1977				3.2			2.0	5.5
1978			3.0	9.7			6.2	6.8
1979			8.3	19.7			13.7	8.4
1980			10.4	26.7			20.5	10.6
1981			13.2	29.3			24.9	10.6
1982	8		7.7	14.3			13.4	7.6
1983	54		2.9	14.7			14.5	4.9
1984			3.2	10.3			10.5	3.8
1985	8		2.3	9.9			10.5	3.6
1986			3.6	10.6			11.6	3.2
1987	30		3.6	10.5			12.0	4.1
1988			1.0	2.9			3.4	3.9
1989				0.0			0.0	3.4
1990				0.0			0.0	2.9
1991				0.0			0.0	2.3
1992	15		1.5	6.2			8.1	2.3
Subtotal	115	0.0	60.7	169.0	0.0	0.0	152.0	

FOOTNOTE:

1/ Beyond FYDP RDTE reflects requirements for the portion of the integrated COMSEC effort which is unfunded in FYDP.

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

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate
		Flyaway		Total	Adv Proc		Total	
		Nonrec	Rec		Debit	Credit		(%)
Appropriation: Procurement (APA) 1/								
1985	2/ 150	5.5	10.9	20.0			22.1	3.6
1986	2/ 720		14.6	15.5			17.8	3.2
1987	1200		17.7	18.7			22.1	4.1
1988	1800		24.3	25.7			31.4	3.9
1989	2400	1.4	32.3	36.6			45.9	3.4
1990	2400		30.6	31.9			40.9	2.9
1991	2400		30.1	31.4			41.2	2.3
1992	2400		28.7	30.1			40.4	2.3
1993	351		10.9	11.9			16.4	2.3
Subtotal	13821	6.9	200.1	221.8	0.0	0.0	278.2	

FOOTNOTES:

1/ OPA inflation indices were used since airborne radios are communications-electronics equipment.

2/ Reflects the planned quantity for the dollars cited in the FY87 President's Budget. These quantities were identified in the FY86 President's Budget and, as a result, the FY86 quantity is part of the CPUC Baseline.

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

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Adv Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement (OPA)								
1983	175	1.2	15.9	18.1			18.6	4.9
1984	1325	3.3	44.2	50.4			53.7	3.8
1985	10600	0.3	120.2	126.2			139.5	3.6
1986	400	4.6	96.8	112.0			128.4	3.2
1987	16000	1.1	181.8	192.8			228.6	4.1
1988	19000	0.1	268.1	275.4			336.3	3.9
1989	17000	0.1	242.9	251.5			315.2	3.4
1990	33500	1.7	467.6	483.1			619.7	2.9
1991	33500	4.6	432.2	450.5			591.3	2.3
1992	25500	0.1	312.4	327.8			440.1	2.3
1993	25500	0.1	312.4	327.8			450.2	2.3
1994	25500	4.6	307.9	327.8			460.2	2.3
1995	25500	0.1	312.7	327.8			471.2	2.3
1996	25500	0.1	312.7	327.8			481.9	2.3
1997	18703	0.0	229.3	240.6			362.0	2.3
Subtotal	277703	22.0	3657.1	3839.6			5097.3	
Total Proc	291524	28.9	3857.2	4061.4	0.0	0.0	5375.5	
Total Program	291639	28.9	3917.9	4230.4	0.0	0.0	5527.5	

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1976	.5	.5	.5
197T	.2	.2	.2
1977	2.0	2.0	2.0
1978	6.2	6.2	6.2
1979	13.7	13.7	13.7
1980	20.5	20.5	20.5
1981	24.9	24.9	24.9
1982	13.4	13.4	13.4
1983	14.5	14.5	13.3
1984	10.5	10.5	10.4
1985	10.5	10.5	6.9
1986	11.6	5.6	0.2
To Complete	23.5	N/A	N/A
Total	152.0	122.5	112.2
Appropriation: Procurement (APA)			
1985	22.1	17.5	1.0
1986	17.8	0.0	0.0
To Complete	238.3	N/A	N/A
Total	278.2	17.5	1.0

16. Program Funding Summary (Cont'd):

Appropriation: Procurement (OPA)

1983	18.6	18.6	10.3
1984	53.7	48.2	31.5
1985	139.5	100.7	5.0
1986	128.4	0.7	0.1
To Complete	4751.1	N/A	N/A
Total	5097.3	168.2	46.9

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year) - Airborne Radio			
	Development Estimate	Production Estimate	Current Estimate	Maximum Economic
1985	N/A	1/ 600	600	600
1986	N/A	720	720	720
1987	N/A	1200	1200	1200
1988	N/A	1800	1800	1800
1989	N/A	2400	2400	2400
1990	N/A	2400	2400	2400
1991	N/A	2400	2400	2400
1992	N/A	2/ 2400	2400	2400
1993	N/A	0	1/ 2400	2400

FOOTNOTES:

1/ Differs from procurement quantity due to funded delivery period of less than 12 months.

2/ Differs from procurement quantity due to funded delivery period of more than 12 months (final buy-out).

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

Current prime contractor (thru FY 88)

Fiscal Year	Production Rates (Quantity/Year) - Ground R/T			
	Development Estimate	Production Estimate	Current Estimate	Maximum Economic
1983	N/A	1/ 1050	1050	1050
1984	N/A	1/ 2650	2650	2650
1985	N/A	8250	2/ 8250	8250
1986	N/A	16000	0	16000
1987	N/A	16500	16000	16500
1988	N/A	16500	16000	16500
1989	N/A	3/ 16500	TBD 3/	16500
1990	N/A	16500	TBD	16500
1991	N/A	16500	TBD	16500
1992	N/A	16500	TBD	16500
1993	N/A	16500	TBD	16500
1994	N/A	16500	TBD	16500
1995	N/A	0	TBD	16500
1996	N/A	0	TBD	16500
1997	N/A	0	TBD	16500

FOOTNOTES:

1/ Differs from procurement quantity due to funded delivery period of less than 12 months.

2/ Differs from procurement quantity due to funded delivery period of more than 12 months.

3/ Actual quantity for this producer will depend on 64%-36% competitive split of annual procurement quantity.

7. Production Rate Data (Cont'd):

Second source subcontractor (FY 86 - FY 88)

Fiscal Year	Production Rates (Quantity/Year) - Ground R/T			
	Development Estimate	Production Estimate	Current Estimate	Maximum Economic
1986	N/A	1/ 780	1/ 600	780
1987	N/A	6930	0	6930
1988	N/A	5493	3000	6930
1989	N/A	16500	TBD 2/	16500
1990	N/A	16500	TBD	16500
1991	N/A	16500	TBD	16500
1992	N/A	16500	TBD	16500
1993	N/A	16500	TBD	16500
1994	N/A	1/ 16500	TBD	16500
1995	N/A	0	TBD	16500
1996	N/A	0	TBD	16500
1997	N/A	0	TBD	16500

FOOTNOTE:

1/ Differs from procurement quantity due to funded delivery period of less than 12 months.

2/ Actual quantity for this producer will depend on 64%-36% competitive split of annual procurement quantity.

17. Production Rate Data (Cont'd):

b. Cost Variance -- Dollars in Millions

Item - SINCGARS	Production Estimate	Variance (CE less Pde)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	$4167.7	$ +62.7	$ 4230.4	$ +75.7	$4154.7
(TY $)	$5611.7	$- 84.2	$5527.5	$ -65.0	$5592.5
PAUC (BY $)	$.0142	$+.0003	$. 0145	$+.0003	$.0142
(TY $)	$.0192	$- .0002	$.0190	$- .0002	$.0192

NOTE: For a production line of this type and for these quantities, the current contractor estimates that there is a range of 10,800 - 21,480 ground R/Ts per year for which the unit cost does not change based on production rate. A proportional range exists for the second source ground radio producer and for the airborne radio. Program cost changes due to schedule changes are addressed in the Cost Variance Analysis paragraph.

c. Schedule Variance --

Airborne Radio	Production Estimate	Variance (CE less Pde)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	12/84	+5 mo	05/85	0	05/85
Duration (in Months)	121	-4 mo	117	+3 mo	114
End Date (Mo/Yr)	01/95	+1 mo	02/95	+3 mo	11/94

Ground Radio	Production Estimate	Variance (CE less Pde)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	12/83	0	12/83	0	12/83
Duration (in Months)	150	+34 mo	184	+34 mo	150
End Date (Mo/Yr)	06/96	+34 mo	04/99	+34 mo	06/96

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	70/66
Procurement	175/0

18. Operating and Support Costs: N/A

N-33 STD MSL

SAR-85-051

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

PROGRAM: STANDARD Missile (SM-2 Block II MR/ER)
AS OF DATE: December 31, 1985*

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1. Designation and Nomenclature (Popular Name): Standard Missile 2 Block II Medium Range (AEGIS) (SM-2 Blk II MR (AEGIS)/RIM-66G), STANDARD Missile 2 Block II Medium Range (Vertical Launch) - (SM-2 Blk II MR (VL)/RIM-66H), STANDARD Missile 2 Block II Medium Range (TARTAR)-(SM-2 Blk II MR (TARTAR)/RIM-66J) and STANDARD Missile 2 Block II Extended Range (TERRIER)-(SM-2 Blk II ER (TERRIER)/RIM-67C).

2. DoD Component: Department of the Navy

3. Responsible Office and Telephone Number:

Director, Guided Missile Division
Program Office (SEA 62Z3)
Naval Sea Systems Command

PM: CAPT D.G. MacDougall
ASSIGNED: October 1983
AUTOVON: 222-0663

CLEARED
FOR OPEN PUBLICATION

4. Program Elements/Procurement Line Items:

Procurement: P.E. 24229N, APPN 1507 ICN 2233
Standard MR SM-2 2234
Standard ER SM-2 2239

APR 01 1986 2

RDT&E: P.E. 64366N

AS AMENDED

5. Related Programs: FFG 7 Fast Frigate, CG 47 AEGIS Cruiser, and DDG 51 AEGIS Destroyer Classes are SAR reportable related programs. TERRIER CG/NTU, TARTAR CGN/NTU, and Vertical Launch System are related programs not included in other SARs.

~~Classified by: NAVINST S-5513.3~~
~~Declassify on: 31 December 1992~~

This Page is Unclassified

OASD(PA) DFOISR 86-0899

~~CONFIDENTIAL~~

6. Mission and Description: The STANDARD Missile Medium Range (SM-2 MR) is a solid propellant, tail controlled surface-to-air and surface-to-surface missile. The Block I production was initiated in FY 1980 and incorporated command guidance, inertial reference system and monopulse receiver to improve range, accuracy and electronic countermeasure (ECM) resistance. The SM-2 Block II MR missile began Pilot Production in FY 1983 and incorporates all digital guidance, new ordnance and a new dual thrust rocket motor to further improve range, speed and system fire power. This missile will be operational on the AEGIS DDG 51 ARLEIGH BURKE Class destroyers and the CG 47 TICONDEROGA Class cruisers. It will also be operational on the TARTAR NTU cruisers and the FFG 7 PERRY Class frigates.

The STANDARD Missile Extended Range (SM-2) Block I (ER) (67B produced FY 1976 through FY 1983) and Block II (67C production began in FY 1982 and continues) are planned for deployment in all 31 TERRIER Guided Missile Destroyers and Cruisers. The SM-2 Block II missile incorporates improved propulsion, fuze, warhead and guidance designs to cope with the more stringent anti-ship missile (ASM) threats.

7. Program Highlights:

a. Significant Historical Developments -- The STANDARD Missile 2, Block II, (RIM-67C), Extended Range Development program was initiated in August 1976. The Block II is an improved missile with capability to counter high speed, higher altitude anti-ship missiles in an advanced ECM environment. Based upon TECHEVAL and OPEVAL results the CNO recommended approval of limited production in May 1983. The Block II improvements are required to meet the Advanced Anti-Ship Missile (ASM) threats of the mid 1980s.

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 problems encountered in the development of the new rocket motor have been solved as 35 successive successful motor firings were achieved during motor qualification. The successful TECHEVAL/OPEVAL of the extended range missile round contributed substantially to the validation of the medium range missile round since there is a high commonality between the two rounds. On this and the successful rocket motor qualification, initial pilot production of 30 medium range rounds was approved for FY 83 in order to provide missiles for CSS QT 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.

Milestone IIIB was conducted in January 1984 and the CNO approved limited production (Lot #2) for a FY 84 buy of 100 ER missiles and limited production (Lot #1) for a FY 84 buy of 390 MR missiles.

b. Significant Developments Since Last Report -- The Milestone IIIC ARC was conducted on 20 February 1985. On 8 June 1985 SECNAV approved limited production (Lot #3) for a FY 85 buy of 255 ER missiles and limited production (Lot #2) for a FY 85 buy of 529 MR missiles. The STANDARD Missile Program is meeting all mission requirements.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: There is no DCP for SM-2 MR/ER. There are no Threshold Breaches to DSARC.

9. Schedule:

SM-2 Block I/Block II MR (RIM-66 G/H/J)

a. Milestones --	Production Estimate/ Approved Program	Current Estimate
(U) First Flight Test (Development Tests)	Feb 83/Feb 83	Feb 83
(U) MR Pilot Production Approved (Block II)	Jun 83/Jun 83	Jun 83
(U) (Lot #1) Approval for Limited Production	Feb 84/Feb 84	Feb 84
(U) DT/OT and OPEVAL	Sep 84/Sep 84	Sep 84
(U) (Lot #2) Approval for Limited Production	Jun 85/Jun 85	Jun 85
(b)(1)		
(U) (Lot #3) ALP	Apr 86/Apr 86	Apr 86
(b)(1)		
(U) Approval for Full Production	Dec 84/Sep 86	Sep 86 (CH-2)

b. Previous Change Explanations -- Approval for full production slipped from Dec 84 to Apr 86.

c. Current Change Explanations --

(b)(1)

(CH-2) AFP schedule delayed as result of schedule change of FOT&E USS VINCENNES (from Apr 86 to Sep 86).

d. References --

Production Estimate: Milestone IIIA Acquisition Review Council (ARC) of 27 May 1983. Milestone IIIC ARC of 20 February 1985. SM-2 Block II Certification of Readiness for FOT&E, January 1986.

Approved Program: FY 1987 President's Budget

SM-2 Block I/Block II ER (RIM-67C)

a. Milestones --		
(U) OPEVAL Completed (Block II)	Mar 83/Mar 83	Mar 83
(U) ER Pilot Production Approved	Apr 82/Apr 82	Apr 82
(U) (Lot #1) Approval for Limited Production	Jun 83/Jun 83	Jun 83
(U) (Lot #2) Approval for Limited Production	Feb 84/Feb 84	Feb 84
(U) (Lot #3) Approval for Limited Production	Mar 85/Mar 85	Mar 85
(b)(1)		

b. Previous Change Explanations -- Approval for full production slipped from Dec 84 to Apr 86.

c. Current Change Explanations -- None

(b)(1)

d. References --

Production Estimate: Milestone IIIA ARC of 27 May 1983. Milestone IIIC ARC of 20 February 1985.

Approved Program: FY 1987 President's Budget

10. Technical/Operational Characteristics:

SM-2 MR Block II

a. Technical --

	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(b)(1)			

b. Operational --

(b)(1)			

c. Previous Change Explanations -- None.

d. Current Change Explanations --

1/(U) Flight test rounds #33/34 and 35 fired 26/27 November 1984 as part of DT/OT in USS TICONDEROGA CG 47. Simulations verify production estimate.

2/(U) Four pilot production rounds (60304,5 and 60315,18) fired on 25 October and 20, 21 November 1985 as part of FOT&E in USS VINCENNES, CG 49. Simulations verify production estimates.

3/(U) Demonstrated in ground and flight tests.

e. References --

Production Estimate: Milestones IIIB ARC of 25 January 1984 and Milestone IIIC ARC of 20 February 1985. STANDARD Missile - 2 Block II (MR) Certification of Readiness for FOT&E, Janaury 1986.

Approved Program: FY 1987 President's Budget

Technical/Operational Characteristics:

SM-2 ER Block II

a. Technical --	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(b)(1)			

b. Operational --	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(b)(1)			

c. Previous Change Explanations --

1/ Pilot production missiles fired 11 October 1984 in USS MAHAN DDG 42. Simulations verify production estimate.

d. Current Change Explanations --

2/ Pilot production missiles fired 26 February-1 March 1985 in USS MAHAN DDG 42. Simulations verify production estimate.

3/ Demonstrated in ground and flight tests.

e. References --

Production Estimate: Milestone IIIB ARC of 25 January 1984 and Milestone IIIC ARC of 20 February 1985. OPTEVFOR Evaluation Report, STANDARD Missile-2 (ER) Block II Missile, OT IIIA 29 May 1985.

Approved Program: FY 1987 President's Budget.

Program Acquisition Cost: (Current Estimate in Millions of Dollars)

SM-2 MR Block I/Block II	Prod Estimate/ Appr Program	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	$ 314.6	$ 42.5	$ 357.1
Procurement	3,334.1	1,006.7	4,340.8
GC&A	(1,641.2)	(632.4)	(2,283.6)
Propulsion	(485.6)	(205.3)	(690.9)
Fuze	(213.0)	(204.1)	(417.1)
Other (Hardware)	(289.6)	211.1	(78.5)
Other (Proc Support)	(247.6)	(129.0)	(376.6)
TOTAL FLYAWAY	(2,877.0)	(959.7)	(3,836.7)
Non-Recurring Prod Support	(202.7)	(3.7)	(206.4)
Fleet Support	(159.0)	(37.6)	(196.6)
Initial Spares	(95.4)	(5.7)	(101.1)
Construction	-	-	-
Total: FY 84 Base-Year $	3,648.7	1,049.2	4,697.9
Escalation	934.2	42.8	977.0
Development (RDT&E)	(26.7)	(0.3)	(27.0)
Procurement	(907.5)	(42.5)	(950.0)
Construction	-	-	-
Total Then-Year $	$ 4,582.9	1,092.0	5,674.9
b. Quantities --			
Development (RDT&E)	88	-	88
Procurement	6,195	2,809	9,004
Total	6,283	2,809	9,092
c. Unit Cost --			
Procurement:			
FY 84 Base-Year $	$ 0.538	$ -0.056	$ 0.482
Then-Year $	0.685	-0.097	0.588
Program:			
FY 84 Base-Year $	0.581	0.064	0.517
Then-Year $	$ 0.729	$ -0.105	$ 0.624

d. 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.

e. Foreign Military Sales -- None.

f. Nuclear Costs -- None.

11. Program Acquisition Cost : (Current Estimate in Millions of Dollars)

SM-2 ER Block I/Block II

		Prod Estimate/ Appr Program	Changes	Current Estimate
a.	Cost --			
	Development (RDT&E)	$ 333.8	43.5	377.3
	Procurement	2,589.0	164.8	2,753.8
	GC&A	(1,275.5)	(-35.3)	(1,240.2)
	Propulsion	(408.0)	(-58.8)	(349.2)
	Fuze	(155.6)	(36.1)	(191.7)
	Other (Hardware)	(42.0)	(-5.4)	(36.7)
	Other (Proc Support)	(252.4)	(136.4)	(388.8)
	TOTAL FLYAWAY	(2,133.5)	(73.1)	(2,206.6)
	Non-Recurring Prod Support	(186.2)	(39.7)	(225.9)
	Fleet Support	(171.9)	(75.4)	(247.3)
	Initial Spares	(97.4)	(23.4)	(74.0)
	Construction	-	-	-
	Total: FY 84 Base-Year $	2,922.8	(208.3)	3,131.1
	Escalation	547.1	-280.3	266.6
	Development (RDT&E)	(26.5)	(-1.3)	(25.2)
	Procurement	(520.6)	(-279.2)	(241.4)
	Construction	-	-	-
	Total Then-Year $	$ 3,469.9	$ (-72.2)	$ 3,397.7
b.	Quantities --			
	Development (RDT&E)	0	0	0
	Procurement	4,583	-115	4,468
	Total	4,583	-115	4,468
c.	Unit Cost --			
	Procurement:			
	FY 84 Base-Year $	$ 0.565	$ 0.051	$ 0.616
	Then-Year $	0.679	-0.008	0.670
	Program:			
	FY 84 Base-Year $	0.638	0.063	0.701
	Then-Year $	$ 0.757	$ 0.003	$ 0.760

d. 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.

e. Foreign Military Sales -- None.

f. Nuclear Costs -- None.



Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

SM-2 MR Block I/Block II

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.	Program Acquisition --			
	(1) Cost	5674.9	4858.8	5674.9
	(2) Quantity	9092	7273	9092
	(3) Unit Cost	0.624	0.668	0.624
b.	Current Procurement	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	528.6	520.6	524.5
	Less CY Adv Proc	-	-	-
	Plus PY Adv Proc	-	-	-
	Net Total	528.6	520.6	524.5
	(2) Quantity	846	846	844
	(3) Unit Cost	0.625	0.615	0.621

SM-2 ER Block I/Block II

a.	Program Acquisition			
	(1) Cost	3397.7	3952.4	3397.7
	(2) Quantity	4468	5398	4468
	(3) Unit Cost	0.760	0.732	0.760
b.	Current Procurement	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	319.1	311.6	223.0
	Less CY Adv Proc	-	-	-
	Plus PY Adv Proc	-	-	-
	Net Total	319.1	311.6	223.0
	(2) Quantity	470	470	350
	(3) Unit Cost	0.679	0.663	0.637

12. Cost Variance Analysis:

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

SM-2 MR Block I/Block II

	RDT&E	PROC	TOTAL
Production Estimate	341.3	4,241.6	4,582.9
Previous Changes:			
Economic	-11.1	-90.6	-101.7
Quantity	-	+383.6	+383.6
Schedule	-	-	-
Engineering	-	-	-
Estimating	+25.4	-	+25.4
Other	-	-	-
Support	-	-31.4	-31.4
Subtotal	+14.3	+261.6	+275.9
Current Changes:			
Economic	-2.8	-261.8	-264.6
Quantity	-	+1,059.3	+1,059.3
Schedule	-	+9.3	+9.3
Engineering	-	+48.7	+48.7
Estimating	+31.3	-153.1	-121.8
Other	-	-	-
Support	-	+85.2	+85.2
Subtotal	+28.5	+787.6	+816.1
Total Changes	+42.8	+1,049.2	+1,092.0
Current Estimate	384.1	5,290.8	5,674.9

13. Cost Variance Analysis (Cont'd): (FY 1984 Constant (Base Year) Dollars in Millions)

SM-2 MR Block I/Block II (Cont'd)

	RDT&E	PROC	TOTAL
Production Estimate	314.6	3,334.1	3,648.7
Previous Changes:			
Economic	-	-	-
Quantity	-	+242.6	+242.6
Schedule	-	-	-
Engineering	-	-	-
Estimating	+18.9	-	+18.9
Other	-	-	-
Support	-	-27.8	-27.8
Subtotal	+18.9	+214.8	+233.7
Current Changes:			
Economic	-	-	-
Quantity	-	+798.1	+798.1
Schedule	-	-	-
Engineering	-	+39.1	+39.1
Estimating	+23.6	-113.5	-89.9
Other	-	-	-
Support	-	+68.2	+68.2
Subtotal	+23.6	+791.9	+815.5
Total Changes	+42.5	+1,006.7	+1,049.2
Current Estimate	357.1	4,340.8	4,697.9

b. Previous Change Explanations --

RDT&E

Economic: Revised 1/85 escalation rates

Estimating: The net increase is for low altitude fuze altimeter and trajectory control improvements in the Standard Missile

PROCUREMENT

Economic: Revised 1/85 escalation rates

Quantity: Increase production (FY 85 and 86) to support AEGIS Cruisers. Due to the Navy's policy change in reaching the Inventory Objectives (IO), procurement quantities for FY 87 through FY 89 were reduced 780 missiles. The FY 90 program year addition (1700 missiles) to the SAR resulted in a total net increase of 990 missiles

Support: Change in Initial Spares requirements, Non-recurring production and Fleet Support

13. Cost Variance Analysis (Cont'd):

SM-2 MR Block I/Block II (Cont'd)

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised 1/86 escalation rates (Economic)	N/A	-2.8
Decrease associated with CSS, SBIR, NIF. Addition of program year (Estimating)	+23.6	+31.3
(2) Procurement		
Revised 1/86 escalation rates (Economic)	-	-261.8
CNO reduction to line with Ship/fill requirements FY 87-89 (-276 missiles) Increase to FY90 (100 missiles), addition of FY91 program year (1995 missiles) for net increase of 1819 missiles (Quantity)	+798.1	+1,059.3
Schedule adjustment due to addition of program year and continued support of TERRIER Cruisers and New Threat Upgrade Ships (Schedule)	-	+9.3
Introduction Phase I of low altitude improvements and introduction Phase II MK 45TDD (Engineering)	+39.1	+48.7
Decrease associated with CSS, NIF and estimating cost for hardware (Estimating)	-113.5	-153.1
Increase in Production Engineering and Evaluation Services and directed "Forward-Funding" of I&CO equipment for realignment purposes in production for second source (Support)	+68.2	+85.2

d. References --

Production Estimate: - Milestone IIIA Acquisition Review Council (ARC) of 27 May 1983.

Cost Variance Analysis:

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

SM-2 ER Block I/Block II

	RDT&E	PROC	TOTAL
Production Estimate	360.3	3,109.6	3,469.9
Previous Changes:			
Economic	-12.6	-155.7	-168.3
Quantity	-	+572.0	+572.0
Schedule	-	-	-
Engineering	-	-	-
Estimating	+26.5	-	+26.5
Other	-	-	-
Support	-	+52.3	+52.3
Subtotal	+13.9	+468.6	+482.5
Current Changes:			
Economic	-2.8	-176.2	-179.0
Quantity	-	-393.0	-393.0
Schedule	-	-	-
Engineering	-	+21.7	+21.7
Estimating	+31.1	-79.7	-48.6
Other	-	-	-
Support	-	+44.2	+44.2
Subtotal	+28.3	-583.0	-554.7
Total Changes	+42.2	-114.4	-72.2
Current Estimate	402.5	2,995.2	3,397.7

13. Cost Variance Analysis (Cont'd): (FY 1984 Constant (Base Year) Dollars in Millions)

SM-2 ER Block I/Block II (Cont'd)

	RDT&E	PROC	TOTAL
Production Estimate	333.8	2,589.0	2,922.8
Previous Changes:			
Economic	-	-	-
Quantity	-	+446.4	+446.4
Schedule	-	-	-
Engineering	-	-	-
Estimating	+20.1	-	+20.1
Other	-	-	-
Support	-	+56.2	+56.2
Subtotal	+20.1	+502.6	+522.7
Current Changes:			
Economic	-	-	-
Quantity	-	-323.8	-323.8
Schedule	-	-	-
Engineering	-	+17.5	+17.5
Estimating	+23.4	-67.7	-44.3
Other	-	-	-
Support	-	+36.2	+36.2
Subtotal	+23.4	-337.8	-314.4
Total Changes	+43.5	+164.8	+208.3
Current Estimate	377.3	2,753.8	3,131.1

b. Previous Change Explanations --

RDT&E

Economic: Revised 1/85 escalation rates

Estimating: The net increase is for low altitude fuze altimeter and trajectory control improvements in the Standard Missile

PROCUREMENT

Economic: Revised 1/85 escalation rates

Quantity: Due to the addition of FY 90 program year (1150 missiles) to the SAR and the policy change in reaching the Inventory Objectives (IO) with resulted in a decrease of 335 missiles for FY 86-90, the total net increase to the program is 815 missiles

Support: Change in Initial Spares requirements, Non-recurring production and Fleet Support

13. Cost Variance Analysis (Cont'd):

SM-2 ER Block I/Block II (Cont'd)

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised 1/86 escalation rates (Economic)	N/A	-2.8
Decrease associated with CSS, SBIR, NIF. Addition of program year (Estimating)	-	+31.1
(2) Procurement		
Revised 1/86 escalation rates (Economic)	-	-176.2
CNO reduction to line with Ship/fill requirements FY 87-90 (-1530 missiles) Addition of FY 91 program year (+600 missiles) Net reduction 930 missiles (Quantity)	-323.8	-393.0
Introduction Phase I of low altitude improvements and introduction Phase II MK 45TDD (Engineering)	+17.7	+21.7
Decrease associated with CSS, NIF and estimating cost for hardware (Estimating)	-67.7	-79.6
Increase in Production Engineering and Evaluation Services and directed "Forward-Funding" of I&CO equipment for realignment purposes in production for second source (Support)	+36.2	+44.2

d. References --

Production Estimate: - Milestone IIIA Acquisition Review Council (ARC) of 27 May 1983.

14. Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

SM-2 MR Block I/Block II

a. Initial SAR Estimate to Current Baseline Estimate -- N/A

b. Current Baseline Estimate to Current Estimate --

PAUC (Prog Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
.729	-.040	-.066	+.001	+.005	-.011	-	+.006	-.105	.624

SM-2 ER Block I/Block II

a. Initial SAR Estimate to Current Baseline Estimate -- N/A

b. Current Baseline Estimate to Current Estimate --

PAUC (Prog Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
.757	-.078	+.059	+.000	+.005	-.005	-	+.022	-.003	.760

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

a. PROCUREMENT --

SM-2 FY 85 GC&A Production	Initial Contract Price		
	Target	Ceiling	Qty
General Dynamics Pomona, California N00024-85-C-5501, FPI Award: 4 September 1985 Definitized: 4 September 1985	$248.1	$279.9	730

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$248.1[1/]	279.9	730	$250.9	$250.1
			Cost Variance	Schedule Variance
Previous Cumulative Variances:			--	--
Cumulative Variances To Date:			--	--
Net Change:			--	--

Explanation of Change: None.

Reference: CPR dated 12/85

[1/] 2.8M for Performance Project has been set aside in addition to the target price.

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

SM-2 FY 84 GC&A (MR/ER) Production
SM-2 MF FY 85 DTRM Production
General Dynamics
Pomona, California
N00024-84-C-5501, CPIF/AF
Award: 30 November 1984
Definitized: 30 November 1984

Initial Contract Price		
Target	Ceiling	Qty
$210.6	N/A	490

Current Contract Price		
Target	Ceiling	Qty
$222.7 1/	N/A	490

Estimated Price At Completion	
Contractor	Program Manager
$222.7	$222.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances:		
Cumulative Variances To Date:	--	--
Net Change:	--	--
	--	--

Reference: CPR dated 11/85

SM-2 MR FY 83 Block II Production
General Dynamics
Pomona, California
N00024-84-C-5513, CPIF/AF
Award: 30 November 1984
Definitized: 30 November 1984

Initial Contract Price		
Target	Ceiling	Qty
$91.1	N/A	170

Current Contract Price		
Target	Ceiling	Qty
$ 91.1	N/A	170

Estimated Price At Completion	
Contractor	Program Manager
$ 92.8	$ 92.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances:		
Cumulative Variances To Date:	--	--
Net Change:	--	--
	--	--

Explanation of Change:
Unfavorable position reported primarily against subcontract THIOKOL WASATCHM/GE for the MK 104 DTRM.

Reference: CPR dated 11/85.

1/ 2.3m for award fee is not included

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

SM-2 FY 83/84 MK 45/5 Components	Initial Contract Price Target	Ceiling	Qty
Motorola, Inc. Scottsdale, Arizona N00024-83-C-5514, CPFF/AF Award: 31 August 1983 Definitized: 31 August 1983	$ 31.3	N/A	494

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$ 34.1	N/A	494	$ 34.1	$ 34.1

	Cost Variance[1/]	Schedule Variance[1/]
Previous Cumulative Variances:	--	--
Cumulative Variances To Date:	--	--
Net Change:	--	--

Explanation of Change: None.

1/ Reference: Due to the fact that this contract is currently the subject of an Inspector General Inquiry, the information contained in the attached reports (C/SSRs) is subject to further evaluation and may be subject to revision.

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

SM-2 MR Block I/Block II

a. Program Status --
(1) Percent Program Completed: 58% or 7 out of 12 years
(2) Percent Program Cost Appropriated: 29% or 1,633.0/5,674.9

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY80-86)	Budget Year (FY87)	Balance FYDP (FY88-92)	To Complete Beyond FYDP (FY93)	Total
RDT&E	199.7	23.0	161.3		384.1
Procurement	1433.3	524.5	333.3	-	5290.8
Total	1633.0	547.5	3494.4		5674.9

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

SM-2 MR Block I/Block II

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1982	88	-		146.2			137.6	7.6
1983	-	-		16.2			15.9	4.9
1984	-	-		9.8			10.0	3.8
1985	-	-		13.8			14.6	3.6
1986	-	-		19.7			21.6	3.2
1987	-	-		20.2			23.0	4.1
1988	-	-		32.0			37.8	3.9
1989	-	-		35.2			42.8	3.4
1990	-	-		36.8			46.0	2.9
1991	-	-		27.2			34.8	2.3
Subtotal	88	-		357.1			384.1	
Appropriation: PROCUREMENT								
1980	30	21.8		30.0			23.7	11.8
1981	70	35.0		44.7			39.4	11.6
1982	120	48.7		61.1			58.5	14.3
1983	150	96.2		126.8			128.7	9.0
1984	390	246.9		278.5			298.5	8.0
1985	529	277.7		319.3			355.9	4.1
1986	846	393.7		456.7			528.6	4.1
1987	844	353.6		437.7			524.5	4.1
1988	850	377.5		428.1			528.8	3.9
1989	1380	564.7		630.6			799.3	3.4
1990	1800	681.7		742.2			962.9	2.9
1991	1995	733.7		785.1			1042.0	2.3
Subtotal	9004	3836.7		4340.8			5290.8	
Total	9092	3836.7		4697.9			5674.9	

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

SM-2 MR Block I/Block II

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: RDT&E		
1982	137.6	137.6	137.6
1983	15.9	15.9	15.9
1984	10.0	8.0	7.5
1985	14.6	15.4	7.6
1986	21.6	.9	.003
1987	23.0	-	-
1988	37.8	-	-
1989	42.8	-	-
1990	46.0	-	-
1991	34.8	-	-
Subtotal	384.1	177.8	168.6
	Appropriation: PROCUREMENT		
1980	23.7	23.6	23.5
1981	39.4	39.4	39.1
1982	58.5	58.5	37.3
1983	128.7	128.8	89.1
1984	298.4	252.0	90.2
1985	355.9	195.7	15.6
1986	528.6	-	-
1987	524.5	-	-
1988	528.8	-	-
1989	799.3	-	-
1990	962.9	-	-
1991	1042.0	-	-
Subtotal	5290.8	698.0	294.8
Total	5674.9	875.8	463.4

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

SM-2 ER Block I/Block II

a. Program Status --
(1) Percent Program Completed: 75% or 12 out of 16 years

(2) Percent Program Cost Appropriated: 50% or 1692.9/3397.7

b. Appropriation Summary --

	(Then-Year Dollars in Millions)				
Appropriation	Current & Prior Yrs (FY80-86)	Budget Year (FY87)	Balance FYDP (FY88-92)	To Complete Beyond FYDP (FY93)	Total
RDT&E	218.2	23.0	161.3	-	402.5
Procurement	1474.7	223.0	1297.5	-	2995.2
Total	1692.9	246.0	1458.8		3397.7

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
		Appropriation: RDT&E						
1982	-		-	177.9			167.3	7.6
1983	-		-	7.4			7.3	4.9
1984	-		-	7.1			7.3	3.8
1985	-		-	13.8			14.6	3.6
1986	-		-	19.7			21.6	3.2
1987	-		-	20.2			23.0	4.1
1988	-		-	32.0			37.8	3.9
1989	-		-	35.1			42.8	3.4
1990	-		-	36.9			46.0	2.9
1991	-		-	27.2			34.8	2.3
Subtotal	-		-	377.3			402.5	

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

SM-2 ER Block I/Block II

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
		Appropriation: PROCUREMENT						
1976	22		53.9	92.5			48.4	6.6
1977	36		60.4	73.8			42.9	3.7
1978	40		61.3	74.3			48.2	6.8
1979	40		51.8	65.3			46.8	8.7
1980	55		41.3	51.9			41.0	11.8
1981	275		121.3	153.5			135.0	11.6
1982	375		180.6	225.2			215.4	14.3
1983	350		195.1	268.2			272.3	9.0
1984	100		68.4	103.8			111.2	8.0
1985	255		132.0	174.5			194.4	4.1
1986	470		218.8	275.7			319.1	4.1
1987	350		154.7	186.1			223.0	4.1
1988	400		178.2	196.9			243.1	3.9
1989	500		212.4	246.3			312.2	3.4
1990	600		241.8	290.9			377.4	2.9
1991	600		234.6	274.9			364.8	2.3
Subtotal	4468		2206.6	2753.8			2995.2	
Total	4468		2206.6	3131.1			3397.7	

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

SM-2 ER Block I/Block II (Cont'd)

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: RDT&E		
1982	167.4	167.4	167.4
1983	7.3	7.3	7.3
1984	7.3	8.0	7.5
1985	14.6	15.4	7.6
1986	21.6	.9	.003
1987	23.0	-	-
1988	37.8	-	-
1989	42.7	-	-
1990	46.1	-	-
1991	34.7	-	-
Subtotal	402.5	199.0	189.8

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

SM-2 ER Block I/Block II (Cont'd)

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: PROCUREMENT		
1976	48.4	48.4	48.4
1977	42.9	42.8	41.4
1978	48.2	48.1	46.8
1979	46.8	47.3	45.8
1980	41.0	41.0	39.8
1981	135.0	135.0	130.0
1982	215.4	215.4	202.9
1983	272.3	272.3	198.2
1984	111.2	92.2	51.4
1985	194.4	111.3	7.7
1986	319.1	-	-
1987	223.0	-	-
1988	243.1	-	-
1989	312.2	-	-
1990	377.4	-	-
1991	364.8	-	-
Subtotal	2995.2	1053.8	812.9
Total	3397.7	1252.8	1002.7

17: Production Rate Data:

SM-2 MR Block I/Block II

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate 1/	Current Estimate	Maximum
1983	30	390	150	150
1984	390	390	390	390
1985	475	475	529	529
1986	830	830	846	846
1987	1225	1225	844	844
1988	1340	1340	850	850
1989	1545	1545	1380	1380
1990			1880	1880
1991			1995	1995

b. Cost Variance -- N/A.

Item		Production Estimate	Variance (CE less PDE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	3,648.7	1,049.2	4,697.9	0	4,697.9
	(TY $)	4,582.9	1,092.9	5,674.9	0	5,674.9
PAUC	(BY $)	0.581	-0.064	0.517	0	0.517
	(TY $)	0.729	-0.105	0.624	0	0.624

c. Schedule Variance -- N/A.

Item	Production Estimate	Variance (CE less PDE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	7/83	N/A	7/83	N/A	7/83
Duration (in Months)	96 mos.	24 mos.	120 mos	0	120 mos.
End Date (Mo/Yr)	7/91	N/A	7/93	N/A	7/93

d. Deliverables (Plan/Actual) --

	To Date
RDT&E	88/88
Procurement	15/15 1/

1/ Block II

17. Production Rate Data:

SM-2 ER Block I/Block II

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate 1/	Current Estimate	Maximum
1982	35	35	375	375
1983	140	140	350	350
1984	100	100	100	100
1985	255	255	255	255
1986	500	500	470	470
1987	935	935	350	350
1988	650	650	400	400
1989	950	950	500	500
1990			600	600
1991			600	600

b. Cost Variance -- N/A.

Item		Production Estimate	Variance (CE less PDE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	2922.8	208.3	3131.1	0	3131.1
	(TY $)	3469.9	-72.2	3397.7	0	3397.7
PAUC	(BY $)	0.638	0.063	0.701	0	0.701
	(TY $)	0.732	0.003	0.760	0	0.760

c. Schedule Variance -- N/A.

Item	Production Estimate	Variance (CE less PDE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	7/82	N/A	7/82	N/A	7/82
Duration (in Months)	108 mos.	24 mos.	132 mos.	0	132 mos.
End Date (Mo/Yr)	7/91	N/A	7/93	N/A	7/93

d. Deliverables (Plan/Actual) --

	To Date
RDT&E	0/0
Procurement	35/35 1/

18. Operating and Support Costs: N/A.

1/ Block II

N-34 SUBACS

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SAR-85-008

(11)

~~CONFIDENTIAL~~

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SELECTED ACQUISITION REPORT (RCS DD-COMP (Q&A) 823)
PROGRAM: AN/BSY-1 (SUBACS BASIC) (U)

AS OF DATE: December 31, 1985

INDEX

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CLEARED
FOR OPEN PUBLICATION
MAR 31 1986

2

1. (U) Designation/Nomenclature (Popular Name): AN/BSY-1 CH-1

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

3. (U) Responsible Office and Telephone Number:

AS AMENDED

AN/BSY-1 Submarine Combat System Project, PMS417
Naval Sea Systems Command
Washington, D.C. 20362

PM: CDR P. F. SCHISSLER, USN
Assigned: September 1984
Area Code 202/746-0032
AUTOVON 286-0032

4. (U) Program Elements:

RDT&E:

PE63524 - S1346 SUBACS (FY82 and Prior)
PE64524 - S1347 SUBACS
PE64503 - S0219 TAC 110 ARRAYS
TAC 120 TBX Integration
TAC 270 HF (High Frequency) Transmit
PE63504 - S0223 SUBACS Acoustic Detection System (SADS)
PE24281 - S0239 MIDAS (Mine and Ice Detection and Avoidance Sonar)

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OASD(PA) DFOISR 86-S-0858

6. (U) Mission Area and Role.

a. (U) Mission Area. The SSN 688 Submarine Combat System supports the mission of the SSNs, which is to conduct prompt and sustained combat operations. The fundamental warfare tasks supporting this mission are: Anti-Submarine Warfare (ASW), Anti-Surface Warfare, Strike Warfare and Mine

Warefare. Supporting warfare tasks for the SSN are: Special Warfare; Ocean Surveillance; Intelligence/ Reconnaissance; Command, Control, and Communications (C^3); and Electronic Warfare.

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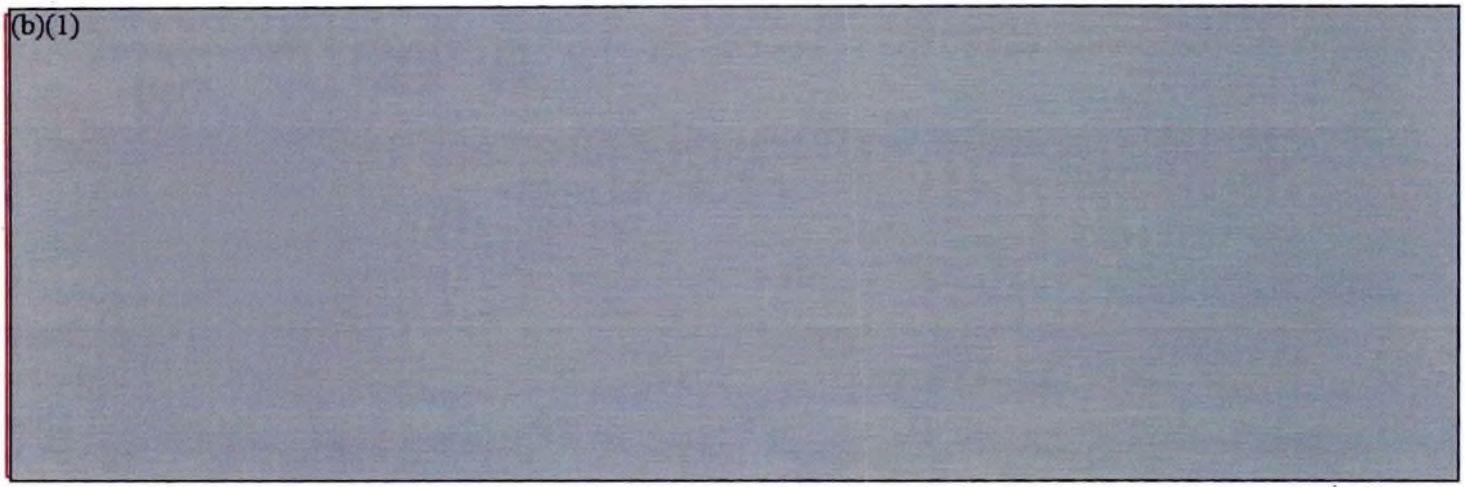

7. (U) Program Highlights (Since Last Report): The program was restructured into two separate Combat Systems. This restructuring was caused by a projected shortfall of $853 million to develop and deploy the three versions of the Combat System approved in October 1983. The $853 million shortfall was identified by the Naval Sea Systems Command in August 1984 and attributed to insufficiently funded requirements, budget cuts, planning errors, and contractor cost overruns.

A zero base RDT&E funding and requirements audit initiated in August 1984 resulted in replanning of the program to ensure cost, schedule and performance requirements could be achieved within approved funding. The restructured AN/BSY-1 (formerly SUBACS BASIC) is reflected in this revision of the SAR.

Replan III for the AN/BSY-1 is for ships authorized in FY83-FY88. Replan III spreads the development risk over three phases (5/87 for initial ship's delivery, 9/88 for ship's deployment, and post 9/88 for Find, Fix and Retest). Replan III resulted in the cancellation of the intermediate configuration (SUBACS A) and those improvements moved to the FY89 Combat System (formerly SUBACS B and B^1). The AN/BSY-1 configuration was modified to eliminate the Distributed System Data Bus (DSDB), substituting lower risk architecture using AN/UYK-43 computers.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated November 1985) threshold breaches.

AN/BSY-1 is expected to satisfy all current mission requirements.

9. (U) SCHEDULE:	PLANNING ESTIMATE	CURRENT ESTIMATE
a. (U) Milestones		
(U) Program Initiated (MENS Approved)	Nov 80	Nov 80
(U) DSARC I Approve Design Definition SUBACS A and Concept Development SUBACS B	Sep 83	Sep 83
(U) DSARC II Approve Full Scale Development SUBACS BASIC	Sep 83	Sep 83
(U) Award Full Scale Development Contract SUBACS BASIC	Oct 83	Dec 83
(U) DSARC II Approve Full Scale Development SUBACS A and Design Definition of B	Sep 85	Cancelled CH-1
(U) SSN 751 Delivery	Jun 88	Nov 87
(U) DSARC II AN/BSY-1 Program Review	Oct 86	Oct 86
(U) DSARC II AN/BSY-1 Program Review	Oct 87	Oct 87
(U) Start TECH/OPEVAL AN/BSY-1	Jan 89	Jan 89 CH-1
(U) DSARC III Review of TECH/OPEVAL Results	Oct 89	Oct 89 CH-1
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b. (U) Explanation of Changes. Change 1 reflects Replan III for the AN/BSY-1.

c. (U) References.

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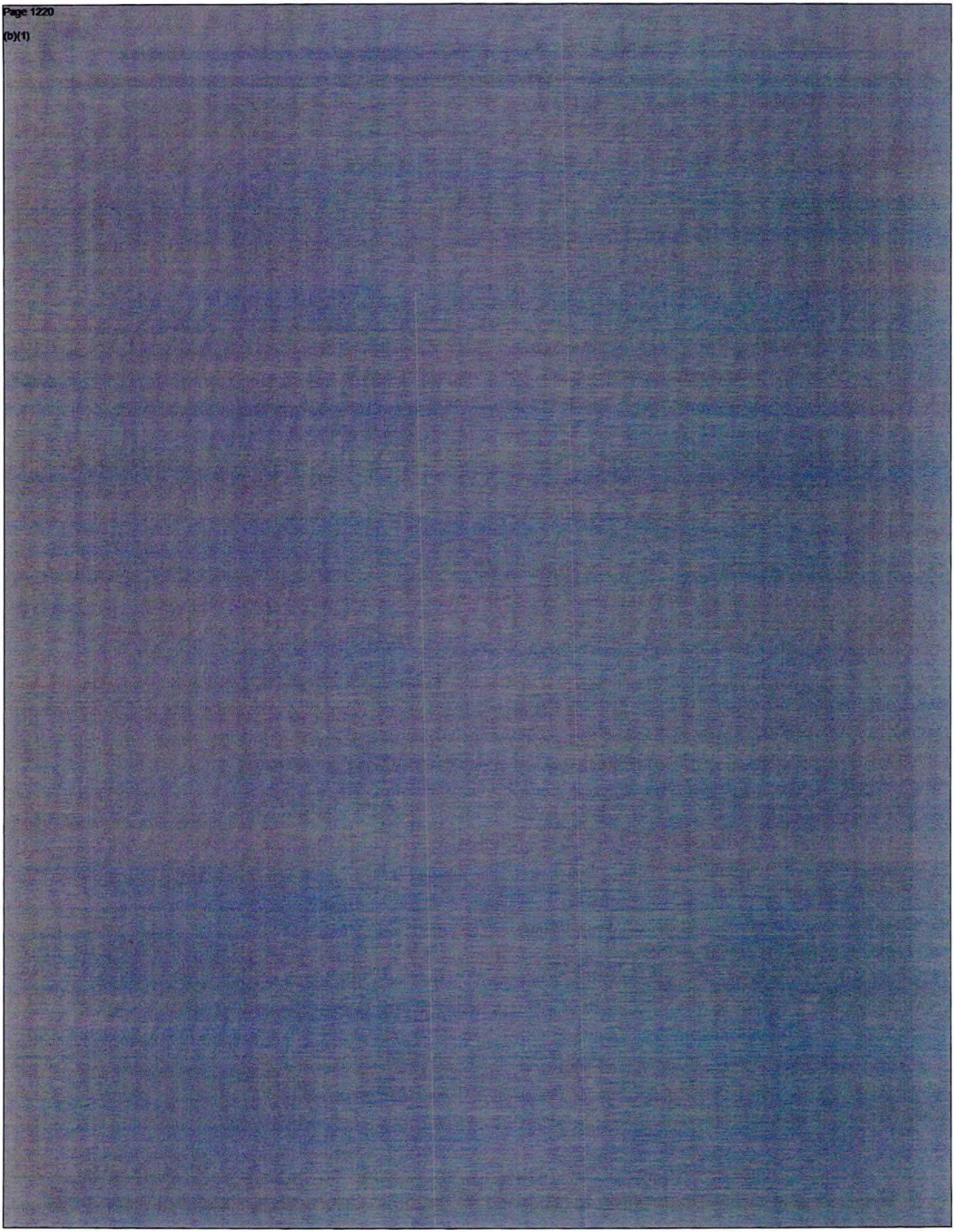

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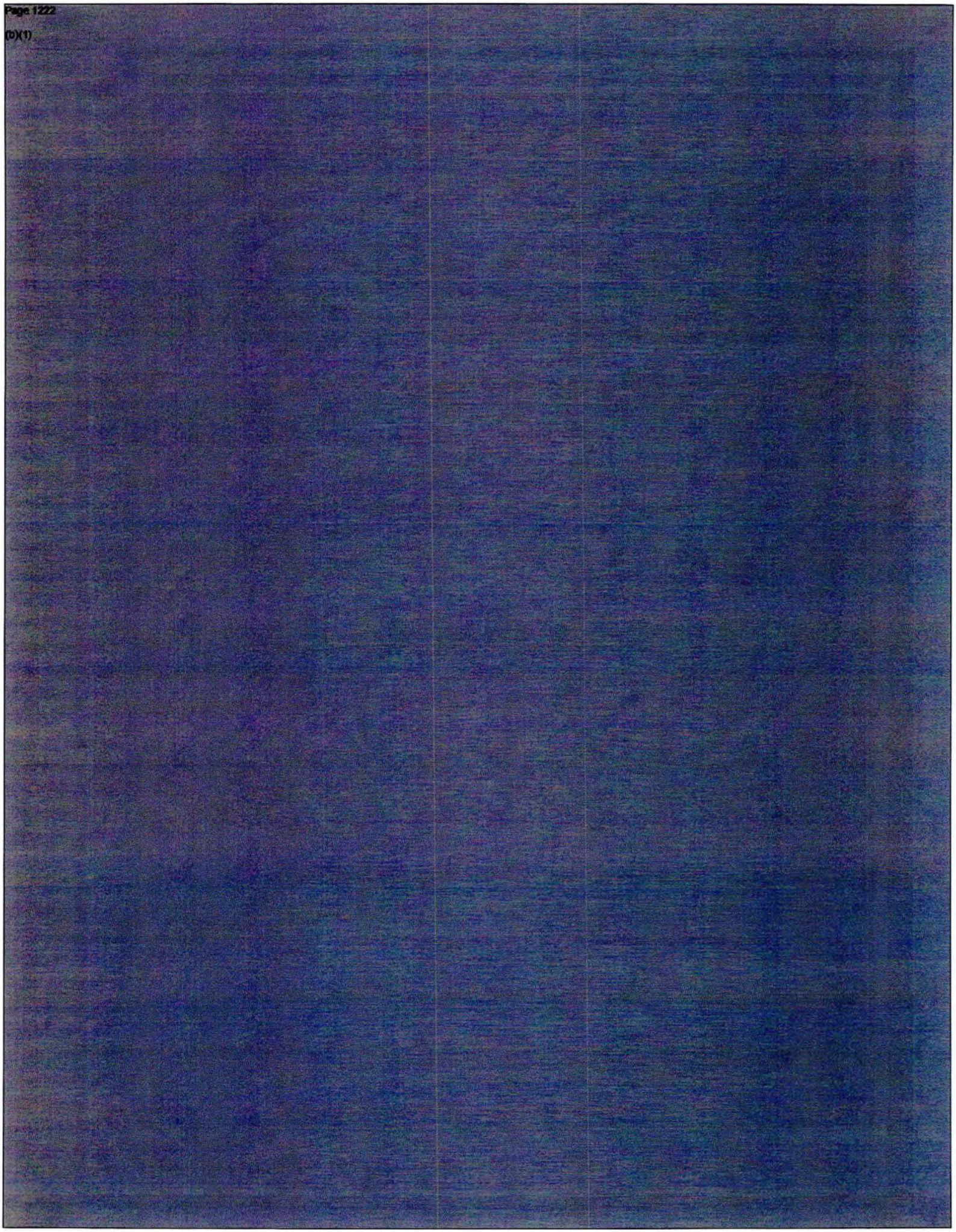

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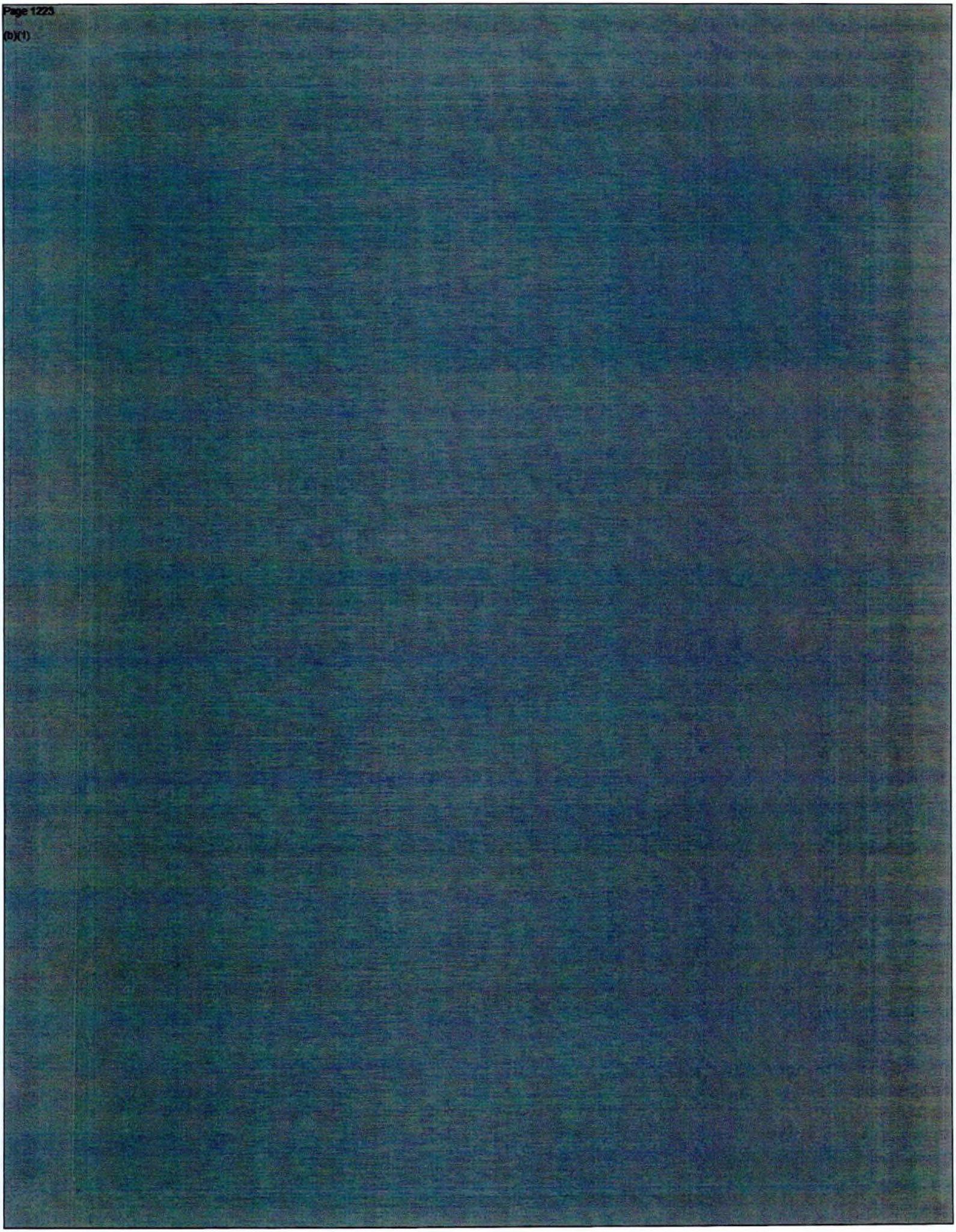

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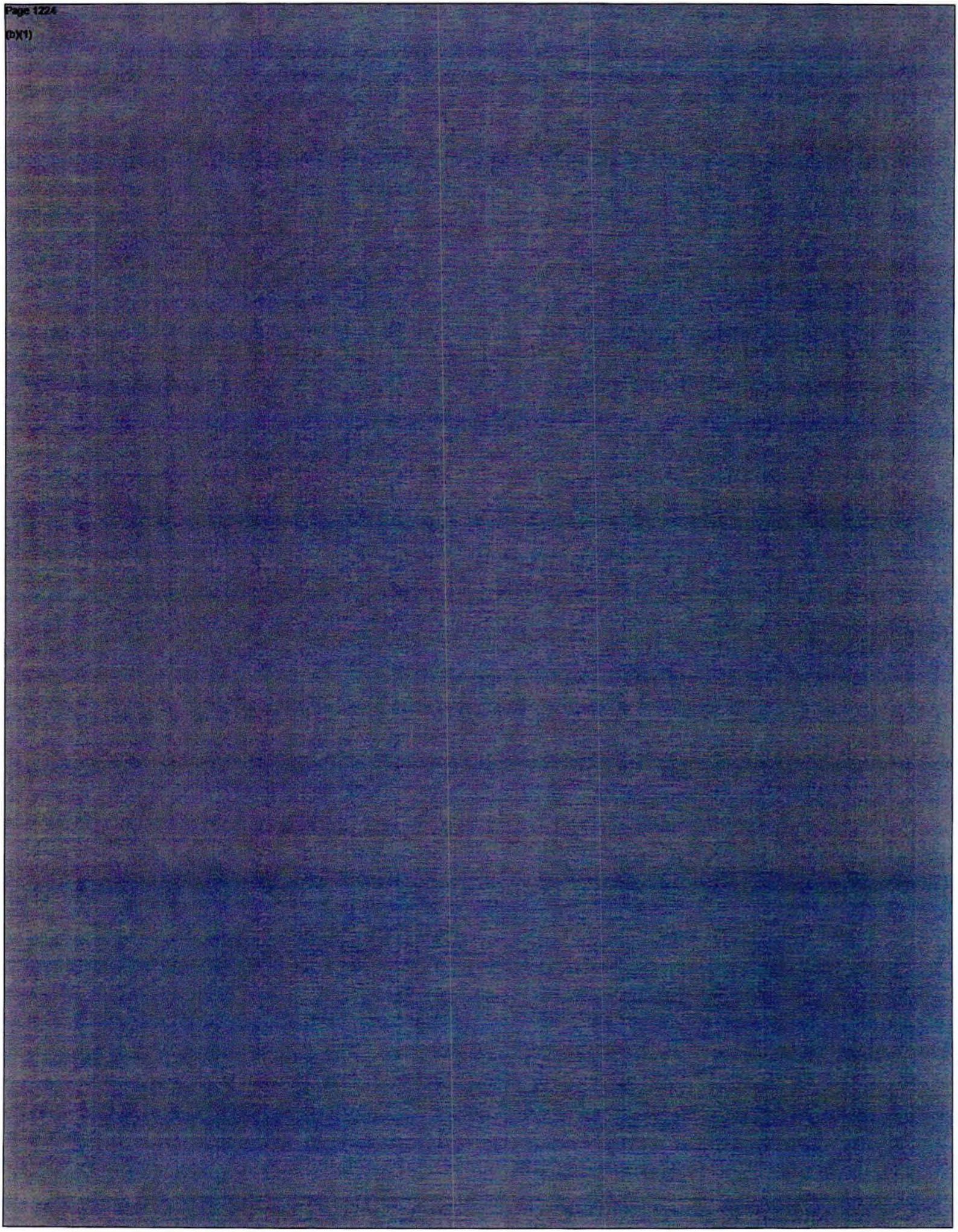

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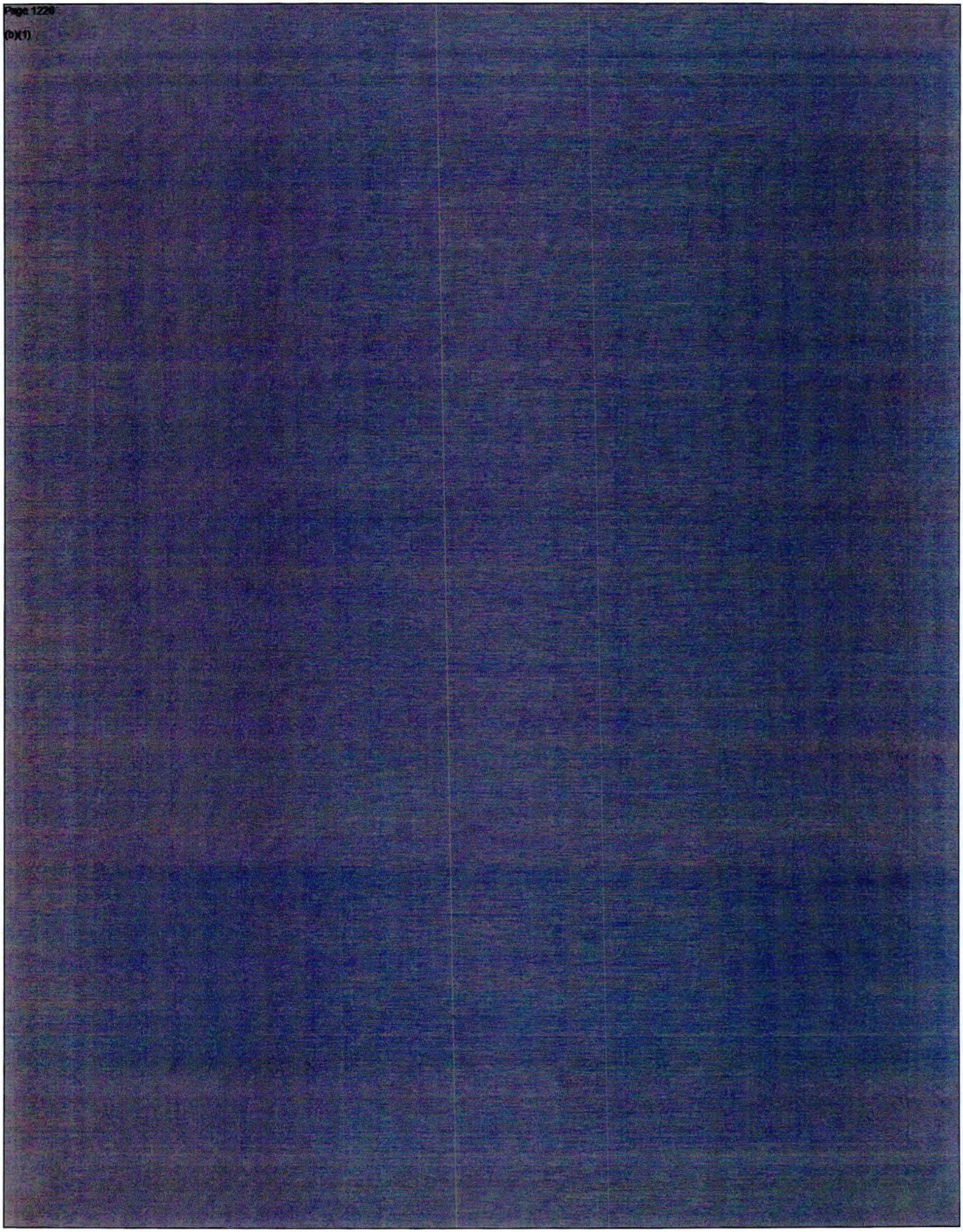

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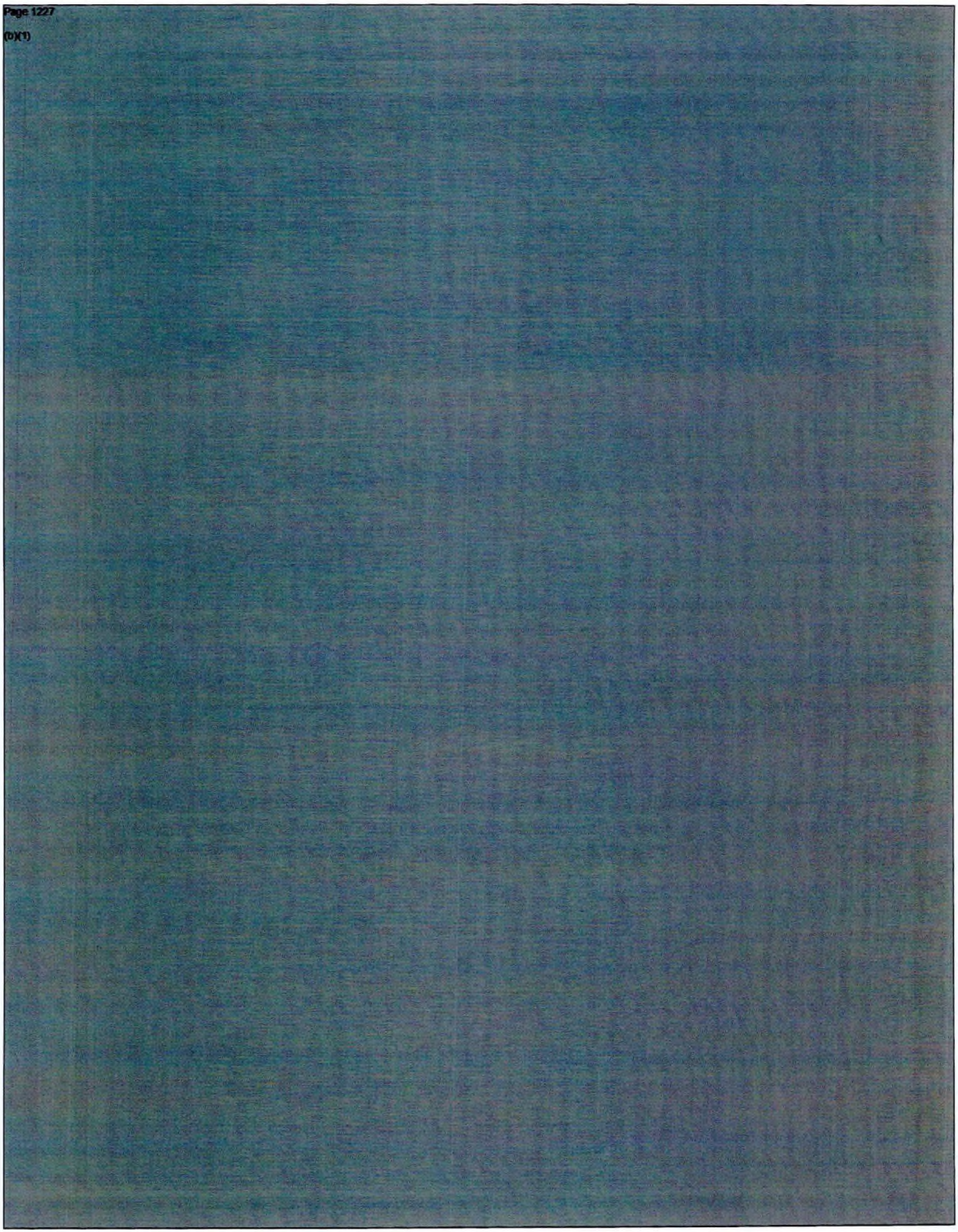

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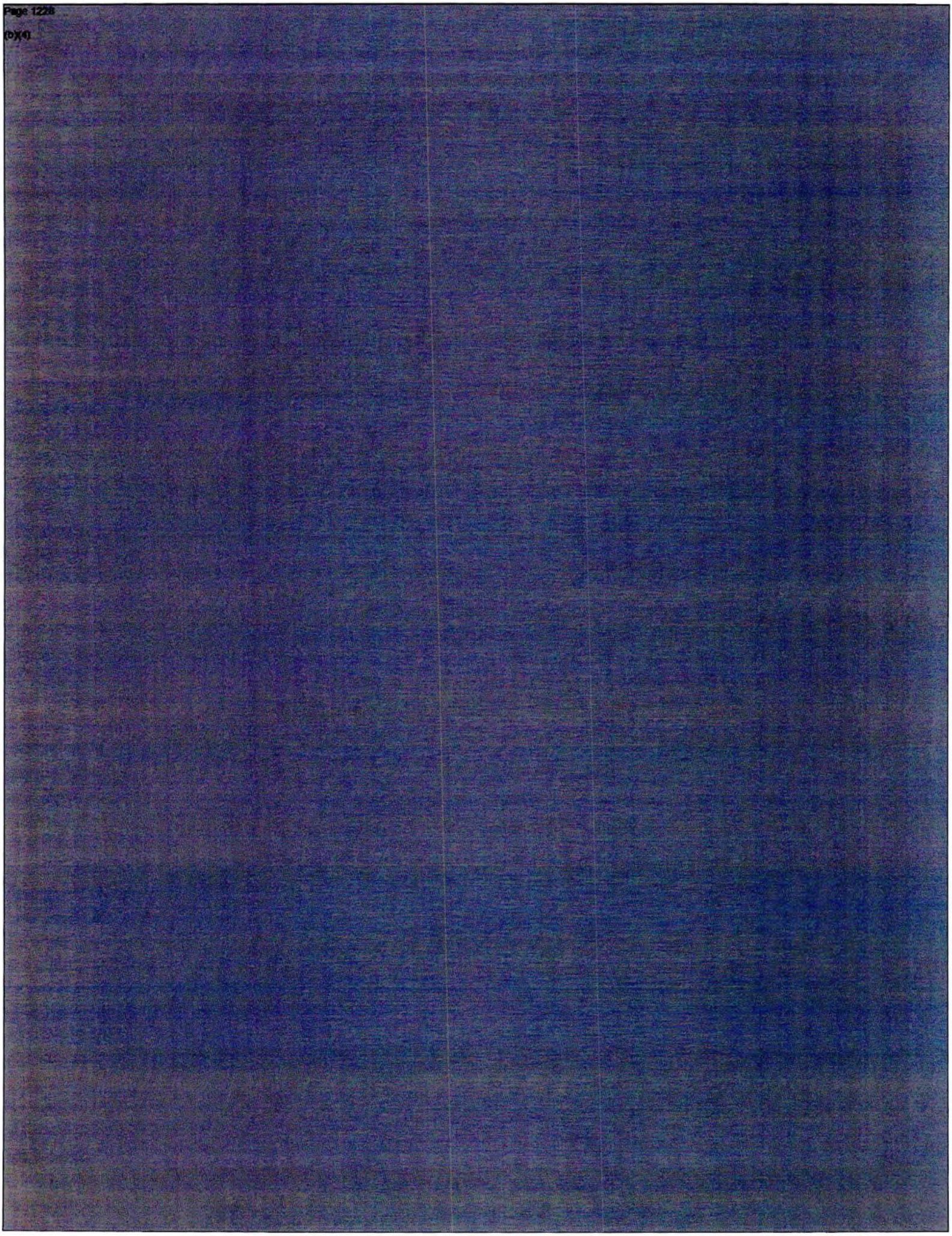


12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

		(FY 1986) Current Year		(FY 1987) Budget Year
		SAR Current	UCR Baseline	UCR Baseline
a.	Program Acquisition	Estimate	Estimate	Estimate
	(1) Cost	1516.1	1516.1	1525.1
	(2) Quantity	N/A	N/A	N/A
	(3) Unit Cost	N/A	N/A	N/A
b.	Current Procurement	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	N/A	N/A	N/A
	Less CY Adv Proc	N/A	N/A	N/A
	Plus PY Adv Proc	N/A	N/A	N/A
	Net Total	N/A	N/A	N/A
	(2) Quantity	N/A	N/A	N/A
	(3) Unit Cost	N/A	N/A	N/A

Note:

Not Applicable. Production systems for new construction ships are procured under SCN appropriation and are included in the SSN 688 report.

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate	2346.9	1480.7	-	3827.6
Previous Changes:				
Economic	- 27.8	- 35.2	-	- 63.0
Quantity	-	-	-	-
Schedule	-	+ 9.5	-	+ 9.5
Engineering	+ 7.9	+ 1.1	-	+ 9.0
Estimating	+ 7.2	+ 51.8	-	+ 59.0
Other	-	-	-	-
Support	-	+ 89.5	-	+ 89.5
Subtotal	- 12.7	+ 116.7	-	+ 104.0
Apportioned to:				
FY89 Combat System	1050.9	1586.7		2637.6
AN/BSY-1	1283.3	10.7		1294.0

Current AN/BSY-1 Changes				
Economic	- 8.9	- 0.2	-	- 9.1
Quantity	- 62.1	-	-	- 62.1
Schedule	+ 15.5	-	-	+ 15.5
Engineering	+ 18.9	-	-	+ 18.9
Estimating	- 38.2	-	-	- 38.2
Other	-1050.9	-1586.7	-	-2637.6
Support	-	+ 297.1	-	+ 297.1
Subtotal	-1125.7	-1289.8	-	-2415.5
Total Changes	-1138.4	-1173.1	-	-2311.5
Current AN/BSY-1 Estimate	1208.5	307.6	-	1516.1

13. Cost Variance Analysis: (Cont'd)

(FY 1984 Constant Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate	2027.5	944.9	-	2972.4
Previous Changes:				
Economic		-	-	-
Quantity	-	-	-	-
Schedule	-	+ 12.4	-	+ 12.4
Engineering	+ 7.0	+ 0.8	-	+ 7.8
Estimating	+ 8.5	+ 32.7	-	+ 41.2
Other	-	-	-	
Support	-	+ 69.6	-	+ 69.6
Subtotal	+ 15.5	+ 115.5	-	+ 131.0
Apportioned to:				
FY89 Combat System	866.5	1051.5		1918.0
AN/BSY-1	1176.5	8.9		1185.4
Current Changes:				
Economic	-	-	-	-
Quantity	- 57.0	-	-	- 57.0
Schedule	+ 13.2	-	-	+ 13.2
Engineering	+ 15.6	-	-	+ 15.6
Estimating	- 24.6	-	-	- 24.6
Other	-866.5	-1051.5	-	-1918.0
Support	-	+ 240.0	-	+ 240.0
Subtotal	-919.3	- 811.5	-	-1730.8
Total Changes	-903.8	- 696.0	-	-1599.8
Current Estimate	1123.7	248.9	-	1372.6

13. Cost Variance Analysis: (Cont'd)

b. Previous Change Explanations

RDT&E

Economic: Revised Escalation Indicies

Procurement

Economic: Revised Escalation Indicies
Schedule: Change of backfit equipment and earlier deliveries to meet accelerated ship building schedule.
Engineering: Configuration changes to enhance capability.
Estimating: Estimaging changes.
Support: Definition of support requirements for trainers and spares.

c. Current Change Explanations

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
o Revised Jan 86 economic escalation rates. (Economic)	-	- 8.9
o EDM and LBTS removed from the program. (Quantity)	- 57.0	- 62.1
o Rephasing of the development of three chasis and of the delivery of Software boots to 5/78, 9/87 and 9/88. (Schedule)	+ 13.2	+ 15.5
o Known ECPs to TG, HFT and CC/A; proposed changes to repair BOA; AN/UYK-43 rearchitecture; revised OPEVAL/TECHEVAL support. (Engineering)	+ 15.6	+ 18.9

13. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E (Cont'd)		
o Changes to system support; HFT and TG funding profile adjustment; CC/A, TG, HFT overrun projections; software growth; BOT and WLSOT cost growth. $2.1M correction from previous SAR for administrative effort. (Estimating)	- 24.6	- 38.2
o Separation of the AN/BSY-1 and FY89 Combat System programs. (other)	- 866.5	-1050.9
(2) Procurement		
o Revised Jan 86 economic escalation rates. (Economic)	-	- 70.2
o Separation of the AN/BSY-1 and FY89 Combat System programs. (Other)	-1051.5	-1586.7
o Better definition of support requirements (trainers and spares).	+ 240.0	+ 297.1

d. References -- SDDM, dated October 5, 1983, subject "Submarine Advanced Combat System (SUBACS) DSARC I/IIA Decision Memorandum."

14. Program Acquisition Unit Cost (PAUC) History:*

a. Initial SAR Estimate to Current Baseline Estimate N/A

b. Current Baseline Estimate to Current Estimate N/A

*Not Applicable. Production systems for new construction ships are procured under SCN appropriation and are included in the SSN 688 report.

15. Contract Information: (Dollars in Millions)

a. RDT&E --

AN/BSY-1:	Initial Contract Price Target	Ceiling	Qty
IBM Corp., Manassas, VA, N00024-83-C-6083, CPAF,	$89.0	N/A	3

Award: December 2, 1982 (CC/A Mod awarded December 22, 1983)
Definitized: December 2, 1982 (CC/A Mod definitized December 22, 1983)

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$1348.3	N/A	10	$1348.3	$1348.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-27.6	$-29.5
Cumulative Variances To Date (10/18/85)	$-77.1	$-72.6
Net Change	$-49.5	$-43.1

Explanation of Change: IBM's unfavorable net change in the cost and schedule variances is largely due to the replanning and restructuring of the program. The cost and schedule variances reported above reflect the old performance measurement baseline. The new baseline is expected to be in place by February 1986. The program manager's assessment is within approved funding.

SADS TG:	Initial Contract Price Target	Ceiling	Qty
Raytheon Co., Portsmouth, RI, N00024-81-C-6236, CPAF,	$54.2	N/A	3

Award: June 30, 1981
Definitized: June 30, 1981

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$126.2	N/A	6	$129.5	$130.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-4.0	$-4.1
Cumulative Variances To Date (10/27/85)	$-7.7	$-1.0
Net Change	$-3.7	$+3.1

15. Contract Information (Cont'd): (Dollars in Millions)

Explanation of Change: Raytheon's unfavorable net change in the cost variance is largely due to engineering changes beyond those anticipated causing the ECO/ECN to exceed plan; delays in the delivery of fully developed and usable 68KOS software; increased costs for Sonar Transmitter Unit Format D module material due to design complexity; and technical difficulties experienced during the test of Modular Power Amplifiers. The favorable net change in the schedule variance is largely due to proficiency in printed wiring board assembly; completion of milestones for the Primary Power/Transmit Control Unit; and receipt of overdue material for the Sonar Transmitter Unit. The program manager's assessment is within approved funding.

HF Transmitter:	Initial Contract Price		
	Target	Ceiling	Qty
Raytheon Co., Portsmouth, RI, N00024-80-C-6066, CPAF, Award: June 20, 1980 Definitized: June 20, 1980	$7.9	N/A	3

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$26.2	N/A	7	$26.2	$26.2

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

Explanation of Change: This contract does not require a contractor Cost Performance Report (CPR) or a Cost/Schedule Status Report (C/SSR), therefore, cost and schedule variances are not applicable.

b. Procurement — N/A

c. MILCON — N/A

16. Program Funding Summary:

a. Program Status--

(1) Percent Program Completed: 55% (6/11)

(2) Percent Program Cost Appropriated: 49% (742.8/1516.1)

b. Appropriation Summary

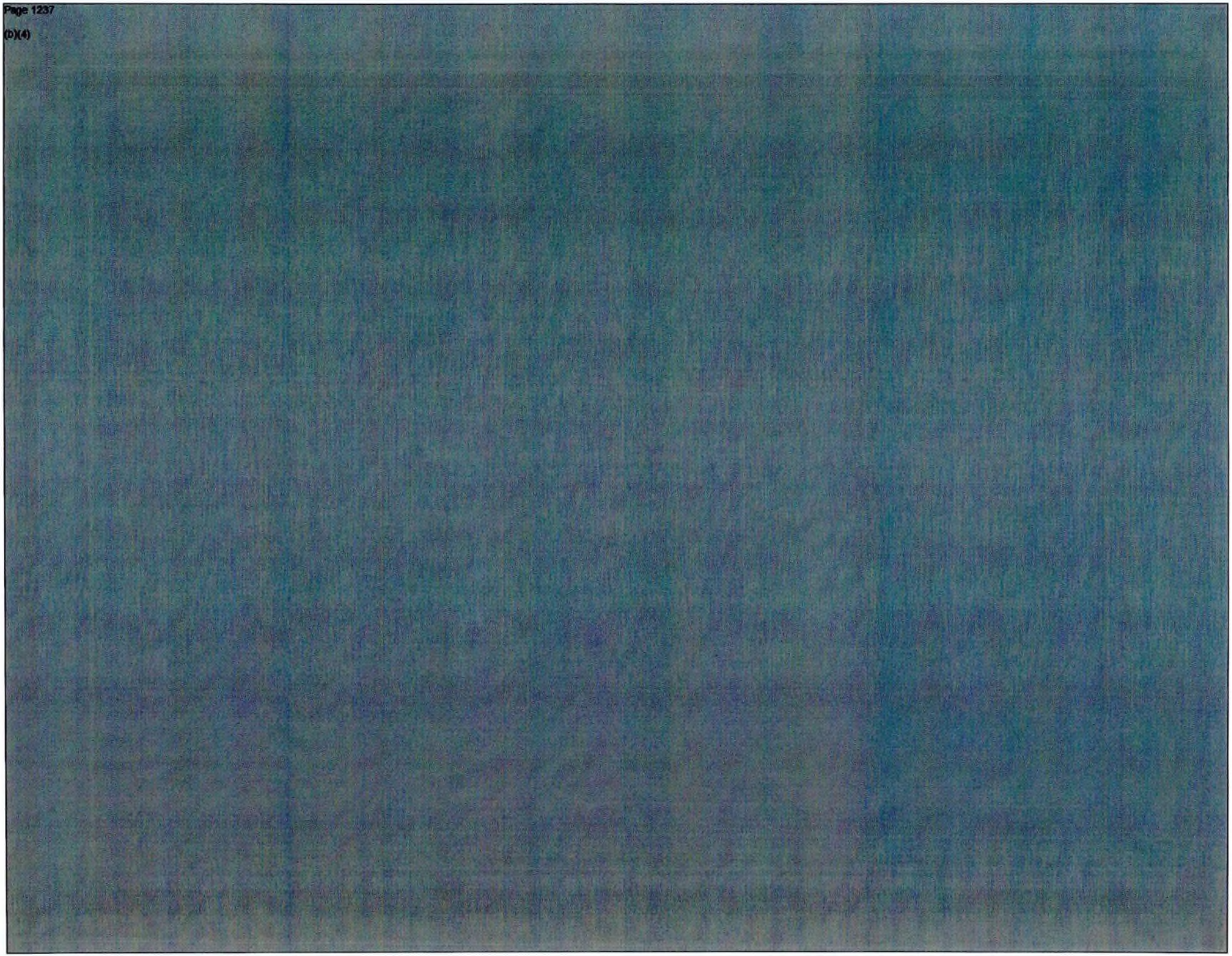
THEN YEAR $M

Appropriation	Current and Prior Years (FY81-FY86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-FY91)	Balance to Complete Beyond FYDP (FY92-FY)	Total
RDT&E	741.7	209.5	257.3	---	1208.5
Procurement	1.1	72.9	224.8	8.8	307.6
MILCON	---	---	---	---	---
(1) Total	742.8	282.4	482.1	8.8	1516.1

(1)

The Current Estimate is the estimated cost of the AN/BSY-1 Program. The SSN 21 Combat System funding contained in the FYDP is: 1985, 11.4M; 1986, 16.4M; 1987, 113.5M; 1988, 141.5M; 1989, 283.4M; 1990, 230.7M; 1991, 258.8M (PE 64524N, S1941); (PE 64520N, S0198) (then year dollars). This funding is not reflected in AN/BSY-1 funding as it is a separate system. A SAR will be initiated following milestone I decision, currently scheduled for 1986.

(b)(4)



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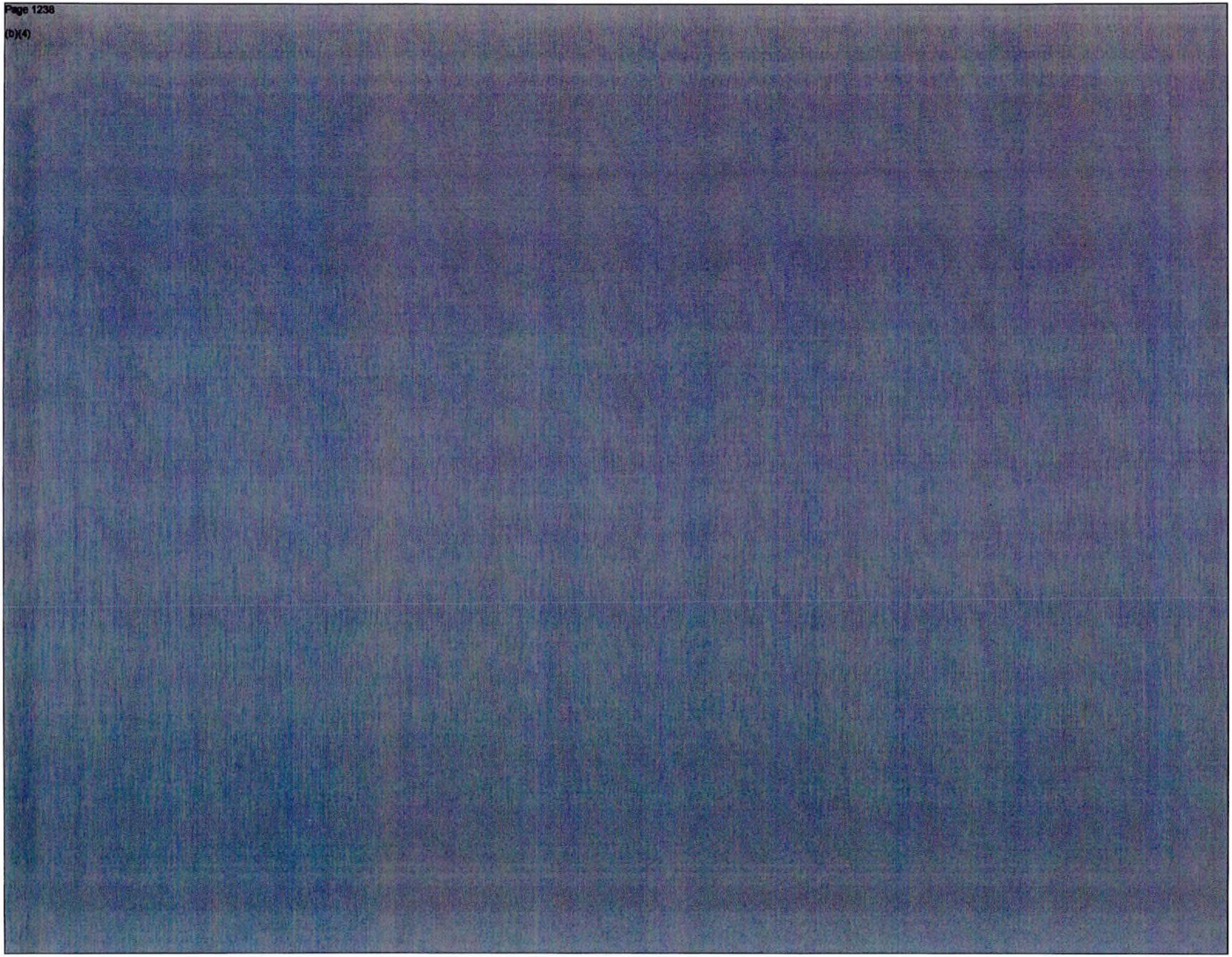

DELIVERIES (PLANNED AND ACTUAL) AND ASSOCIATED VARIANCE ANALYSIS
SYSTEM: AN/BSY-1

Production Systems for new construction ships are procured under the SCN appropriation and are reported in the SSN SAR. Only support equipment procurement is reported in this SAR.

23

A-22 TOW 2

~~CONFIDENTIAL~~

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

PROGRAM: TOW 2

85-017

AS OF DATE: December 31, 1985

INDEX

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1.(U) Designation and Nomenclature (Popular Name): M220E4, Heavy Anti-tank/ Assault Weapon System (TOW 2)

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

3.(U) Responsible Office and Telephone Number:

TOW Project Office
U.S. Army Missile Command
Redstone Arsenal, AL

PM: COL James B. Lincoln
Assigned: April 30, 1984
AUTOVON 746-7194

4.(U) Program Elements:

RDT&E: 237244
PROCUREMENT: APPN 2032, SSN C59300, CA0253, CA0258
APPN 2035, SSN BL5295, K42500

5.(U) Related Programs:

Not Applicable

CLEARED
FOR OPEN PUBLICATION

MAR 21 1986 5

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

AS AMENDED pp 3, 9
para markings throughout

~~CLASSIFIED BY: TOW Security Classification Guide~~
~~Dated: 17 Sep 84~~
~~DECLASSIFY ON: 31 Dec 87~~

Concur in Classification as marked

18 MAR 1986

Enrique Eftimiu
SECURITY REVIEW, OASD, PA

86-0731 ~~CONFIDENTIAL~~

6.(U) Mission and Description:

The TOW 2 system is an upgrading of the Basic TOW System necessitated by an existing and postulated future threat. The Basic TOW (tube-launched, optically tracked, wire-guided) System is a crew-portable, heavy anti-tank, assault weapon designed to attack and defeat armored vehicles and other targets such as field fortifications. Concurrent with lethality improvements, the TOW 2 System hardens against obscurants and electro-optical countermeasures.

7.(U) Program Highlights (Since Last Report):

a.(U) Significant Historical Developments --

The FY85 missile production contract, exercised as an option to the FY83/FY84 contract DAAH01-83-C-0212 on 11 Jan 85, included 15,839 TOW 2 missiles for the U.S. Army and the U.S. Marine Corps. All restart issues were resolved and new assembly/production resumed operation on schedule. Following extended testing, the first lot of TOW 2 missiles produced under restart procedures was accepted by the government on 26 April 1985. Twenty-six firings resulted in twenty-six successes. Because of this production restart milestone completion, the Air Force Plant Representative Office, Tucson, resumed 100 percent progress payments to Hughes Aircraft Company(HAC), Tucson.

The two night sight mobilization producers (Texas Instruments, Inc. and Kollsman Instruments Company) continued to work towards the initial deliveries of FY84 procurement quantities in 2nd Quarter FY86. The Texas Instruments, Inc. contract is for the optically improved AN/TAS-4A with Block I (now designated AN/TAS-4C). Kollsman Instruments, Co. will deliver AN/TAS-4A's, transitioning into the AN/TAS-4C in the FY86 procurement. A split-buy limited competition is planned for the FY86 procurement quantities.

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

The TOW 2B Improvement Program was approved by the Vice Chief of Staff, Army, (VCSA) in May 1985 as a lethality improvement beyond the TOW 2A Enhanced Warhead Program to counter threat evolution. Based upon VCSA direction the FY86 - FY89 RDT&E Program was structured to incorporate $57M for the TOW 2B Program with shortfalls still remaining in budget guidance.

c.(U) Changes Since "As of" Date -- None.

8.(U) Decision Coordinating Paper (DCP) Threshold Breaches: None.

9.(U) Schedule:

a.(U) Milestones	Production Estimate/ Approved Program	Current Estimate
Program Go-ahead	Sep 78	Sep 78
R&D Contract Award	Dec 78	Dec 78
TOW 2 IPR	Sep 81	Sep 81
1st TOW 2 Production Contract	Dec 81	Dec 81
FUED	Jul 83	Jul 83
IOC	Sep 83	Oct 83

b.(U) Explanation of Changes - None.

c.(U) Reference - Production IPR approved by HQDA Message, DAMA-WSM-S, dated 9 Oct 1981.
(U) Approved Program: FY 1987 President's Budget.

10.(U) Technical/Operational Characteristics:

a.(U) Technical	Production Estimate/ Approved Program	Demonstrated Performance	Current Estimate
1.(U) System Ready to Fire Ground Mount System Weight (lbs) (Launcher in Tripod & 1 Missile)	276	276	276
2.(U) a.(U) Missile Weight (in lbs.) (Tactical missile in Container)	63.4	63.4	63.4
b.(U) Launcher Weight (in lbs.)	216	216	216
b.(U) Operational			
1.(U) Range (meters)			
a.(U) Minimum	65 M	65 M	65 M
b.(U) Maximum	3.75 KM	3.75 KM	3.75KM
2.(U) System Reliability (%)	91.6	91.6	91.6

(b)(1)

10.(U) Technical/Operational Characteristics (cont):

c. Explanation of Changes (U) -- None.

d. (U) Reference

Production Estimate: Production IPR approved by HQDA Message, DAMA-WSM-S, dated 9 Oct 1981.

Approved Program: FY 1987 President's Budget.

11.(U) Program Acquisition Cost:

	(1) Production Estimate/ Approved Program (FY78-89)	(2) Changes	(3) Current Estimate (FY78-89)
a.(U) Cost --			
Development 1	107.0	+ 48.2	155.2
Procurement 2	2,195.1	+ 28.1	2223.2
Heat Missile	1,299.3	- 97.1	1202.2
Launcher	7.0	- 7.0	-0-
AN/TAS 4/4A Night Sight	363.2	- 77.3	285.9
Ground Supt Retrofit	325.8	+207.7	533.5
Night Sight Retrofit	26.1	- 12.8	13.3
Total Flyaway	2,021.4	+ 13.5	2034.9
Training Missile	28.1	- 28.1	-0-
Other Ground Supt. Equip.	75.2	- 17.9	57.3
SURGE 3/	48.9	- 2.2	46.7
Total Other Wpn Sys	152.2	- 48.2	104.0
Initial Spares	21.5	+ 62.8	84.3
Total: constant FY84$	2,302.1	+ 76.3	2378.4
Escalation	321.7	- 69.0	252.7
Development	-15.7	+ 7.3	- 8.4
Procurement	337.4	- 76.3	261.1
Construction	0		0
Total Program Cost	2,623.8	+ 7.3	2631.1
b.(U) Quantities --			
Development (RDT&E)	113	-0-	113
Procurement	141,224	-12,641	128,583
Total	141,337	-12,641	128,696
c.(U) Unit Cost --			
Procurement:			
FY84 Base-Year $	.015	.001	.017
Then-Year $	.018	.001	.019
Program:			
FY84 Base-Year $	.016	.003	.018
Then-Year $	.019	.001	.020

d.(U) Approved Design to Cost Goal -- None.

e.(U) Foreign Military Sales -- Sales to date include 812 missiles for Canada for $9.7 million, 508 missiles for Sweden for $5.6 million and minor sales to Germany ($.3 million) and Switzerland ($3.5 million) for evaluation of the TOW 2 system. Procurement of TOW 2 material from the Special Defense Acquisition Fund (SDAF) total 5,330 TOW 2 missiles ($54 million), 65 launchers ($7 million), and 154 launcher retrofit kits ($5 million).

f.(U) Nuclear Costs -- None.

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

(Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.(U) Program Acquisiton			
(1) Cost	2631.1	2705.2	2631.1
(2) Quantity	128,696	133,096	128,696
(3) Unit Cost	.020	.020	.020
b. Current Procurement	(FY86)	(FY86)	(FY87)
(1) Cost	218.6	306.9	216.5
Less CY Adv Proc	22.3	22.0	15.7
Plus PY Adv Proc	16.4	(CH-1)16.2	22.3
Net Total	212.7	301.1	223.1
(2) Quantity	12,700	20,100	12,000
(3) Unit Cost	.017	(CH-1) .015	.019

c. Previous Change Explanations -- None.

d. Current Change Explanations -- (CH-1) Prior year Advanced Procurement was erroneously excluded from Budget year column in Dec 84 SAR.

13.(U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate (PdE)	$91.3	$2532.5	-0-	2623.8
Previous Changes:				
Economic	- 0.2	- 3.4	-	- 3.6
Quantity	-	-107.8	-	-107.8
Schedule	-	+ 42.8	-	+ 42.8
Engineering	+ 5.5	+195.9	-	+201.4
Estimating	-	-199.9	-	-199.9
Other	-	-	-	-
Support	-	+148.5	-	+148.5
Subtotal	+ 5.3	+ 76.1	-0-	+ 81.4

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

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

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate (PdE)	$91.3	$2532.5	-0-	2623.8
Current Changes:				
Economic	- 0.2	-101.2	-	-101.4
Quantity	-	- 58.2	-	- 58.2
Schedule	-	+ 42.8	-	+ 42.8
Engineering	+50.4	+ 55.7	-	+106.1
Estimating	-	+ 48.5	-	+ 48.5
Other	-	-	-	-
Support	-	-111.9	-	-111.9
Subtotal	+50.2	-124.3	-0-	- 74.1
Total Changes	+55.5	- 48.2	-0-	+ 7.3
Current Estimate	146.8	2484.3	-0-	2631.1

(FY 1984 Constant (Base-Year Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	$107.0	2195.1	-0-	2302.1
Previous Changes:				
Quantity	-	- 71.5	-	- 71.5
Schedule	-	+ 8.0	-	+ 8.0
Engineering	+ 5.2	+147.0	-	+152.2
Estimating	-	-156.4	-	-156.4
Other	-	-	-	-
Support	-	+102.7	-	+102.7
Subtotal	+ 5.2	+ 29.8	-0-	+ 35.0
Current Changes:				
Quantity	-	- 42.7	-	- 42.7
Schedule	-	+ 18.6	-	+ 18.6
Engineering	+43.0	+ 44.9	-	+ 87.9
Estimating	-	+ 63.0	-	+ 63.0
Other	-	-	-	-
Support	-	- 85.5	-	- 85.5
Subtotal	+47.0	- 1.7	-0-	+ 45.3
Total Changes	+48.2	+ 28.1	-0-	+ 76.3
Current Estimate	155.2	2223.2	-0-	2378.4

b.(U) Previous Change Explanations --

(1) RDT&E

Economic: revised escalation indices
Engineering: Enhancement to TOW 2 Warhead

(2) Procurement

Economic: revised escalation indices
Quantity: reduction of TOW 2 Missile quantity
Schedule: stretch-out of missile procurements
Engineering: funding of approved PIPs
Estimating: changes in Night Sight Acquisition Strategy
Support: Increase in requirement for training missiles

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

c.(U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) (U) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)		- 0.2
° VCSA-approved development of a Lethality Improvement to TOW 2 Missile. (Engineering)	+ 43.0	+ 50.4
(2) (U) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-101.2
° Reduction of 4,400 TOW 2 missiles from the Procurement Plan (Quantity).	- 42.7	- 58.2
° Slip in production schedule; revised APR for 4,400 missile reduction. (Schedule)	+ 18.6	+ 42.8
° Approved missile improvements (optics). (Engineering)	+ 44.9	+ 55.7
° Changes in Night Sight acquisition strategy; Application of Historical Deflators to program funding. (Estimating)	+ 63.0	+ 48.5
° Reduced requirement for training missiles. (Support)	- 85.5	-111.9
(3) (U) MILCON	N/A	N/A

d.(U) References --

Production Estimate: Production IPR approved by HQDA Message, DAMA-WSM-5, dated 9 Oct 1981.

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

(U) Initial SAR Estimate to Current Estimate —

PAUC	Changes								PAUC (CURRENT ESTIMATE)
Estimate	ECON	QTY	SCH	ENGR	EST	SPT	OTHER	TOTAL	
.019	-.001	+.001	-0-	+.001	+.001	-.001	-0-	+.001	.020

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

a.(U) RDT&E: None.

b.(U) Procurement -

TOW Subsystem (FY83/84)
Hughes Aircraft Co., El Segundo, CA
DAAH01-81-G-2010/2000, FFP 1/
Award: 30 Dec 82
Definitized: 2 Mar 84

Initial Contract Price

Target	Ceiling	Qty
$ 262.5	N/A	1200

Current Contract Price

Target	Ceiling	Qty
$ 262.5	N/A	1200

Estimated Price at Completion

Contractor	Program Manager
$ 262.5	$262.5

TOW Missiles (FY83-85)
Hughes Aircraft Co., Tucson, AZ
DAAH01-83-C-0212, FPE
Award: 21 Dec 82
Definitized: N/A

Initial Contract Price

Target	Ceiling	Qty
$ 1.0 2/	N/A	14,315

Current Contract Price

Target	Ceiling	Qty
$ 508.1	N/A	57,668 4/

Estimated Price at Completion

Contractor	Program Manager
$ 508.1	$508.1

TOW 2 Retrofit Kits and Affiliated Test Sets (FY83-86
Texas Instruments, Inc., Dallas, TX
DAAH01-83-C-1038, FFP
Award: 14 Jan 83
Definitized: N/A

Initial Contract Price

Target	Ceiling	Qty
$ 64.2	N/A	Variou

Current Contract Price

Target	Ceiling	Qty
$ 64.2	N/A	Various

Estimated Price at Completion

Contractor	Program Manager
$ 64.2	$ 64.2

1/ Contract transferred from AMCCOM Apr 85.
2/ LLI
3/ Includes USMC 1,000 - Payback 1,315.
4/ Includes USMC 7,022 - SDAF 3,200 - Payback 1385 - FMS 2,638 (Basic), 16,260 (ITOW) and 1,870 (TOW 2)

15.(U) Contract Information (Cont):

TOW Subsystem/TOW 2 Subsystem (FY85)
Hughes Aircraft Co., El Segundo, CA
DAAH01-84-C-A081, FFP
Award: 22 May 85
Definitized: TBD

Initial Contract Price

Target	Ceiling	Qty
$ 310.4	N/A	655

Current Contract Price

Target	Ceiling	Qty
$ 310.4	N/A	655

Estimated Price at Completion

Contractor	Program Manager
$ 310.4	$310.4

Night Vision Sets (AN/UAS-12A)
Kollsman Instrument Co., Nashua, NH
DAAH01-84-C-0577, FFP
Award: 21 Sep 84
Definitized: 20 Mar 85

Initial Contract Price

Target	Ceiling	Qty
$ 41.1	N/A	~~775~~

Current Contract Price

Target	Ceiling	Qty
$ 41.1	N/A	775

AS AMENDED

Estimated Price at Completion

Contractor	Program Manager
$ 41.1	N/A ~~775~~ 41.1

Night Vision Sets (AN/UAS-12C/12D)
Texas Instruments, Inc., Dallas, TX
DAAH01-84-C-0750, FFP
Award: 21 Sep 84
Definitization: 15 May 85

Initial Contract Price

Target	Ceiling	Qty
$ 30.3	N/A	625

Current Contract Price

Target	Ceiling	Qty
$ 30.3	N/A	625

Estimated Price at Completion

Contractor	Program Manager
$ 30.3	N/A ~~625~~ 30.3

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

a.(U) Program Status --

(1)(U) Percent Program Completed: 64.3% (9 yrs/14 yrs)

(2)(U) Percent Program Cost Appropriated: 55.0% ($1263.1)

b.(U) Appropriation Summary --

Appropriation	Current & Prior Yrs (FY78-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP	TOTAL
	(Then-Year Dollars in Millions)				
RDT&E	100.5	12.5	33.8	-	146.8
Procurement	1353.5	216.5	914.3	-	2484.3
MILCON	-	-	-	-	-
TOTAL	1454.0	229.0	948.1	-	2631.1

16.(U) Program Funding Summary (Cont):

c.(U) Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
APPROPRIATION: RDT&E								
1978				8.1			5.3	11.06
1979	113			14.4			10.3	12.61
1980				32.5			25.7	11.42
1981				25.8			22.5	7.58
1982				6.5			6.1	7.60
1983				2.2			2.2	4.90
1984				4.7			4.8	3.80
1985				11.2			11.9	3.60
1986				10.6			11.7	3.20
1987				14.4			12.5	4.10
1988				16.3			18.9	3.90
1989				12.5			14.9	3.40
Subtotal	113			159.2			146.8	
APPROPRIATION: PROCUREMENT (MIPA: ACT II & ACT III)								
1981	3875		151.9	151.9			120.6	11.90
1982	10008		207.2	228.2			207.1	14.30
1983	12000		191.2	194.7			192.6	9.00
1984	18000		192.4	212.8			229.6	8.00
1985	12000		180.8	217.4			243.7	4.10
1986	12700		151.4	187.4	22.3	16.4	218.6	4.10
1987	12000		148.5	179.5	15.7	22.3	216.5	4.10
1988	12000		174.9	187.7			233.1	3.90
1989	12000		158.0	172.0			219.1	3.40
1990	12000		157.4	164.2			214.0	2.90
1991	12000		179.8	186.1			248.1	2.30
Subtotal	128583		1893.5	2081.9			2343.0	

16.(U) Program Funding Summary (Cont):

c.(U) Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
APPROPRIATION: OPA								
1981			30.5	30.5			27.8	11.90
1982			33.0	33.0			32.3	7.60
1983			44.1	44.1			45.3	4.90
1984			33.7	33.7			35.9	4.30
1985								
1986								
1987								
1988								
1989								
Subtotal			141.3	141.3			141.3	

d.(U) Obligations and Expenditures --

FISCAL YEAR	Then-Year Dollars (Current Estimate in Millions)		
	TOTAL	OBLIGATED	EXPENDED
APPROPRIATION: RDT&E			
1978	5.3	5.3	5.3
1979	10.3	10.3	10.3
1980	25.7	25.7	25.7
1981	22.5	22.5	22.5
1982	6.1	6.1	5.8
1983	2.2	2.2	2.2
1984	4.8	4.8	4.5
1985	11.9	11.9	2.8
1986	11.7	7.2	.2
TO COMPLETE	46.3	N/A	N/A
TOTAL	146.8	96.0	79.3
APPROPRIATION: MIPA			
1981	120.6	120.6	120.6
1982	207.1	205.5	191.9
1983	192.6	145.4	133.1
1984	229.6	190.5	154.1
1985	243.7	182.5	10.5
1986	218.6	1.4	-0-
TO COMPLETE	1130.8	N/A	N/A
TOTAL	2343.0	845.9	610.2

16.(U) Program Funding Summary (Cont):

APPROPRIATION: OPA

1981	27.8 1/	N/A	11.9
1982	32.3	N/A	7.6
1983	45.3	10.9	4.9
1984	35.9	30.4	4.3
TO COMPLETE	-0- 2/	N/A	N/A
TOTAL	141.3	41.3	14.9

1/ Executed by CECOM

2/ Transferred to MIPA effective FY85

17.(U) Production Rate Data:

a.(U) Annual Production Rate -- (NOTE: The annual production rates shown differ from the annual funded quantities because the funded delivery period is 6 mos for FY86 and 6 mos for FY87.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum Economic
1986	N/A	21,628	25,400 1/	30,000
1987	N/A	19,187	24,000	30,000
1988	N/A	16,441	12,000	30,000
1989	N/A	15,400	12,000	30,000
1990	N/A	15,100	12,000	30,000
1991	N/A	14,750	12,000	30,000

1/ Plant shut-down in Aug 84 resulted in stockpiled assets which were accepted with the resumption of production exceeding the normal maximum rate.

b.(U) Cost Variance -- Dollars in Millions (NOTE: Subject to limitations on production rates above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum Economic
Prog Acq Cost (BY $)	2,302.1	+76.3	2,378.4	- 304.6	2,683.2
(TY $)	2,623.8	+ 7.3	2,631.1	- 443.7	3,074.8
PAUC (BY $)	.016	+.002	.018		
(TY $)	.019	+.001	.020		

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

c.(U) Schedule Variance --

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum Economic
Start Date (Mo/Yr)	4/82	N/A	4/82	N/A	4/82
Duration (in Mos)	132	N/A	132	N/A	132
End Date (Mo/Yr)	3/93	N/A	3/93	N/A	3/93

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

	To Date
RDT&E	113/113
Procurement	54,701/28,315

18.(U) Operating and Support Costs: N/A

N-35 T45TS

SAR-85-052

CLASSIFIED

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A) 823)
PROGRAM: T45TS

AS OF DATE: December 31, 1985*

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Designation and Nomenclature: T45TS Navy Undergraduate Jet Flight Training System (GOSHAWK)

2. DoD Component: Department of the Navy

3. Office and Telephone Number:

Naval Air Systems Command
PMA-273, Rm. 844, JP-1
Washington, D.C. 20361-1273

Capt. B. C. Marshall
Assigned: June 14, 1985
AV 222-7392; COMM (202)692-7392

4. Program Elements/Procurement Line Items:

RDT&E: PE 63208N APPN 1319 Project No. W1142

PROCUREMENT: PE 84745N APPN 1506 ICN 0338
ICN 0348

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. Related Programs: Navy Aircrew Common Ejection Seat (NACES)

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OASD(PA) DPCISR 86-0884

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. A jet strike pilot training rate requirement of approximately 600 pilots annually is projected through the year 2000. The T-45 Training System (T45TS) is comprised of aircraft, simulators, academics, a training integration system (TIS), and contractor logistic support. The T-45A GOSHAWK aircraft is a derivative of the British Aerospace HAWK aircraft. The HAWK is a tandem seat aircraft powered by a single Rolls-Royce Adour turbofan engine. The T-45A is being adapted to provide the capability for carrier catapult and arrested landings and has an adapted engine, the F-405 (Rolls-Royce designation Adour Mk 861-49). The simulator suite includes both Instrument Flight Trainers (IFT) and Operational Flight Trainers (OFT). Academics include textbook materials, classroom aids and a computer-assisted instruction (CAI) system. The TIS utilizes existing hardware and software to provide planning, scheduling, and tracking of training events in order to achieve required training efficiency. Contractor logistic support has been structured to provide for future competition of maintenance support services to ensure that the system will be supported in the most cost effective manner. The T45TS will replace existing T-2C intermediate and TA-4J advanced jet trainer aircraft, simulators, and associated equipment.

7. Program Highlights:

a. Significant Historical Developments -- Development of the T45TS was initiated n 1975 when the Navy perceived that both the T-2B/C and TA-4J aircraft would need to be eplaced during the early 1990's due to age and attrition. As a result, a series of studies was conducted to confirm the feasibility of developing a single aircraft for both intermediate and advanced undergraduate jet pilot training. A Mission Element Need Statement (MENS) was approved in 1979. In August 1980, contracts were awarded for the development/definition of two training system alternatives - a system concept with a new design aircraft and one with an existing or derivative aircraft. In March 1981, a Request for Proposal (RFP) for Pre-Full Scale Development (Pre-FSD) was released and on 19 November 1981, the Navy announced the selection of Douglas Aircraft Company (DAC) as the winner of the competition to further develop the system based on a derivative variation of the British Aerospace HAWK aircraft. The Pre-FSD contract was awarded to DAC in September 1982 and in the same year the aircraft was formally designated the T-45A. Until November 1983, entry into FSD was based on a two phase acquisition strategy involving the initial production of 54 Field Carrier Landing Practice (Dry) T-45B aircraft and subsequent development and production of 251 carrier capable (Wet) T-45A aircraft. However, Congressional guidance in November, 1983 to procure only carrier capable aircraft resulted in a major redirection of the acquisition strategy and adjustments in planned costs and milestones.

A Secretary of Defense Decision Memorandum (SDDM), resulting from a successful DSARC Milestone I/II Review, was issued in October 1984 authorizing the T45TS program to enter full scale engineering development (FSED). A $9.5 million letter contract was signed on October 2, 1984 with the prime contractor, Douglas Aircraft Corporation, to initiate a firm-fixed price, incrementally funded contract for development of the system t a total cost of approximately $511.9 million (TY$) over a six year period.

7. Program Highlights (Cont'd):

b. Significant Developments Since Last Report -- After extensive negotiations, price agreement was reached in September 1985 on a firm-fixed price FSED contract of $511.9 million (TY$) which conforms with the ceiling price established by the Navy. The FSED contract also includes three limited production options for the procurement of 60 aircraft with associated ground training systems and logistic support hardware/software in FY 88 through FY 90. The $1,337 million not-to-exceed option price contains major contract terms and conditions such as flyaway cost containment, contractor tooling investment and expanded warranty protection provisions. Based on current projections, T45TS is expected to satisfy all mission requirements.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: Approved DCP of November 4, 1985 reflected flight design weight of 12,699 pounds. Subsequent definitization of FSED contract established weight at 12,758 lbs. OSD notified during PRE-DSARC briefing November 6, 1985.

9. Schedule:

a. Milestones --

	Planning Estimate/ Approved Program	Current Estimate
Program Initiated (Prelim Design Study)	Jul 75/Jul 75	Jul 75
Requirements Validation Study	Mar 78/Mar 78	Mar 78
Mission Element Need Statement (MENS) Approved	Jun 79/Jun 79	Jun 79
Request For Quotation (RFQ) For Concept Definition	Dec 79/Dec 79	Dec 79
Alternative System Exploration (ASE) Contract Award	Nov 80/Nov 80	Aug 80
Project Charter Approved	Aug 80/Aug 80	Aug 80
ASE Studies Completed	Mar 81/Mar 81	Mar 81
RFP For Demonstration/Validation (Pre-FSD)	Mar 81/Mar 81	Mar 81
Sustaining Engineering Contract Award	Nov 81/Nov 81	Nov 81
Demonstration/Validation Contract Award (Pre-FSD)	Sep 82/Sep 82	Sep 82
Program Redirection (All Carrier Qualified)	-- /Nov 83	Nov 83
Advanced Development Contract Award	-- /Jul 84	Jul 84
DSARC I/II	-- /Sep 84	Sep 84
FSED Letter Contract Award	Sep 84/Oct 84	Oct 84
T-45A First Flight	Jan 88/Dec 87	Dec 87
Complete Navy Technical Evaluation (NTE)	Jan 90/Sep 89	Sep 89
Complete OPEVAL	Jun 90/Mar 90	Mar 90
Initial Operational Capability (IOC)	May 91/1990	Sep 90 (Ch-1)
Milestone IIID - Authorized Full Production (AFP)	-- /Oct 90	Oct 90

b. Previous Change Explanations --

DSARC I/II was completed in September, 1984 and IOC redefined as delivery of the 12th production aircraft projected for October, 1990. Similarly, Milestone III D (AFP) was projected for October, 1990 based on the development schedule.

c. Current Change Explanations --

(Ch-1) IOC advanced one month to coincide with agreed delivery date of 12th production aircraft in accordance with production options contained in the FSED contract.

9. Schedule (Cont'd):

d. References --

Planning Estimate: Draft SCP of January, 1984.

Approved Program: FY 1987 President's Budget.

10. Technical/Operational Characteristiscs:

a. Technical --	Planning Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Wing Span (ft)	30.81/30.81	N/A	30.81
Length (ft)	39.26/39.26	N/A	39.26
Height (ft)	13.42/13.42	N/A	13.42
Wing Area (Sq. ft.)	179.64/179.64	N/A	179.64
Flight Design Weight (lbs)	12,420/12,699	N/A	12,758 (Ch-1)
b. Operational --			
Pilot Training Rate (Annual)	600/600	N/A	600
Aircraft			
(1) Utilization Rate (Hr/Yr)	720/720	N/A	720
(2) Max Range (NM)	1,000/1,000	N/A	1,000
(3) Speed			
(a) Max Level Flt (Mach)	.80/.85	N/A	.85
(b) Approach (Kts)	115-125/125	N/A	125
(4) Sustained G's @ 15,000 ft.	3.0/3.4	N/A	3.4
(5) Mean Flight Hours Between Failure (MFHBF)	3.2/3.2	N/A	3.2
(6) Direct Maintenance Man Hours per Flight Hour (DMMH/FH)	10.0/10.0	N/A	10.0
(7) Mission Capability (%)	85%/85%	N/A	85%
Simulator Availability (% Sched)			
(1) Instrument Flight Trainer (IFT)	96%/95%	N/A	95%
(2) Operational Flight Trainer (OFT)	95%/95%	N/A	95%
Academics			
(1) Computer Aided Instruction (CAI) System Availability (% Sched)	98%/95%	N/A	95% (Ch-2)
Training Integration System (TIS)			
(1) Availability (% Sched)	99%/95%	N/A	95%

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10. Technical/Operational Characteristics (Cont'd):

c. Previous Change Explanations --

More sophisticated analyses of inherent HAWK capabilities increased the maximum range estimate from 994 to the SDDM threshold of 1000 and decreased the sustained G's estimate from the SDDM threshold of 3.6 to 3.4. The TIS availability estimated was reduced from 99% to 95% because of DTC considerations. The CAI availability estimate was dependent on TIS availability due to shared computer resources.

d. Current Change Explanations --

(Ch-1) Definitized FSED contract Flight Design Weight from 12,699 to 12,758 pounds. OSD notified during PRE-DSARC Briefing November 6, 1985.

(Ch-2) Formerly undetermined CAI availability has now been established as an actual contract specification value.

e. References --

Planning Estimate: Draft SCP of January, 1984

Approved Program: FY 1987 President's Budget.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost --	Planning Estimate	Changes	Current Estimate
Development (RDT&E)	$1150.3	-630.8	519.5
Procurement	2604.3	+535.6	3139.9
Airframe	(1259.1)	(+149.0)	(1408.1)
Engine/Accessories	(363.6)	(+13.3)	(376.9)
Electronics (GFE/CFE)	(136.6)	(+22.5)	(159.1)
Change Allowance (ECO)	(42.9)	(+7.3)	(50.2)
Other GFE/Armament	(17.7)	(+30.5)	(48.2)
Nonrecurring	(35.4)	(+43.8)	(79.2)
Total Flyaway	(1855.3)	(+266.4)	(2121.7)
Other Wpn Sys Cost	(577.5)	(+247.7)	(825.2)
Initial Spares	(171.5)	(+21.5)	(193.0)
Construction (MILCON)	--	--	--
Total FY 84 Base-Year $	3754.6	-95.2	3659.4
Escalation	1707.4	-553.5	1153.9
Development (RDT&E)	(192.6)	(-122.7)	(69.9)
Procurement	(1514.8)	(-430.8)	(1084.0)
Construction (MILCON)	(--)	(--)	(--)
Total Then-Year $	5462.0	-648.7	4813.3

. Program Acquisition Cost (Cont'd):

b. Quantities --	Planning Estimate	Changes	Current Estimate
Development (RDT&E)	4	-2	2
Procurement	300	--	300
Total	304	-2	302
c. Unit Cost --			
Procurement:			
FY 84 Base-Year $	$8.7	$+1.8	$10.5
Then-Year $	13.7	+0.4	14.1
Program:			
FY 84 Base-Year $	12.4	-0.3	12.1
Then-Year $	$18.0	$-2.1	$15.9

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

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

. Program Acquisition/Current Procurement Unit Cost Summary:
urrent (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	4813.3	4530.6	4813.3
(2) Quantity	302	302	302
(3) Unit Cost	15.9	15.0	15.9

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	N/A	N/A	56.4
Less CY Adv Proc	N/A	N/A	56.4
Plus PY Adv Proc	N/A	N/A	0
Net Total	N/A	N/A	0
(2) Quantity	N/A	N/A	0
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1342.9	4119.1	-	5462.0
Previous Changes:				
Economic	-8.8	-144.1	-	-152.9
Quantity	-23.8	-	-	-23.8
Schedule	-619.6	+16.0	-	-603.6
Engineering	-35.8	-	-	-35.8
Estimating	+15.4	-223.1	-	-207.7
Other	0.0	-	-	0.0
Support	-108.9	+201.3	-	+92.4
Subtotal	-781.5	-149.9	-	-931.4
Current Changes:				
Economic	-6.0	-494.2	-	-500.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+24.0	+338.2	-	+362.2
Estimating	+5.8	+208.6	-	+214.4
Other	-	-	-	-
Support	+4.2	+202.1	-	+206.3
Subtotal	+28.0	+254.7	-	+282.7
Total Changes	-753.5	+104.8	-	-648.7
Current Estimate	589.4	4223.9	-	4813.3

(FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1150.3	2604.3	-	3754.6
Previous Changes:				
Quantity	-24.7	-	-	-24.7
Schedule	-497.4	-	-	-497.4
Engineering	-37.2	-	-	-37.2
Estimating	+13.2	-141.3	-	-128.1
Other	0.0	-	-	0.0
Support	-112.8	+127.8	-	+15.0
Subtotal	-658.9	-13.5	-	-672.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+18.8	+254.3	-	+273.1
Estimating	+5.6	+153.4	-	+159.0
Other	-	-	-	-
Support	+3.7	+141.4	-	+145.1
Subtotal	+28.1	+549.1	-	+577.2
Total Changes	-630.8	+535.6		-95.2
Current Estimate	519.5	3139.9	-	3659.4

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations --

RDT&E

Economic:	revised escalation indices
Quantity:	decrease from four to two flight test aircraft
Schedule:	milestone schedule adjustments to accomodate reduction in flight test program and earlier first flight of prototype aircraft
Engineering:	reduction in requirements for flight testing and tooling and use of existing production engine vice an extensively redeveloped engine
Estimating:	revision of methodology for estimating engineering hours
Schedule:	deletion of T-45B aircraft funding in accordance with Congressional direction
Support:	reduced manpower and material to support a two vice a four flight test article program and use of a TIS based on an adaptation of a previously developed computerized instructional system

Procurement

Economic:	revised escalation indices
Schedule:	revised aircraft procurement schedule
Estimating:	change in dollar/pound exchange rate
Support:	more refined estimate of ILS requirements

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-6.0
Emerging system changes to reduce O&S costs. (Engineering)	+18.8	+24.0
Accounting and estimating adjustments to accomodate revised escalation rates and prior year actuals. (Estimating)	+5.6	+5.8
Restoral of prior Navy In-House support reductions (Support)	+3.7	+4.2
(2) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-494.2
Estimates revised to reflect restructured system characteristics approved at DSARC I/II. (Engineering)	+254.3	+338.2
Change in U.S. dollar/British pound exchange rate. (Estimating)	+153.4	+208.6
Estimate of ILS requirements for aircraft and ground training systems. (Support)	+141.4	+202.1

d. References --

Planning Estimate: Draft SCP dated January, 1984

14. Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial SAR Est)	Changes								PAUC (Planning) Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
18.0	--	--	--	--	--	--	--	--	18.0

b. Current Baseline Estimate to Current Estimate --

PAUC (Planning Est)	Changes								PAUC (Current) Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
18.0	-2.2	--	--	+1.1	--	-2.0	+1.0	-2.1	15.9

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

a. RDT&E --

T-45 Training System:
Douglas Aircraft Co., Long Beach, CA,
N00019-84-C-0240, FFP
Award: October, 1984

Initial Contract Price		
Target	Ceiling	Qty
$511.9	N/A	2

Current Contract Price		
Target	Ceiling	Qty
$511.9	N/A	2

Estimated Price At Completion	
Contractor	Program Manager
$511.9	$511.9

Cost/Schedule Variances: FFP Contract

b. Procurement -- N/A

c. MILCON -- N/A

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

a. Program Status --

(1) Percent Program Completed: 43.8% (7 yrs/16 yrs)

(2) Percent Program Cost Appropriated: 4.7% ($227.0/$4813.3)

5. Program Funding Summary (Cont'd):

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY80-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP (FY92-95)	TOTAL
RDT&E	227.0	134.2	228.2	-	589.4
Procurement	-	56.4	1865.0	2302.5	4223.9
MILCON	-	-	-	-	-
Total	227.0	190.6	2093.2	2302.5	4813.3

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1980				4.2 1/			4.2	10.6
1981				1.6 1/			1.6	10.6
1982				5.0 1/			5.0	7.6
1983				7.9 1/			7.9	4.9
1984				24.8 1/			24.8	3.8
1985				63.8			67.5	3.6
1986				105.8			116.0	3.2
1987				117.8			134.2	4.1
1988				80.2			94.6	3.9
1989				71.0			86.4	3.4
1990				18.6			23.2	2.9
1991				18.8			24.0	2.3
Subtotal	2			519.5			589.4	
Appropriation: Procurement								
1987				46.3	56.4		56.4	4.10
1988	12	47.1	173.1	310.9	30.8	56.4	384.9	3.90
1989	24	6.1	205.9	351.5	42.3	30.8	445.9	3.40
1990	24	5.3	180.7	339.2	49.1	42.3	440.6	2.90
1991	48	4.5	321.5	447.1	47.4	49.1	593.6	2.30
1992	48	4.3	302.7	495.6	49.3	47.4	673.1	2.30
1993	48	4.1	292.8	452.0	49.0	49.3	628.1	2.30
1994	48	4.0	285.0	370.1	49.3	49.0	526.3	2.30
1995	48	3.8	280.8	327.2		49.3	475.0	2.30
Subtotal	300	79.2	2042.5	3139.9	373.6	373.6	4223.9	
Total	302			3659.4			4813.3	

1/ The following amounts must be added to the reflected actuals to bring them to Base Year 1984 dollars: 1980: +0.9, 1981: +0.2, 1982: +0.3, 1983: +0.1, 1984: -0.5.

UNCLASSIFIED

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1980	4.2	4.2	4.2
1981	1.6	1.6	1.6
1982	5.0	5.0	4.9
1983	7.9	7.9	7.8
1984	24.8	24.8	22.5
1985	67.5	67.5	37.3
To Complete	478.4	N/A	N/A
Total	589.4	111.0	78.3

17. Production Rate Data:

a. Annual Production Rates --

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1988	N/A	N/A	12	N/A
1989	N/A	N/A	24	N/A
1990	N/A	N/A	24	N/A
1991	N/A	N/A	48	N/A
1992	N/A	N/A	48	N/A
1993	N/A	N/A	48	N/A
1994	N/A	N/A	48	N/A
1995	N/A	N/A	48	N/A

17. Production Rate Data (Cont'd):

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	3659.4	N/A	N/A
(TY $)	N/A	N/A	4813.3	N/A	N/A
PAUC (BY $)	N/A	N/A	12.1	N/A	N/A
(TY $)	N/A	N/A	15.9	N/A	N/A

c. Schedule Variance --

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	1/88	N/A	N/A
Duration (in Months)	N/A	N/A	117	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	9/97	N/A	N/A

d. Deliveries (Plan/Actual) --

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

18. Operating and Support Costs: N/A

~~CONFIDENTIAL~~

A-4 ASAS

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

85-021

AS OF DATE: December 31, 1985

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Concur in Classification as marked
20 MAR 1986
SECURITY REVIEW, OACSI, HQDA

CLEARED
FOR OPEN PUBLICATION
MAR 21 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

AMENDED pp 4,9,10

1. (U) Designation/Nomenclature (Popular Name): Army "All Source Analysis System (ASAS)".

2. (U) DOD Component: Department of the Army as Executive Agent for Joint Army/Air Force Program

3. (U) Responsible Office and Telephone Number:

Joint Tactical Fusion Program
Management Office (JTFPMO)
1500 Planning Research Drive
McLean, Virginia 22102-5099

PM: BG William E. Harmon
Assigned: 26 November 1984
Commercial: (703) 556-2930

4. (U) Program Elements:

RDTE: PE 64321, PROJ 0926, 0396

Procurement: SSN K28800 APPN 2035
28801 ASAS Interface Module (AIM)
28802 Fwd Sensor Interface & Con (FISC)
28803 Comm Processor & Interface (CPI) Module
28804 Intel Data Processor (IDP) Module

MILCON:

~~CLASSIFIED ON 3 Feb 86~~
~~DECLASSIFY ON~~ OADR

OASD(PA) DFOISR 86-0715

~~CONFIDENTIAL~~

5. (U) Related Programs: Related programs include Air Force PE 64321F (Joint Tactical Fusion Program); Army PE 63745-A (Tactical ESM Systems); and, Army PE 35885G (Tactical Cryptologic Program). Extensive coordination is conducted with other services and with national intelligence agencies to insure that duplication of effort is avoided.

6. (U) Mission and Description:

a. (U) The major technological advances of the past decade have created a need for more sophisticated intelligence collection systems on the battlefield. Successful prosecution of the Airland Battle/Deep Battle requires an intelligence system that provides commanders with near real-time depiction of critical enemy elements and activities. In view of this mission requirement, the JTFP has the objective of fielding the Army All Source Analysis System (ASAS).

b. (U) The ASAS is a system employing evolutionary development consisting of four modules:

(1) (U) ASAS Interface Module (AIM). The AIM will provide remote workstation access to the ASAS systems. It will be configured to operate either within an enclave (communicating on the local area network) or outside of an enclave (communicating via service area communications).

(2) (U) Forward Sensor Interface and Control (FSIC) Module. The FSIC is a data concentrator which receives information in automated and manual form from the forward division sensors located in the Brigade area and automatically relays it to the division ASAS for processing. It identifies high priority sensor reports and routes them to the FSIC operator for sanitization and subsequent release to the Brigade Headquarters. Additional functions include voice radio and sensor/EW management support.

(3) (U) Intelligence Data Processing (IDP) Module. The IDP receives, processes, stores and transmits information to support analysis, production and dissemination of military intelligence at the TOC (Tactical Operations Center) and supporting CEWI unit. This module contains software and analyst workstations.

(4) (U) Communications Processor and Interface (CPI) Module. This module provides the interface for all voice and data communications for ASAS/ENSCE enclaves. It will accept inputs from the FSIC (Division only), radio, IDP, and AIM Modules, perform security release and message distribution functions, and interface with Service Area Communications and perform internal communications functions.

7. (U) Program Highlights (Since Last Report):

a. (U) Successful Preliminary Design Review (PDR) was held for the ASAS Interface Module (AIM) and Forward Sensor Interface and Control (FSIC) modules. Preliminary fabrication was started on these hardware modules. A PDR was held for the ASAS program. In-depth reviews of all first release (R_1) ASAS applications software programs was held with the users.

b. (U) The ASAS Interface Module Brassboard (ABB) was tested and delivered. Subsequent to its delivery, the ABB was field tested by supporting G-2 functions of the 9th Infantry Division during their participation in exercise BORDER STAR 85. Significant lessons-learned from this test were transitioned into the ASAS program.

c. (U) This SAR includes prior years and current FYDP figures (78-91). An official Army cost position will not be available until May/June, 86. At that time, a revised SAR will be submitted (June, 86) which will include the total program cost data for Army and Air Force funding figures. (As directed by AMC, this SAR reflects only Army funding.)

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: None

9. (U) Schedule:

a. (U) Milestones	Planning Estimate/ Approved Program	Current Estimate
ASAS Acquisition Strategy	Nov 82/Nov 82	Nov 82
OSD/Congressional Approval of Acquisition Strategy	Feb 83/Feb 83	Feb 83
Implementing Contractor Award	Mar 83/ Mar 83	Mar 83
Functional Capabilities Document Complete	Dec 83/Dec 83	Dec 83
Preliminary Design Review (Architecture)	Feb 84/Feb 84	Feb 84
Joint Oversight Group (ASARC Authority)	Mar 84/Mar 84	Mar 84
Request for Proposals	May 84/May 84	May 84
JTFP Letter of Instruction	Jul 84/Jul 84	Jul 84
Award Baseline System Contracts (Development)	Oct 84/Oct 84	Dec 84
Preliminary Design Review (Development)	May 85/May 85	Nov 85 (CH-1)
ABB Testing	Aug 85/Aug 85	Aug 85
AIM/FSIC Testing	Jul 86/Jul 86	Jul 86
IDP/CPI Testing	Nov 87/Nov 87	Nov 87
Software Release 1	Nov 87/Nov 87	Nov 87
Software Release 2	Sep 88/Sep 88	Sep 88
Software Release 3	Nov 88/Nov 88	Nov 88

b. (U) Previous Change Explanations --

c. (U) Current Change Explanation -- Preliminary Design Review slipped due to Congressional/DA staff redirection of the program (CH-1)

d. (U) References — Letter of Instruction for Joint Tactical Fusion Program (JTFP) Special Task Force (STF), 5 Jul 1984; Chief of Staff, Army Letter, 10 Nov 1982, Subj: All Source Analysis System (ASAS) Acquisition Strategy; Functional Capabilities Document (FCD), 7 Dec 1983.

10. (U) Technical/Operational Characteristics:

	Planning Est./ Approved Program	Demonstrated Performance	Current Estimate
a. (U) OPERATIONAL/TECHNICAL			AS AMENDED
(b)(1)	[redacted]		

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

11. (U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

		Planning Estimate	Changes	Current Estimate
a. (U)	Cost —			
	Development (RDTE)	$ 563.1	$ +146.2	$ 709.3
	Procurement	449.2	+164.6	613.8
	Construction (MILCON)	7.8	-0-	7.8
	Total FY84 Base-Year $	1020.1	+310.8	1330.9
(U)	Escalation —	190.5	-9.3	181.2
	Development (RDTE)	(65.1)	(-6.5)	(58.6)
	Procurement	(123.6)	(-2.4)	(121.2)
	Construction (MILCON)	(1.8)	(- .4)	(1.4)
	Total Then-Year $	$ 1210.6	$ + 301.5	$ 1512.1

b. (U) Quantities -- TBD

c. (U) Unit Cost — TBD

d. (U) Approved Design to Cost Goal —

	(Average Unit Flyaway Cost) Dev Estimate Appr Program	Current Estimate	Latest Approved Threshold
o Qty: TBD			
o Peak Rate: TBD			
FY84 Base-Year $	TBD	TBD	TBD
Then-Year $	TBD	TBD	TBD
o Qty: TBD			
o Peak Rate: TBD			
FY84 Base-Year $	TBD	TBD	TBD
Then-Year $	TBD	TBD	TBD

e. (U) Foreign Military Sales — None

f. (U) Nuclear Costs — None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. (U) Program Acquisition —			
(1) Cost	1512.1	1689.5	1512.1
(2) Quantity	TBD	TBD	TBD
(3) Unit Cost	TBD	TBD	TBD
b. (U) Current Procurement —	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	-0-	-0-	110.7
Less CY Adv Proc	-0-	-0-	-0-
Plus PY Adv Proc	-0-	-0-	-0-
Net Total	-0-	-0-	110.7
(2) Quantity	TBD	TBD	TBD
(3) Unit Cost	TBD	TBD	TBD

13. (U) Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
PLANNING ESTIMATE	628.2	572.8	9.6	1210.6
Previous Changes:				
Economic	- 58.9	-118.1	- .2	-177.6
Quantity				
Schedule				
Engineering	+200.3	+455.8		+656.1
Estimating				
Other				
Support				
SUBTOTAL	+141.4	+337.7	- .2	+478.9
Current Changes:				
Economic	- 29.9	- 55.3	- .2	- 85.4
Quantity				
Schedule				
Engineering				
Estimating	+ 28.2	-120.2		- 92.0
Other				
Support				
SUBTOTAL	- 1.7	-175.5	- .2	-177.4
Total Changes	+139.7	+162.2	- .4	+301.5
Current Estimate	+767.9	+735	9.2	1512.1

(FY84 Constant Dollars (Base Year) in Millions)

	RDTE	PROC	MILCON	TOTAL
PLANNING ESTIMATE	563.1	449.2	7.8	1020.1
Previous Changes:				
Quantity				
Schedule				
Engineering	+137.2	+261.7	0	+398.9
Estimating				
Other				
Support				
SUBTOTAL	+137.2	+261.7	0	+398.9
Current Changes:				
Quantity				
Schedule				
Engineering				
Estimating	+ 9.0	- 97.1		- 88.1
Other				
Support				
SUBTOTAL	+ 9.0	- 97.1		- 88.1
Total Changes	+ 146.2	+164.6		+310.8
Current Estimate	709.3	613.8	7.8	1330.9

b. (U) Previous Change Explanation --

(1) (U) RDTE

Economic: Revised escalation rate.

Engineering: Program redefined as a result of Congressional direction. Close-out of development phase has not yet been defined.

(2) (U) Procurement

Economic: Revised escalation rate.

Engineering: Authorized allowance objective has not been determined; therefore, procurement program also lacks sufficient out-year definition.

(3) (U) MILCON

Economic: Revised escalation rates.

c. (U) Current Change Explanations --

	(Dollars in Millions) Base Year	Then Year
(1) (U) RDTE		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-29.9
Close out of development phase not yet been defined. (Estimating)	+9.0	+28.2
(2) (U) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-55.3
Revised Estimate. (Estimating) Correction of mathematical error of $10M in previous SAR. (Estimating)	-97.1	-110.2 - 10.0
(3) (U) MILCON		
Revised Jan 86 economic escalation rates. (Economic)	N/A	- .2

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. (U) Initial SAR Estimate to Current Baseline Estimate — TBD

PAUC (Initial SAR Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
TBD	0	0	0	0	0	0	0	0	TBD

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

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
TBD	0	0	0	0	0	0	0	0	TBD

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

a. (U) RDTE -- The National Science Foundation has listed JPL as a Federally Funded Research and Development Center (FFRDC) under the cognizance of the National Aeronautics and Space Administration. JPL's role for the ASAS/ENSCE baseline phase is that of a Systems Engineering and Technical Direction (SE/TD) contractor, which includes a significant number of project management functions normally attributed to a government program office such as, technical integration and management functions associated with system development, to include architectural design, RFP completion, competitive contracting for prototypes (JPL would let major contracts during this phase), acceptance testing, conduct of government reviews and associated contract management of industrial contractors. Although JPL is the prime contractor, JTFP does not have a contract with JPL for the ASAS effort. JPL is performing under a Task Order against a NASA contract. JPL's role during the objective system phase (production) will be that of a System Engineering/Technical Assistance (SE/TA) contractor, providing sustaining engineering and technical assistance to the JTFPMO.

Initial Contract Price		
Target	Ceiling	Qty
TBD	TBD	TBD

b. (U) Procurement -- None

c. (U) MILCON -- None

ASAS, December 31, 1985

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

a. (U) Program Status --

(1) (U) Percent Program Completed: 57.1%(8yrs/ 4 Yrs)

(2) (U) Percent Program Cost Appropriated: 14.2
($214.6/$1512.1)

(b)(1)

[redacted]

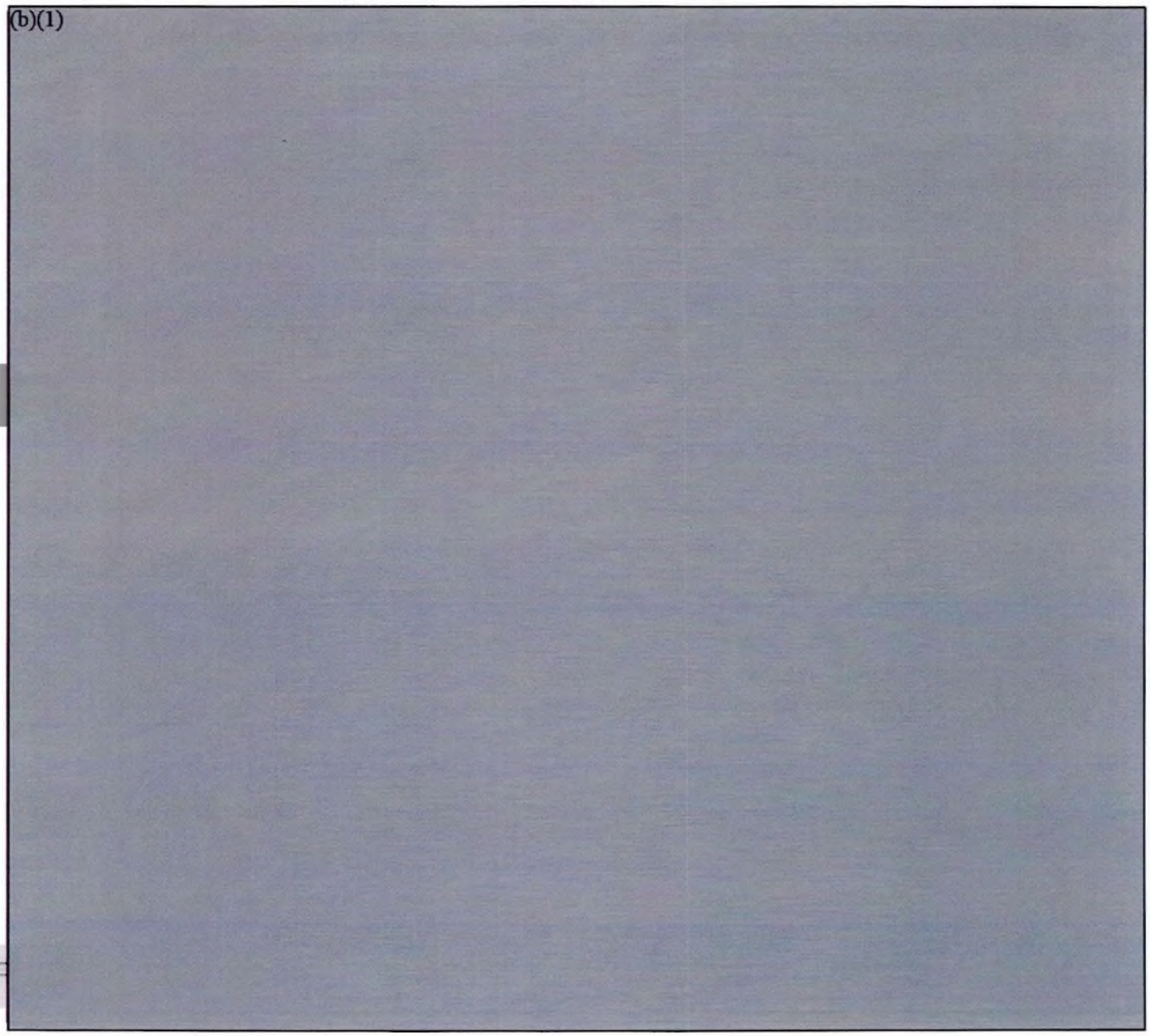
16. (U) Program Funding Summary: (Current Estimate in Millions of Dollars)

a. (U) Program Status --

(1) (U) Percent Program Completed: 57.1%(8yrs/ 4 Yrs)

(2) (U) Percent Program Cost Appropriated: 14.2 ($214.6/$1512.1)

(b)(1)



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d. (U) **Obligations and Expenditures --**

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: RDTE		
1978-1982	63.4	63.4	63.4
1983	25.7	25.7	25.6
1984	54.5	54.5	51.5
1985	71.0	71.0	49.5
1986	155.2	147.4	93.1
1987	168.1	159.7	100.9
1988	93.7	89.0	56.2
1989	69.2	65.7	41.5
1990	27.7	26.3	16.6
1991	39.4	37.4	23.6
Total	767.9	742.1	521.9
	Appropriation: PROCUREMENT		
1987	110.7	22.1	5.5
1988	120.1	24.0	6.0
1989	165.3	33.0	8.2
1990	161.1	32.2	8.0
1991	177.8	35.5	8.8
Total	735.0	146.8	36.5

17. (U) Production Rate Data: None

18. (U) Operating and Support Costs: N/A

~~CONFIDENTIAL~~

A-14 MLRS TGW

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

85-030

AS OF DATE: December 31, 1985

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MAR 21 1986

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

5

AS AMENDED
[redacted], 6, 7, 10, 11, 13, 14, 16
pe throughout

1. (U) Designation/Nomenclature (Popular Name): Multiple Launch Rocket System Terminal Guidance Warhead (MLRS TGW)

2. (U) DoD Component: Department of the Army

3. (U) Responsible Office and Telephone Number:

MLRS Project Office
Program Management Division
Redstone Arsenal, AL 35898-5700

PM: COL Nicholas Hurst
Assigned: 7 January 1985
AUTOVON: 746-1195
Commercial: 205-876-1195

4. (U) Program Elements:

RDT&E: PE 63303, PROJ D216
PROCUREMENT: SSN C65100, APPN 2032
MILCON: Project Code - Not Assigned.

5. (U) Related Programs: Basic MLRS, XM447 fuze, Scatterable Mine Warhead, Battery Computer System, TACFIRE, Field Artillery Meteorological Data System, Bradley Fighting Vehicles, test set AN/MSM-105.

Concur in Classification as marked

18 MAR 1986

[redacted] DCSI, HQDA

~~CLASSIFIED BY: MLRS TGW Security Classification Guide dated 31 December 1984~~

DECLASSIFY BY: OADR

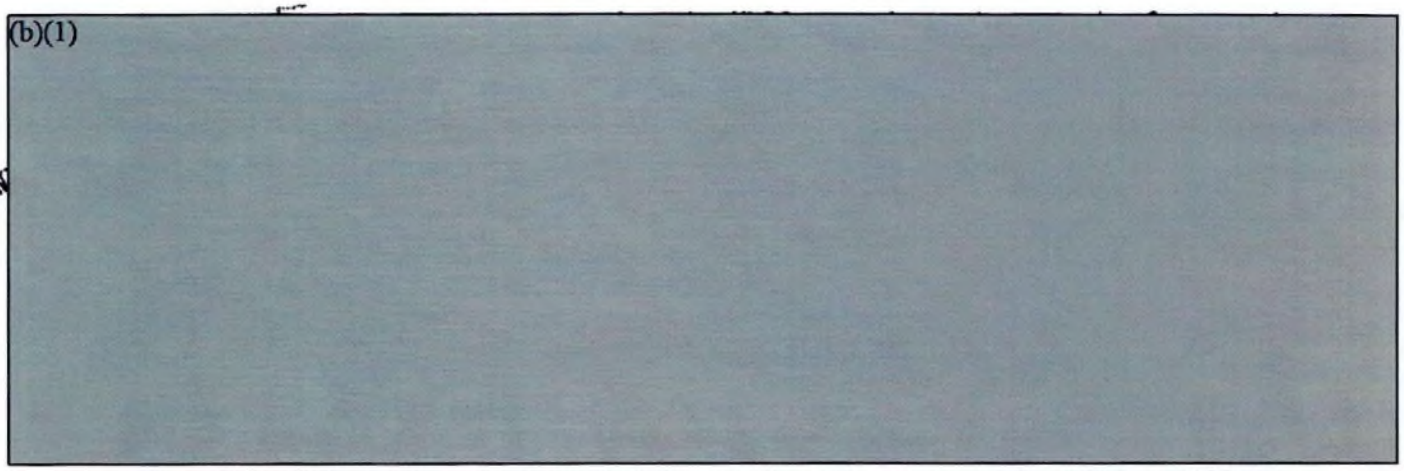
86-0732

~~CONFIDENTIAL~~

UNCLASSIFIED WHEN SEPARATED FROM CLASSIFIED ENCLOSURE

6. (U) Mission and Description:

(b)(1)



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b. (U) This system is intended to supplement cannon and rocket artillery rather than replace equipment and/or munitions in the current inventory. The TGW will be fully integrated into the existing MLRS and be compatible with the components of the system as required in the specification for the rocket, launch pod/container (LP/C), AT2 fuze, and fire control. A modified self-propelled launcher loader (SPLL) being produced for the basic MLRS program will be able to fire the MLRS TGW rounds.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

(1) (U) In a Memorandum for the Secretary of the Army dated 14 February 1977, the Secretary of Defense directed the Army to prepare a plan for compliance with congressional guidance on terminal homing options in the MLRS program. An "MLRS Terminal Homing Plan" was structured to complement the basic MLRS development schedule. It was approved by DA and forwarded to OSD. Congress appropriated FY80 research, development, test, and evaluation (RDTE) funding under a separate program element to support concept definition studies for MLRS TGW.

(2) (U) In July 1979, the U.S., UK, FR, and GE concluded a Memorandum of Understanding (MOU) for the cooperative development of the MLRS. In the MOU, the four nations have acknowledged an operational requirement for weapon systems with the general characteristics compatible with the basic MLRS system. Those general characteristics are described as the Best Technical Approach (BTA) for development. The BTA is a horizontally gliding terminally guided submunition with a millimeter wave seeker and a shaped charge lethal mechanism.

(3) (U) The development of the TGW is being carried out under Supplement Number 3 to the MLRS MOU signed December 1983. Under the terms of the MOU Supplement, the total international development program costs will be shared in the ratio of U.S. - 40 percent, and FR, GE, and UK - 20 percent each. Each

7. (U) Program Highlights (Continued):

country will be responsible for total funding of any internal national task they decide to do in addition to the agreed international development program.

(4) (U) The ASARC/DSARC I for TGW was conducted in August/September 1984. Approval was received to enter into the component demonstration substage (CDS) of the program. A contract was awarded to MDTT Joint Venture on 29 November 1984 by the U.S. Army Missile Command (MICOM), acting on behalf of the Governments of FR, GE, UK, and the U.S. MDTT Joint Venture consists of Martin Marietta Corporation (U.S.), Thomson-Brandt (FR), Thorn EMI Electronics Limited (UK), Diehl GmbH and Company (GE), and MDTT, Inc. MICOM also awarded a contract to LTV Aerospace Division, the MLRS prime contractor, for integration of the TGW into the Basic MLRS. LTV Aerospace and MDTT will be associate prime contractors for development of the total MLRS TGW weapon system.

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

(1) (U) The MLRS TGW program has been revised to reflect a 3-month slip in completion of the CDS with a projected contract cost overrun of $10.3 million at the price line over the negotiated value of $99.9 million. The revised schedule and projected cost overrun were ratified for implementation on 4 December 1985 by the Joint Steering Committee. The program plan is currently being revised to incorporate the extension.

(2) (U) The MLRS TGW Engineering Design Test Plan (EDTP) has been approved and released by MDTT. The EDTP defines the overall test program for the TGW and TGSM development program during the component demonstration and system demonstration substages.

(3) (U) A requirements planning meeting for the seeker captive flight test was held at Meppen, Germany in July 1985. The Meppen Proving Ground indicated they can provide all required government support for the captive flight tests in Germany scheduled to start in March 1986.

(4) (U) The series of preliminary design reviews were completed during October 1985. The critical design reviews are scheduled for January 1986 through March 1986.

(5) (U) The basic wind tunnel tests required to characterize the aerodynamic performance of the TGSM have been completed.

(6) (U) The MLRS TGW is expected to satisfy the mission requirement.

c. (U) Changes Since "as of" Date --- The MDTT Extension Mod was signed on 31 January 1986. It extended the period of performance of CDS from 28 1/2 months to 31 1/2 months.

8. (U) System Concept Paper (SCP) Threshold Breaches:

(U) There are currently no SCP (dated July 1984) or Secretary of Defense Memorandum (SDDM) (dated 14 November 1984) threshold breaches.

9. (U) Schedule:

(b)(1)

[redacted]

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b. (U) Previous Change Explanations -- Initial milestone dates established per ASARC/DSARC I. These milestones were "TBD" in initial SAR (Sep 84).

c. (U) Current Change Explanations --

(b)(1)

[redacted]

d. (U) References --

Planning Estimate: SCP for MLRS TGW, July 1984.

Approved Program: SDDM for Secretary of the Army, subject: MLRS TGW, 14 November 1984.

10. (U) Technical/Operational Characteristics: 1/

	Plng Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. (U) Technical --			
(U) Effectiveness	TBD	TBD	TBD
(U) Range (km)			
Maximum	TBD	TBD	TBD
Minimum	TBD	TBD	TBD
b. (U) Operational --			
Reliability			
Rocket	TBD	TBD	TBD
TGSM	TBD	TBD	TBD
Availability	TBD	TBD	TBD

c. (U) Previous Change Explanations -- None

d. (U) Current Change Explanations -- None

e. (U) References --

Planning Estimate: See Note 1/.

Approved Program: See Note 1/.

1/ Approval of MLRS TGW goals and thresholds has been deferred until after the completion of the component demonstration substage (CDS). A System Required Operational Capability (ROC) will be established just prior to the end of CDS and presented at the next milestone (ASARC/DSARC II).

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars) 1/

	Planning Estimate (FY80-89)	Changes	Current Estimate (FY80-91)
a. (U) Cost --			
Development (RDT&E) 2/	190.7	+64.4	255.1
Procurement 3/	320.0	-64.7	255.3
Flyaway	(-)	(-)	(236.1)
Peculiar Support Equip	(0)	(0)	(0)
Other Weapon Sys Cost	(-)	(-)	(19.2)
Initial Spares	(0)	(0)	(0)
Construction (MILCON)	7.7	+0.6	8.3
Total FY84 Base Year $	518.4	+0.3	518.7
Escalation	118.7	+9.1	127.8
Development (RDT&E)	(20.5)	(+22.3)	(42.9)
Procurement	(94.4)	(-12.6)	(81.8)
Construction (MILCON)	(3.8)	(-0.6)	(3.2)
Total Then-Year $	637.1	+9.4	646.5

(b)(1)

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d. (U) Approved Design to Cost Goal -- (Design to cost goals have not been established)

1/ The program acquisition cost shown reflects only the U.S. share of MLRS TGW.

2/ Total international development program cost is established at $704.6M. In accordance with the MOU, the U.S. will pay 40 percent of the international program cost. Cost shown reflects U.S. share of the agreed international program cost plus other U.S. national tasks.

11. (U) Program Acquisition Cost (Continued):

e. (U) Foreign Military Sales -- None

f. (U) Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary (Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate (FY1986)	UCR Baseline Estimate (FY1986)	UCR Baseline Estimate (FY1987)
a. (U) Program Acquisition --			
(1) (U) Cost	646.5	692.7	646.5

AS AMENDED

[redacted]

b. (U) Current Procurement -- N/A. First year of procurement is FY90.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	211.2	414.40	11.5	637.1
Previous Changes:				
Economic	-2.7	-4.9	-0.3	-7.9
Quantity				
Schedule	+84.5	-46.2	+0.3	+38.6
Engineering				
Estimating	+24.9			+24.9
Other				
Support				
Subtotal	+106.7	-51.1	-	+55.6
Current Changes:				
Economic	-6.0	-32.4	-1.3	-39.7
Quantity				
Schedule	-79.7	+48.3		-31.4
Engineering				
Estimating	+65.7	-42.1	+1.3	+24.9
Other				
Support				
Subtotal	-20.0	-26.2	0	-46.2
Total Changes	+86.7	-77.3	0	+9.4
Current Estimate	297.9	337.1	11.5	646.5

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

(FY 1984 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	190.7	320.0	7.7	518.4
Previous Changes:				
Quantity				
Schedule	+64.9	-63.7	-0.1	+1.1
Engineering				
Estimating	+11.8			+11.8
Other				
Support				
Subtotal	+76.7	-63.7	-0.1	+12.9
Current Changes:				
Quantity				
Schedule	-60.9	+63.7		+2.8
Engineering				
Estimating	+48.6	-64.7	+0.7	-15.4
Other				
Support				
Subtotal	-12.3	-1.0	+0.7	-12.6
Total Changes	+64.4	-64.7	+0.6	+0.3
Current Estimate	255.1	255.3	8.3	518.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices through January 1985.

Schedule: Previous total represented the funded portion of FYDP only and did not include total TGW development program (recategorized to estimating under current change explanations).

Estimating: Refinement of cost resulting from ASARC/DSARC I decision and directed U.S. requirements.

Procurement

Economic: Revised escalation indices through January 1985.

Schedule: Start of Low Rate Production was rescheduled from FY88 to FY89. (Recategorized to estimating).

MILCON

Economic: Revised escalation indices through January 1985.

Schedule: Cost associated with reschedule of MCA requirement.

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

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised January 1986 economic escalation rates (ECONOMIC)	N/A	-6.0
Correction to last year's SAR moved +64.9M in Base-Year and +84.5M in Then-Year $ from Schedule to Estimating category. RDTE 3 month schedule slip cost 4M in Base-Year and 4.8M in Then-Year. (SCHEDULE)	-60.9	-79.7
Corrrection to last year's SAR moved +64.9M in Base-Year and +84.5M in Then-Year $ from Schedule to Estimating category. Adjustments in development program to offset schedule slip. (ESTIMATING)	+48.6	+65.7
(2) Procurement		
Revised January 1986 economic escalation rates (ECONOMIC)	N/A	-32.4
Correction to last year's SAR moved -63.7 Base-Year and -46.2 Then-Year $ from Schedule to Estimating category. Production start slipped from FY89 to FY90, thus causing a 2.1 increase in escalation in Then-Year dollars. (SCHEDULE)	+63.7	+48.3
Correction to last year's SAR moved -63.7 Base-Year and -46.2 Then-Year $ from Schedule to Estimating category, a +4.1 Then-Year and -1.0 Base-Year estimating change this year. (ESTIMATING)	-64.7	-42.1
(3) MILCON		
Revised January 1986 economic escalation rates (ECONOMIC)	N/A	-1.3
Adjustment of base program to compensate for escalation adjustments not taken. (ESTIMATING)	+.7	+1.3

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

d. (U) References --

Planning Estimate: FY 1985 President's Budget.

14. (U) Program Acquisition Unit Cost (PAUC) History:

(b)(1)

[redacted]

AS AMEND

15. (U) Contract Information:

a. (U) RDT&E --

TGW Component Demonstration	Initial Contract Price Target	Ceiling	Qty
MDTT, Inc., Orlando, FL DAAH01-85-C-A004, CPIF Award: November 1984 Definitized: November 1984	$ 99.9	N/A	N/A

Current Contract Price Target	Ceiling	Qty
$ 99.9	N/A	N/A

AS AMENDED

Estimated Price at Completion

(b)(1)

[redacted]

	Contractor Cost Variance	Program Manager Schedule Variance
Previous Cumulative Variances	$ 0.0	$ 0.0
Cumulative Variances To Date (10/31/85)	-2.4	-7.8
Net Change	$ -2.4	$ -7.8

Explanation of Change: Contract includes multinational funds. The schedule variance was caused by difficulty in developing the seeker algorithms, coding of the algorithms into software, changes in configuration of the IF transmitter, and problems in fabricating an acceptable brassboard seeker feed because of its small size. Expected impact is a 3 month slip in completion of CDS effort. The cost variance is attributed to startup problems associated with the international peculiarities of the program, software coding greater than

15. (U) Contract Information (Continued):

anticipated, and actual labor rates for the U.S. prime higher than proposed. PM's estimate at completion reflects contractor internal replanning to achieve cost reductions and contract scope adjustments currently in process, but not yet included in the Cost Performance Report (CPR).

TGW Integration	Initial Contract Price Target	Ceiling	Qty
LTV Aerospace & Defense Company, Dallas, TX, DAAH01-85-C-A024, CPIF, Award: November 1984 Definitized: May 1985	$ 14.8	N/A	N/A

	Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
AS AMENDED	$ 14.8	N/A	N/A	(b)(4)	

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 0.0	$ 0.0
Cumulative Variances To Date (10/27/85)	+0.1	-0.3
Net Change	$ +0.1	$ -0.3

Explanation of Change: Contract includes multinational funds. The schedule variance is attributed to delayed design engineering efforts due to late definition of the warhead skin/sabot interface between the warhead developer (MDTT, Inc.) and the system integrater (LTVAD) and later than planned billings by KDI for subcontract XM447 fuze development precluded taking earned value. No adverse impact to program schedule is anticipated. Cost performance to date is favorable and the contract effort is expected to be completed within target.

Improved Electronics Unit	Initial Contract Price Target	Ceiling	Qty
LTV Aerospace and Defense Co., Dallas, TX, DAAH01-84-C-0312, CPIF Award: March 1984 Definitized: March 1984	$ 10.5	N/A	8

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$ 12.1	N/A	8	$ 11.7	$ 11.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 0.0	$ -0.6
Cumulative Variances to Date (10/27/85)	+0.3	-0.7
Net Change	$ +0.3	$ -0.1

15. (U) Contract Information (Continued):

Explanation of Change: Contract includes multinational funds. The schedule variance was caused by a delay in subcontractor billings that inhibit recording [redacted] and a slip in qualification testing because of the adjusted final quality test schedules. No adverse impact to program schedule is anticipated. Cost performance to date is within budget and costs at contract completion are forecast to be under target.

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

a. (U) Program Status --
(1) (U) Percent Program Completed: TBD
(2) (U) Percent Program Cost Appropriated: TBD

b. (U) Appropriation Summary --

Appropriation	Current + Prior Yrs (FY80-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-01)	TOTAL
RDT&E	74.4	42.7	180.8	0	297.9
Procurement	0	0	337.1	TBD	337.1
MILCON	0	0	0	11.5	11.5
TOTAL	74.4	42.7	517.9	11.5	646.5

c. (U) Annual Summary --

Fiscal Year	Qty	FY Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
	Rkt	Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1980				0.6			0.5	10.6
1981				0.3			0.3	10.6
1982				1.1			1.0	7.6
1983				2.4			2.4	4.9
1984				15.1			15.5	3.8
1985				23.1			24.5	3.6
1986				27.5			30.2	3.2
1987				37.4			42.7	4.1
1988				44.2			52.2	3.9
1989				39.1			47.6	3.4
1990				41.6			52.0	2.9
1991				22.7			29.0	2.3
Subtotal				255.1			297.9	-

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

(b)(1)

[redacted]

Appropriation: MILCON

To complete				8.3			11.5	
Subtotal				8.3			11.5	
Total				518.7			646.5	

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1980	0.5	0.5	0.5
1981	0.3	0.3	0.3
1982	1.0	1.0	1.0
1983	2.4	2.4	2.2
1984	15.5	15.5	15.4
1985	24.5	24.5	16.1
1986	30.2	19.8	0.4
To complete	223.5	0	0
Total	297.9	64.0	35.9

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

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: Procurement			
1990	141.5	0	0
1991	195.6	0	0
To Complete	TBD	0	0
Total	337.1	0	0
Appropriation: MILCON			
To Complete	11.5	0	0
Total	11.5	0	0

17. (U) Production Rate Data:

a. (U) Annual Production Rates -- N/A

18. (U) Operating and Support Costs: N/A

A-11 LHX

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: LIGHT HELICOPTER FAMILY (LHX)

85-028

AS OF DATE: December 31, 1985

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1. Designation and Nomenclature (Popular Name): Light Helicopter Family (LHX)

2. DOD Component: U.S. Army

3. Responsible Office and Telephone Number:

LHX Project Manager's Office
U.S. Army Aviation Systems Command
(AVSCOM)
St. Louis, MO 63120-1798

Brigadier General Ronald K. Andreson
Assigned: August 1984
AUTOVON 693-1800
Commercial (314) 263-1800

4. Program Elements/Procurement Line Items:

RDTE: PE 63220 Project D325
PE 64216 Project DC72
PE 64223 Project D327

Procurement: APPN 2031 SSN AA0495
APPN 2031 SSN AA0972

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FOR OPEN PUBLICATION

MAR 21 1986

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

5

5. Related Programs:

Air-to-Air Stinger Missile System
Anti-tank Missile System

No SECURITY Objection
to PUBLIC RELEASE

18 MAR 1986

SECURITY REVIEW, OASD, HQDA

86-I-0722

6. Mission and Description:

The LHX will be a highly capable, survivable, affordable, and supportable family of twin-engine, advanced technology helicopters that meets the operational requirements of the U.S. Army in the mid-1990s and beyond. The LHX family will have two variants, scout/attack (SCAT) and utility (U) with common dynamic components and subsystems. The LHX family will replace the AH-1, OH-58 A/C, OH-6, and UH-1 fleets and augment and complement the operational capabilities of the BLACK HAWK, Apache, and AHIP. The SCAT will be single crew, and the Utility will be capable of single-crewmember operation. The objectives of the LHX program are to increase Army aviation world-wide tactical capabilities, increase readiness, increase support effectivity, reduce operating and support costs, and correct major deficiencies in the current light fleet. The LHX will be operationally effective in adverse weather and night operations, be capable of conducting nap-of-the-earth operations, be self-deployable to Europe, and be rapidly transportable by intertheater tactical air transport. The LHX will conduct effective air-to-air combat, deep attack, continuous day and night operations on an integrated battlefield, allow more rapid tailoring of units to meet the demands of the fluid battlefield, and provide increased ability to remain effective in battle. SCAT armament will include the HELLFIRE anti-tank missile system, air-to-air Stinger missile system, and a turreted automatic gun. The LHX will be fielded in units that have combat, combat support, and combat service support missions.

7. PROGRAM HIGHLIGHTS

a. Significant Historical Developments -- The Army completed its first Army Aviation Mission Area Analysis (AAMAA), in January 1982, which identified 77 major Army aviation deficiencies in the current fleet, 56 of which were hardware related. LHX was identified as solving or significantly improving over one-half of the 56 hardware deficiencies. During the Army Aviation Systems Program Review in March 1982, the Army's senior leadership endorsed the recommendation presented in the AAMAA to replace the current light fleet with the LHX. In January 1983, at the direction of the Deputy Chief of Staff for Operations, an LHX Special Working Group (SWG) was formed to develop the framework of the LHX Program. In April 1983, the Vice Chief of Staff of the Army (VCSA) and the Under Secretary of the Army (USA) provided a "Proof of Concept Go Ahead" for the LHX Program. On 15 September 1983, Firm Fixed Price (FFP) contracts for preliminary design studies were awarded to four airframe manufacturers, including Bell Helicopter Textron, Boeing Vertol, Sikorsky Aircraft, and Hughes Helicopter Incorporated (now McDonnell Douglas Helicopter Company). Authorization to proceed with the Advanced Rotorcraft Technology Integration (ARTI) effort was received in October 1983. FFP contracts were awarded 21 December 1983 to the same four airframe manufacturers and to International Business Machines (IBM) Defense Systems for ARTI program effort to define the advanced/integrated cockpit design and architecture and demonstrate the feasibility of a single-pilot LHX Scout/Attack (SCAT) through full-mission simulations. In December 1983, the LHX Justification for Major Systems New Start (JMSNS) was approved by

the Office of the Secretary of Defense (OSD). The LHX Cost and Operational Effectiveness Analysis (COEA) effort was initiated in February 1985. The scope of the five ARTI contracts was expanded in March-July 1985 to include analytical and developmental efforts in detailed preliminary design of a Very High Speed Integrated Circuit (VHSIC) Processor and operating system software. Joint U.S. Air Force (USAF)/LHX Project Manager efforts began in December 1984 for a Helmet Mounted Display (HMD) program, which is being conducted by the U.S.A.F. Aerospace Medical Research Laboratory, to demonstrate the virtual cockpit display technology for incorporation in the LHX Full-Scale Development (FSD). On 19 July 1985, FFP FSD contracts were awarded to the contractor teams of AVCO Lycoming/Pratt & Whitney (AVCO/United) and Garrett Turbine Engine Company/Allison Gas Turbine Division of General Motors (LHTEC) for development of a 1200 shaft horsepower class advanced technology engine, designated as the T800. FFP contracts were awarded in July-September 1985 to the same four airframe contractors performing ARTI effort to conduct wind tunnel testing of the Best Technical Approach (BTA) helicopter designs produced by the preliminary design contracts. This effort also included development of aerodynamic models for use in the ARTI full-mission simulations. On 19 August 1985, the LHX Letter of Agreement (LOA) was approved by Department of the Army (DA). A draft Request for Proposal (RFP) for the LHX Air Vehicle FSD Phase I contracts was issued to industry on 30 December 1985. The Acquisition Strategy for the LHX program has been approved by U.S. Army Materiel Command (AMC). This is the initial SAR for the LHX Program.

b. Significant Developments Since Last Report -- None.

c. Changes Since "As Of" Date -- None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: None

9. Schedule:

a. Milestones --

	Plan Estimate/ 1/ Approved Program	Current Estimate
T800 Engine FSD Contract Awards	Jul 85/ Jul 85	Jul 85
ASARC/DSARC I/II	Feb/Mar 87 / Feb/Mar 87	Feb/Mar 87
Issue RFP for Air Vehicle	Mar 87/Mar 87	Mar 87
Contract Awards for Air Vehicle (Phase I)	Oct 87/Oct 87	Oct 87
T800 Engine Source Selection (FSD Down Selection)	Sep 88/Sep 88	Sep 88
Contract Award for Air Vehicle (Phase II)	Jul 89/ Jul 89	Jul 89
First Flight	Sep 91/ Sep 91	Sep 91
T800 Engine Production Contract Award	Jan 93/ Jan 93	Jan 93
DT/OT II Completed	Nov 93/ Nov 93	Nov 93
ASARC/DSARC III Production Decision	Jan 94/ Jan 94	Jan 94
Air Vehicle Production Contract Award	Jan 94/ Jan 94	Jan 94
First Air Vehicle Production Delivery	Jul 95/ Jul 95	Jul 95
First Unit Equipped	May 96/ May 96	May 96

9. Schedule (Cont'd):

b. Previous Change Explanations -- N/A, Initial SAR

c. Current Change Explanations -- N/A

d. References --

Planning Estimate: AMC Approved Acquisition Strategy (16 Dec 85)

Approved Program: FY 1987 President's Budget

Footnotes:

1/ The planning estimate milestones are based on the AMC approved Acquisition Strategy.

10. Technical/Operational Characteristics:

a. Technical --	Plan Estimate/ Appr Program	Demonstrated Performance	Current Estimate
SCAT Primary Mission Gross Weight (PMGW) (lbs):	8,500/TBD		8500
Flight Performance (Primary Mission):			
SCAT Vertical Rate of Climb (VROC) feet per minute (FPM) 4000'/ 95°F. at structural design gross weight	500/TBD		500
Cruise Speed at PMGW, 4,000'/95°F. (Max Continuous Power):			
(a) SCAT (knots):	170/TBD		170
(b) Utility (knots):	160/TBD		160
Reliability			
Mean Time Between Essential Maintenance Action (MTBEMA) (hours)	4.5/TBD		4.5
Mean Time Between Mission Affecting Failure (MTBMAF) (hours)	8.4/TBD		8.4
Operational Availability (Peacetime)	86/TBD		86
Maintainability			
Mean Time to Repair (MMTR) (hours)	1/TBD		1
Maintenance Manhours per Flight Hour (MMH/FH)	2.8/TBD		2.8

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10. Technical/Operational Characteristics (Cont'd):

b. Operational --	Plan Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Payload (Primary Mission)			
SCAT (Expendable Ordnance)			
HELLFIRE Missiles:	4/4		4
STINGER Missiles:	2/2		2
Gun · Ammo, 500 rds.	TBD/TBD		TBD
Utility (Ordnance/Troops)			
STINGER · Missiles:	2/2		TBD
Troops:	6/6		6
Air Transportability in C-141B (No. of Aircraft/Hours Load-Unload):			
SCAT	4/1.5 / 4/1.5		4/1.5
Utility	3/1.5 / 3/1.5		3/1.5
Self-Deployable (NM):	1260/1260		1260

c. Previous Change Explanations -- N/A

d. Current Change Explanations -- N/A

e. References --

Planning Estimate: Letter of Agreement approved by DA, 19 August 1985/ Draft Required Operational Capability (ROC) document.

Approved Program: FY 1987 President's Budget

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost --	Planning Estimate	Changes	Current Estimate
Development	1756.2[1/]		1756.2
Concept Formulation (6.3B)	(128.8)	-0-	(128.8)
Air Vehicle	(1188.0)	-0-	(1188.0)
Engine	(439.4)	-0-	(439.4)
Procurement	391.4[2/]		391.4
Air Vehicle	(356.5)	-0-	(356.5)
Engine	(-0-)	-0-	(-0-)
Initial Spares	(34.9)	-0-	(34.9)
Construction	TBD	-0-	TBD
Total FY 84 Base-Year $	2147.6	-0-	2147.6
Escalation			
Development	376.8	-0-	376.8
Procurement	125.5	-0-	125.5
Construction	-0-	-0-	-0-
Total Then Year $	2649.9	-0-	2649.9

11. Program Acquisition Cost (Cont'd): (Current Estimate in Millions of Dollars)

	Planning Estimate	Changes	Current Estimate
b. Quantities --			
Development	TBD	-0-	TBD
Procurement	TBD	-0-	TBD
Total	TBD	-0-	TBD

c. Unit Cost -- To Be Determined

d. Approved Design to Cost Goal --

	(Average Unit Flyaway Cost) Planning Estimate	Current Estimate	Latest Approved Threshold
Quantity: SCAT: 3072[3/]			
Peak Rate: 27/month[4/]			
FY 84 Base-Year $	6.0M	6.0M	N/A
Then-Year $	9.9M	9.9M	N/A
Quantity: Utility: 195[1 3/]			
Peak Rate: 13/month[4/]			
FY 84 Base-Year $	4.0M	4.0M	N/A
Then-Year $	6.6M	6.6M	N/A

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

Footnotes:

1/ Includes funding for FY 84 through FY 91 as reflected in the President's Budget.

2/ Includes only two years of procurement for advanced procurement and initial spares.

3/ Quantities are baseline estimates, subject to change upon approval of program acquisition strategy.

4/ Total of two competing production contractors.

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	2649.9	N/A	2649.9
(2) Quantity	TBD	N/A	0
(3) Unit Cost	TBD	N/A	TBD
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost:	N/A	N/A	N/A
Less CY Adv Proc			
Plus CY Adv Proc			
Net Total			
(2) Quantity	N/A	N/A	N/A
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL	
Planning Estimate	2133.0	516.9	TBD	2649.9	1/
Previous Changes:	N/A	N/A	N/A	N/A	
Current Changes:	N/A	N/A	N/A	N/A	
Total Changes	N/A	N/A	N/A	N/A	
Current Estimate	2133.0	516.9	TBD	2649.9	

13. Cost Variance Analysis (Cont'd):

(FY 1984 Constant (Base Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Planning Estimate	1756.2	391.4	TBD	2147.6
Previous Changes:	N/A	N/A	N/A	N/A
Current Changes:	N/A	N/A	N/A	N/A
Total Changes	N/A	N/A	N/A	N/A
Current Estimate	1756.2	391.4	TBD	2147.6

b. Previous Change Explanations -- N/A

c. Current Change Explanations -- N/A

Footnote:

1/ Includes funding only for FY 84 through FY 91 as reflected in the President's Budget.

14. Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate --

PAUC Initial SAR Est.	CHANGES								PAUC Current Est
	ECON	QTY	SCH	ENG	EST	OTHER	SPT	TOTAL	
TBD									TBD

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

a. RDTE --

Engine: AVCO/United,
Stratford, CT
DAAJ09-85-C-B019
Award: July 19, 1985
Definitized: Nov 15, 1985 4/
Type: FFP with CPIF option

Initial Contract Price		
Target	Ceiling	Quantity
240.0 1/	TBD 2/	N/A

Current Contract Price		
Target	Ceiling	Quantity
240.0	TBD	N/A

Estimated Price at Completion	
Contractor	Program Manager
TBD	240.0

Previous Cumulative Variances	Cost Variance	Schedule Variance
N/A	N/A	N/A

b. RDTE --

Engine: Light Helicopter
Turbine Engine Company
(LHTEC)
Indianapolis, Indiana
DAAJ09-85-C-B017
Award: July 19, 1985
Definitized: Nov 13, 1985 4/
Type: FFP with CPIF option

Initial Contract Price		
Target	Ceiling	Quantity
264.0 3/	TBD 2/	N/A

Current Contract Price		
Target	Ceiling	Quantity
264.0	TBD	N/A

Estimated Price at Completion	
Contractor	Program Manager
TBD	264.0

Previous Cumulative Variances	Cost Variance	Schedule Variance
N/A	N/A	N/A

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

c. RDTE --

ARTI:
Boeing Vertol Co.
Philadelphia, PA
DAAK51-84-C-0004
Award: December 21, 1983
Definitized: Nov 26, 1985 4/
Type: FFP

Initial Contract Price

Target	Ceiling	Quantity
9.6	N/A	N/A

Current Contract Price

Target	Ceiling	Quantity
15.8	N/A	N/A

Estimated Price at Completion

Contractor	Program Manager
15.8	15.8

Previous Cumulative Variances

N/A

Cost Variance	Schedule Variance
N/A	N/A

d. RDTE --

ARTI:
IBM Corp., Owego, NY
DAAK51-84-C-0006
Award: December 21, 1983
Definitized: Nov 26, 1985 4/
Type: FFP

Initial Contract Price

Target	Ceiling	Quantity
10.5	N/A	N/A

Current Contract Price

Target	Ceiling	Quantity
16.6	N/A	N/A

Estimated Price at Completion

Contractor	Program Manager
16.6	16.6

Previous Cumulative Variances

N/A

Cost Variance	Schedule Variance
N/A	N/A

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

e. RDTE --

ARTI:
McDonnell Douglas Helicopter Co., Culver City, CA
DAAK51-84-C-0005
Award: December 21, 1983
Definitized: Nov 26, 1985 4/
Type: FFP

Initial Contract Price

Target	Ceiling	Quantity
11.4	N/A	N/A

Current Contract Price

Target	Ceiling	Quantity
17.6	N/A	N/A

Estimated Price at Completion

Contractor	Program Manager
17.6	17.6

Previous Cumulative Variances	Cost Variance	Schedule Variance
N/A	N/A	N/A

f. RDTE --

ARTI:
Sikorsky Aircraft
Stratford, CT
DAAK51-84-C-0007
Award: December 21, 1983
Definitized: Nov 26,1985 4/
Type: FFP

Initial Contract Price

Target	Ceiling	Quantity
11.3	N/A	N/A

Current Contract Price

Target	Ceiling	Quantity
17.4	N/A	N/A

Estimated Price at Completion

Contractor	Program Manager
17.4	17.4

Previous Cumulative Variances	Cost Variance	Schedule Variance
N/A	N/A	N/A

1/ Target price includes:

Basic contract (FFP)	$209.6
Options (FFP)	6.6
A/V Support (CPIP)	23.8
	$240.0

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

2/ Ceiling price to be negotiated for CPIF option.

3/ Target price includes:

Basic Contract (FFP)	212.3
Options (FFP)	11.8
A/V Support (CPIF)	39.9
	264.0

4/ Represents latest awarded increment.

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

a. Program Status --

(1) Percent Program Completed: (3 yrs./TBD)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: (186.8/TBD)
(Funds Appropriated To Date in Millions/Total Program Funding in Millions)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current $ Prior Yrs. (FY 84-86)	Balance to Complete: Budget Year (FY 87)	FYDP (FY 88-91)	Beyond FYDP	Total
RDTE	186.8	155.7	1790.5	TBD	TBD
PROC	-0-	-0-	516.9	TBD	TBD
MILCON	-0-	-0-	TBD	TBD	TBD
TOTAL	186.8	155.7	2307.4	TBD	TBD

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

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			
		Flyaway		Total	Advance Proc		Total	Escl Rate %
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1984				1.0			1.0	3.8
1985				67.6			71.6	3.6
1986				103.9			114.2	3.2
1987				136.4			155.7	4.1
1988				291.1			344.1	3.9
1989				334.4			407.3	3.4
1990				401.6			501.9	2.9
1991				420.2			537.2	2.3
Subtotal				1756.2			2133.0	
Appropriation: Procurement								
1990			34.0	36.8	- 44.0		47.6	2.9
1991			322.5	354.6	-426.8		469.3	2.3
Subtotal			356.5	391.4	-470.8		516.9	

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Est in Millions		
	Total	Obligated	Expended
Appropriation: RDTE			
1984	1.0	1.0	1.0
1985	71.6	71.3	39.8
1986	114.2	47.6	.4
Subtotal	186.8	119.9	41.2
To Complete	TBD	N/A	N/A
Total	TBD	119.9	41.2

17. Production Rate Data:

a. Annual Production Rates -- TBD

b. Cost Variance - Dollars in Millions -- N/A

c. Schedule Variance -- N/A

d. Deliveries (Plan/Actual) --

	To Date
RDTE	0/0
Procurement	0/0

18. Operating and Support Costs: N/A

A-15 MSE

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

85-031

PROGRAM: Mobile Subscriber Equipment (MSE)

AS OF DATE: December 31, 1985

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CLEARED
FOR OPEN PUBLICATION

MAR 21 1986

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

1. Designation and Nomenclature (Popular Name): Mobile Subsciber Equipment (MSE)

2. DOD Component: U.S. Army

3. Responsible Office and Telephone Number:

PM MSE
Ft. Monmouth, NJ 07703-5210

Colonel John R. Power
Assigned: January 23, 1986
AV 992-5450; COMM (201) 532-5450

4. Program Elements/Procurement Line Items:

RDT&E: None
PROCUREMENT: APPN 2035, SSN BB1610

5. Related Programs: None

6. Mission and Description: The mission of MSE is to provide the tactical U.S. Army commander with a secure, automatic, mobile and survivable tactical telephone system capable of passing data, facsimile, and voice traffic throughout the corps area of operations and allow commanders and their staffs to communicate while moving as well as stationary. The MSE system is being procured through a nondevelopmental item (NDI) procurement acquisition strategy. MSE will, for the first time, enable the Army to fully implement the Air Land Battle doctrine.

No SECURITY Objection to PUBLIC RELEASE

18 MAR 1986

SECURITY REVIEW, OASD (PA) DoDA

86-0734

6. Mission and Description (Cont'd)
The MSE system will field the total force of 5 corps and 26 divisions. The major items of equipment will be integrated into the following functional areas: Subscriber Terminals, Mobile Subscriber Access, Wire Subscriber Access, Area Coverage and System Control.

7. Program Highlights:

a. Significant Historical Developments -- The MSE system is part of the TRI-TAC architecture and was identified as the division backbone communication system in the Army's INTACS Objective System, approved in October 1975, and revalidated by TRADOC in Msg R241200Z Feb 81, Subject: Mobile Subscriber Equipment.

OSD Memorandum dated 13 Oct 79 approved the Joint Operational Requirement (JOR) for MSE and continued the assignment of the Army as the acquisition agent.

OSD Memorandum dated 8 Jan 80 approved the Mission Element Need Statement (MENS) for MSE.

HQ DA (DCSRDA) Message dated 6 Aug 82 directed AMC to proceed immediately with actions necessary to obtain the MSE system.

In Nov 82, guidance was received from the Under Secretary of the Army to procure MSE using a non-developmental approach.

The JOR and MENS were updated & expanded to include corps and divisions in the MSE Operational Capabilities Document (MSEODC) dated 24 May 84.

On 5 Nov 85, GTE was declared the winning contractor by the Secretary of the Army.

On 19 Dec 85, the basic contract, was signed.

On 31 Dec 85, Option 1 of the contract was signed.

b. Significant Developments Since Last Report -- N/A

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: None

9. Schedule:

a. Milestones --

	Production Estimate/ Approved Program	Current Estimate
Program Initiated	Aug 82	Aug 82
Issue Request for Proposal	Jul 84	Jul 84
Type Classification (Std) Approved	Nov 85	Nov 85
Contract Award (Production)	Dec 85	Dec 85
First Production Delivery (On-Site)	Apr 88	Apr 88
First Unit Equipped/IOC	May 88	May 88
User Follow-On Test & Eval Completed	Aug 88	Aug 88

b. Previous Change Explanations -- N/A

9. Schedule (Cont'd)

c. Current Change Explanations -- N/A

d. References --

Approved Program: Draft PD, 16 Dec 85.

10. Technical/Operational Characteristics:

	Pdn Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a. Technical --			
(1) MSE Switching Equipment			
(a) Node Center Switch			
Max # of Local Subscribers	24		24
# of Digital Transmission Groups	16		16
Operating Temperature	-40° to 120° F		-40° to 120° F
(b) Large Extension Switch			
Max # of Local Subscribers	176		176
# of Digital Transmission Groups	8		8
Operating Temperature	-40° to 120° F		-40° to 120° F
(c) Small Extension Switch			
Max # of Local Subscribers	41		41
# of Digital Transmission	1		1
Operating Temperature	-40° to 120° F		-40° to 120° F
(2) MSE Radio Equipment			
(a) UHF			
Frequency			
Band I	225-400 Mhz		225-400 Mhz
Band III	1350-1850 Mhz		1350-1850 Mhz
Output Power			
Band I	10 watts		10 watts
Band III	5 watts		5 watts

10. Technical/Operational Characteristics: (Cont'd)

	Pdn Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(2) MSE Radio Equipment			
Data Rates	256,512,1024Kbps		256, 512, 1024Kbps
Operating Temperature	-40° to 120° F		-40° to 120° F
(b) VHF			
Frequency	30-88 Mhz		30-88 Mhz
Output Power	14-18 watts		14-18 watts
Data Rates	16Kbps		16Kbps
Operating Temperature	-40° to 120° F		-40° to 120° F
(b) Operational			
(1) Set-up/Tear Down Time (Node)	30 Min		30 Min
(2) Max Vehicle Curb Weight	8600 lbs		8600 lbs
(3) Max MSE Radio Operating Ranges			
VHF	15 Km		15 Km
UHF	40 Km		40 Km

(c) Previous Change Explanations -- N/A.

(d) Current Change Explanations -- N/A.

(e) References --

Production Estimate: MSE System Specification, 8 Jul 85.

Approved Program: Same as Production Estimate.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost --	Production Estimate	Changes	Current Estimate
Development (RDT&E)	$ 0	0	$ 0
Procurement	4,428.5	0	4,428.5
Subscriber Terminals	(157.4)	0	(157.4)
Mobile Subscriber Access	(548.2)	0	(548.2)
Wire Subscriber Access	(1,198.2)	0	(1,198.2)
Area Coverage	(1,587.4)	0	(1,587.4)
System Control Center	(116.4)	0	(116.4)
Initial Spare Parts	(160.4)	0	(160.4)
Warranty	(166.3)	0	(166.3)
Contractor Fielding	(166.3)	0	(166.3)
Other Weapon Sys. Cost	(327.9)	0	(327.9)
TOTAL FY86 Base-Year $	$4,428.5	0	$4,428.5
Escalation --	705.5		705.5
Development (RDT&E)	(0.0)		(0.0)
Procurement	(705.5)		(705.5)
TOTAL Then-Year $	$5,134.0 1/		$5,134.0 1/
b. Quantities --			
Development (RDT&E)	0	-	0
Procurement	48	-	48
TOTAL	48 1/		48 1/
c. Unit Cost -- 1/			
Procurement:			
FY86 Base-Year $	92.3		92.3
Then-Year $	107.0		107.0

1/ The quantity of 48 units identified above represents twenty-six division signal bns, twenty corps signal bns and two training sets for a total of $4.294B. All user equipment located in the division/corps areas has been included in the total program acquisition cost. The Department of Army has tentatively programmed $840 million as a planning wedge in FY91 to outfit three new divisions and three separate brigades with MSE. Studies are on going to determine if these forces should be equipped with MSE or some other means of area communications. When the Army reaches a decision regarding proper communications equipment for these additional units Congressional approval will be sought. Thus, unit cost calculations refected in this SAR overstate the per unit cost.

11. **Program Acquisition Cost (Current Estimate in Million of Dollars) (Cont'd)**

c. Unit Cost (Cont'd)

Program:

FY86 Base-Year $	92.3	92.3
Then-Year $	107.0	107.0

d. Approved Design to Cost Goal — Not applicable due to MSE being a Non-Development Item Procurement.

e. Foreign Military Sales -- None

f. Nuclear Costs — None

12. **Program Acquisition/Current Procurement Unit Cost Summary:**
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition:			
(1) Cost	$5,134.0	$5,134.0	$5,134.0
(2) Quantity	48	48	48
(3) Unit Cost	107.0	107.0	107.0

b. Because this program will purchase a varying number of Subscriber Terminals, Mobile Subscriber Access, Wire Subscriber Access, Area Coverage and System Control Units in a given year, it would not be appropriate to reprt CPUC.

13. Cost Variance Analysis

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	$5,134.0	0	$5,134.0
Previous Changes:	N/A	N/A	N/A	N/A
Subtotal	N/A	N/A	N/A	N/A
Current Changes	None	None	N/A	None
Subtotal	None	None	N/A	None
Total Changes	None	None	N/A	None
Current Estimate	0.0	$5,134.0	0	$5,134.0

(FY1986 Constant (Base-Year) Dollars in Millions)

Production Estimate	0.0	$4,428.5	0	$4,428.5
Previous Changes:	N/A	N/A	N/A	N/A
Subtotal	N/A	N/A	N/A	N/A
Current Changes:	None	None	N/A	None
Subtotal	None	None	N/A	None
Total Changes	None	None	N/A	None
Current Estimate	0.0	$4,428.5	0	$4,428.5

b. Previous Change Explanations -- First SAR Submission

13. Cost Variance Analysis (Cont'd)

c. Current Change Explanations 1/ (Dollars in Millions)

	Base-Year	Then-Year
(1) RDT&E	N/A	N/A
(2) Procurement	N/A	N/A
(3) MILCON	N/A	N/A

d. References --

Production Estimate: MSE Contracts DAAB07-86-C-K022, DAAB07-86-D-K023.

14. Program Acquisition Unit Cost(PAUC) History:(Millions of then-year dollars)

Initial SAR Estimate to Current Estimate:

PAUC	CHANGES								PAUC
(Int. Est)	ECON	QTY	SCH	ENG	EST	OTHER	SPT	TOTAL	(Current Est)
107.0	--	--	--	--	--	--	--	--	107.0

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

a. RDT&E: N/A

b. Procurement

Basic Contract:	Initial Contract Price Ceiling	QTY
GTE Corp., Needham Heights, MA		
DAAB07-86-C-K022, FFP,	$4,145.7	48
Award: 19 Dec 85		

1/ Initial SAR Submission

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

Current Contract Price		Estimated Price at Completion	
Ceiling	QTY	Contractor	Prog. Manager
$4,145.7	48	$4,145.7	$4,145.7

	Cost Variance	Schedule Variance 1/
Previous Cummulative Variances:	-	-
Cumulative Variance to Date (11/30/85)	-	-
Net Change	-	-

Requirements Contract(IK's Only): Initial Contract Price

GTE Corp., Needham Heights, MA — Ceiling $40.9, QTY 9,416
DAAB07-86-D-K023, FFP (Delivery Order Based),
Award: 19 Dec 85

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	QTY	Contractor	Prog. Manager
	$40.9	9,416	$40.9	$40.9

	Contractor	Schedule Variance 1/
Previous Cumulative Variances:	-	-
Cumulative Variance to Date (11/30/85)	-	-
Net Change	-	-

Explanation of Change: Initial SAR Submission

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

a. Program Status --
(1) Percent Program Completed: 33 1/3% (2 yrs/6 yrs)
(2) Percent Program Cost Appropriated: 9.3% ($398.6/4,294.0)

1/ Initial SAR Submission

16. Program Funding Summary: (Current Estimate in Millions of Dollars) (Cont'd)
b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY85-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP	Total
RDT&E	0.0	0.0	0.0	0.0	0.0
Procurement	$398.6	$903.7	$3,831.7	0.0	$5,134.0
MILCON	0.0	0.0	0.0	0.0	0.0
Total	$398.6	$903.7	$3,831.7	0.0	$5,134.0

c. Annual Summary --

Fiscal Year	FY 86 Base-Year Dollars: Qty 1/	Flyaway: Nonrec	Flyaway: Rec	Total	Then-Year Dollars: Advance Proc: Debit	Advance Proc: Credit	Total	Escl Rate (%)
			Appropriation: RDT&E					
1986	0			0.0			0.0	--
1987	0			0.0			0.0	--
1988	0			0.0			0.0	--
1989	0			0.0			0.0	--
1990	0			0.0			0.0	--
Subtotal	0			0.0			0.0	

1/ The quantity of 48 units identified above represents twenty-six division signal bns, twenty corps signal bns and two training sets for a total of $4.294B. All user equipment located in the division/corps areas has been included in the total program acquisition cost. The Department of Army has tentatively programmed $840 million as a planning wedge in FY91 to outfit three new divisions and three separate brigades with MSE. Studies are on going to determine if these forces should be equipped with MSE or some other means of area communications. When the Army reaches a decision regarding proper communications equipment for these additional units Congressional approval will be sought.

c. Annual Summary -- (Cont'd)

Fiscal Year	Qty 3/	FY 86 Base-Year Dollars Flyaway Nonrec 2/	Flyaway Rec	Then-Year Dollars Advance Proc Total Debit	Advance Proc Total Credit	Escl Rate (%)
			Appropriation: Procurement			
1985	TBD		$ 60.4	$ 61.3	$ 63.3	3.6
1986	TBD		300.6	312.6	335.3	3.2
1987	TBD		785.9	814.7	903.7	4.1
1988	TBD		860.0	892.6	1019.8	3.9
1989	TBD		816.4	849.4	995.7	3.4
1990	TBD		776.6	813.6	976.2	2.9
1991	TBD		TBD	684.3	840.0	2.3
Subtotal	TBD		$3,599.9	$4,428.5	$5,134.0	
Total	48		$3,599.9	$4,428.5	$5,134.0	

2/ The MSE contract is a price contract not a cost contract, that is, nonrecurring costs were not separately identified.

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: Procurement		
1985	$ 63.3	$ 60.5	0
1986	335.3	329.1	0
1987	903.7	0	0
1988	1,019.8	0	0
To Complete	1,971.9	0	0
Total	$4,294.0	$389.6	0

3/ The quantity of 48 units identified above represents twenty-six division signal bns, twenty corps signal bns and two training sets for a total cost of $4.294B. All user equipment located in the division/corps areas has been included in the total program acquisition cost. The Department of Army has tentatively programmed $840 million as a planning wedge in FY91 to outfit three new divisions and three separate brigades with MSE. Studies are on going to determine if these forces should be equipped with MSE or some other means of area communications. When the Army reaches a decision regarding proper communications equipment for these additional units Congressional approval will be sought.

17. Production Rate Data: Because this program will purchase a varying number of Subscriber Terminals, Mobile Subscriber Access, Wire Subscriber Access, Area Coverage and System Control Units in a given year, it would not be appropriate to report production rates.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The MSE system will be utilized in a peacetime mode 8.2 hours per day, 7 days per week with an annual operating time of 2996.4. The costs are the direct/indirect costs to support the primary personnel and to operate the system. The cost of military personnel & indirect support operations were estimated from Tables of Organization and Equipments (TOEs) developed for the MSE system. Costs applied for the Military Personnel were the standard composite pay and allowances and the retired accrual factors. The summary costs for replenishment spares were calculated by the Optimum Supply and Maintenance Model (OSAMM) using MTBF, washout rates & other estimated qualitative data from the contractor together with weighted average unit prices developed from firm fixed range prices in the contract. This was developed for the nonstandard Communications-Electronics (C-E) portion. For standard C-E equipment, estimates were developed through the OSAMM model using reliability data furnished by the contractor & unit price data from CECOM. The non C-E equipment costs were developed for vehicles, generators & trailers from historical data furnished by TACOM & TROSCOM. The non C-E maintenance action costs were furnished by the contractor and the C-E maintenance action costs were obtained from the CECOM Directorate of Maintenance Engineering (DME). The petroleum, oil & lubricants (POL) cost is based on the number and type of vehicles and generators, the operating scenario (6,000 miles driven per year), fuel economy and cost factors for gas & oil. All the O&S costs were based on a life cycle of 15 years following delivery of the final MSE system.

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

b. Costs --

Cost Element	Avg Annual Cost Per MSE System 4/ in Constant FY86 $M
Personnel	225.824
Replenishment Spares	0.810
IGS/Depot Maintenance	1.453
POL	0.243
Total	228.330

4/ The Average Annual O&S cost per MSE system is based on a quantity of 48 units which represents twenty-six division signal bns, twenty corps signal bns and two training sets. All user equipment located in the division/corps areas has been included in the total program acquisition cost. The quantities for additional units have not been included in the total quantity of 48.

N-31 SSN-21 ~~CONFIDENTIAL~~ SAR85-049

~~CONFIDENTIAL~~

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: SSN 21 CLASS SUBMARINE

AS OF DATE: 31 December 1985*

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1. [U] Designation/Nomenclature: High Speed Nuclear Attack Submarine/SSN 21 Class

2. [U] DoD Component: Department of the Navy

3. [U] Responsible Office and Telephone Number:
SSN 21 Program Office
PMS394
PM: CAPT M.S. Firebaugh
Assigned: January 1984
Telephone: (202) 692-1888

AS AMENDED
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FOR OPEN PUBLICATION
MAR 31 1986 9
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD--PA)
DEPARTMENT OF DEFENSE

4. [U] Program Elements/Procurement Line Items:
RDT&E:
PE 25634N, Project S0218 Submarine Silencing
PE 63561N, Project S0207 Advanced Submarine Control
PE 63561N, Project S0344 Submarine Auxiliaries
PE 63561N, Project S0348 Deep Components
PE 63561N, Project S0364 Submarine Damage Prevention
PE 63561N, Project S0923 Improved Performance Machinery
PE 63561N, Project S0971 Submarine Survivability
PE 63561N, Project S1266 Submarine Propellers
PE 63562N, Project S0221 Target Strength Reduction
PE 63562N, Project S0320 Weapons Stowage and Launch
PE 63569N, Project S1255 Advanced Submarine Technology
PE 63570N, Project S1914 S6W Nuclear Propulsion Plant
PE 64561N, Project S1946 SSN 21 Development
PE 64567N, Project S1803-007 Ship Contract Design

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CG-RN-1
Declassify on ~~OADR~~ This document may not be used as a derivative classification source

~~CONFIDENTIAL~~

SSN 21, 31 December 1985*

PROCUREMENT: 24281N

MILCON: N/A

O&MN: N/A

5. [U] Related Programs:

PE	24281N, Project S0239	Mine Detection and Avoidance
PE	63504N, Project S0223	Submarine Sonar Improvement (Adv)
PE	63560N, Project S1305	ACSAS
PE	63522N, Project S1739	Submarine Arctic W/F Development
PE	63522N, Project X0770	Adv Submarine Support Equipment
PE	63560N, Project S0222	Submarine Hull Array Development (Adv)
PE	63528N, Project S0967	Non Acoustic ASW
PE	64502N, Project S0742	Submarine Integrated Antenna System
PE	64503N, Project S0219	Submarine Sonar Improvement (Eng)
PE	64508N, Project S0166	SPS Improvement
PE	64514N, Project S0247	ESGN
PE	64514N, Project S0253	Navigation System
PE	64515N, Project X0775	Submarine Surveillance Equipment
PE	64520N, Project S0198	Submarine Hull Array Development (Eng)
PE	64524N, Project S1347	AN/BSY-1
PE	64524N, Project S1941	FY89 Combat System
PE	64524N, Project X1411	Submarine Tactical Communication System
PE	64562N, Project S0236	SSN Combat Control System Improvement (Eng)

(b)(1)

7. [U] Program Highlights:

a. Significant Historical Developments -- The SSN 21 Class submarine program began July 1982 with the establishment of GROUP TANGO to assess the need for an advanced technology submarine. In December 1982, CNO directed NAVSEA to proceed with feasibility studies. SECNAV approved the conceptual design of the SSN 21 in June 1983, and a new start was authorized by a Program Decision Memorandum in August 1983. In December 1983, SECNAV and SECDEF approved proceeding with preliminary design. As a result, preliminary design contracts were awarded to Electric Boat and Newport News.

SSN 21, 31 December 1985*

In June 1984, a Secretary of Defense Decision Memorandum, documenting the decisions of the December 1983 SECDEF Program Review, authorized the Navy to proceed with the preliminary design phase for the lead ship of the SSN 21 Class. The SSN 21 program was reviewed in 1984 by the Acquisition Review Board in October, and by SECNAV in December. In addition, a Logistics Review Group Audit was conducted in December 1984.

b. Significant Developments Since Last Report -- The findings of the Logistics Review Group Audit in May 1985 established certification of the SSN 21 Program ILS Plan for entry into Full Scale Engineering Development. The preliminary design phase for the SSN 21 Class attack submarine was completed in May 1985, with the subsequent Department of Navy Preliminary Design Report approved in August. The SSN 21 program went before the DSARC for Milestone II on 28 June 1985. DT-II (Development Test-II) is presently underway and will continue through FY1993. Major programmatic efforts include Silencing, Target Strength Reduction, Propulsors, Advanced Ship Control, Weapons Stowage and Launch, and Submarine Survivability. DT-III is scheduled for FY1994-95. OT-III (Operational Test-III) and OT-IV are scheduled for FY1995 and FY1996 respectively, and will be conducted by COMOPTEVFOR. Also, contract design contracts were awarded to Tenneco - Newport News Shipbuilding Division and General Dynamics, Electric Boat Division on 15 July and 13 August 1985, respectively, to accomplish the 16-month contract design effort. Finally, the SSN 21 Class submarine is expected to satisfy the mission requirements.

c. Changes Since As Of 31 December 1985 -- None

8. [U] Decision Coordinating Paper (DCP) Threshold Breaches: None

9. [U] Schedule:

a. Milestones --

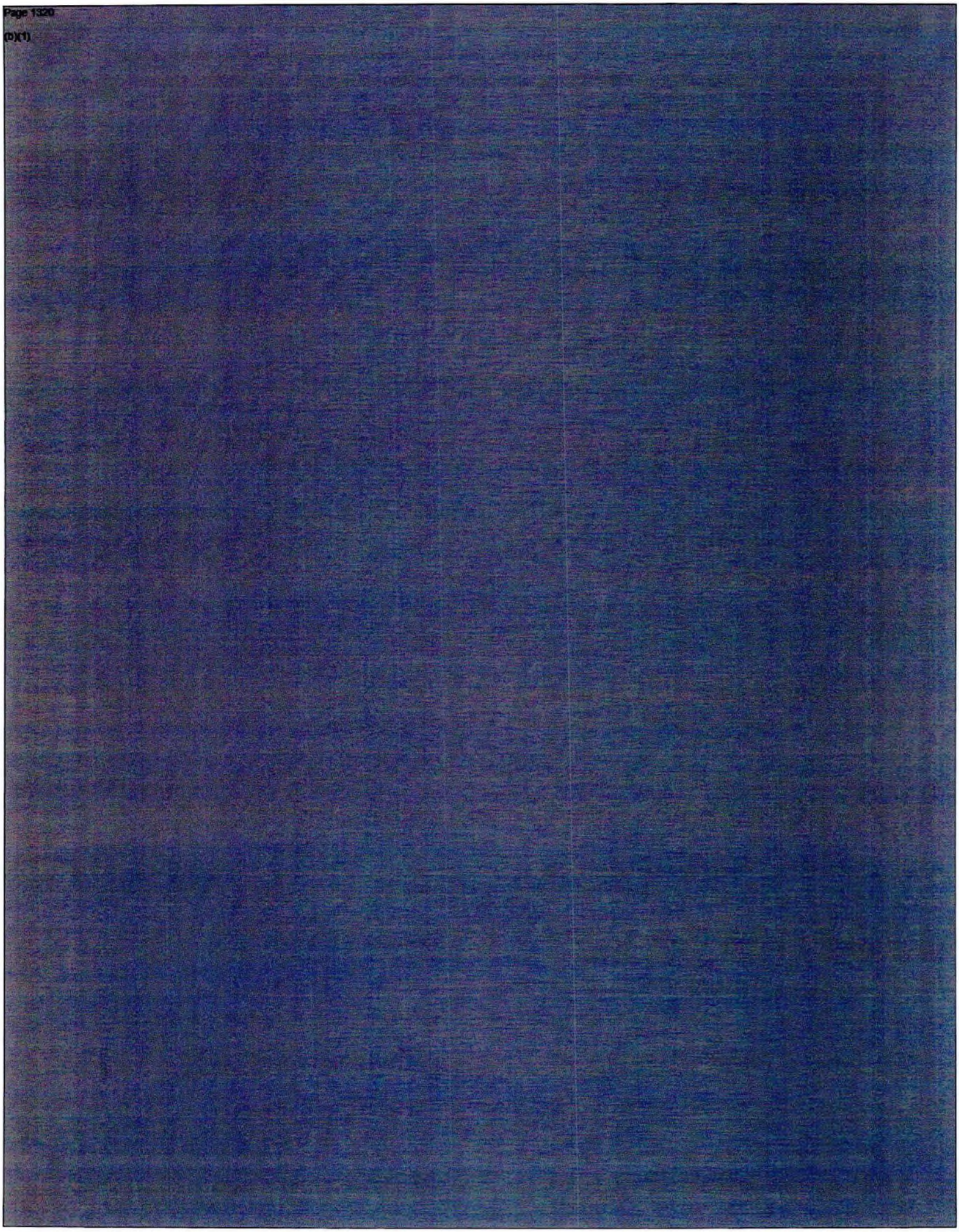
	Development Estimate/ Approved Program	Current Estimate	
Program Initiated	Jul 82/Jul 82	Jul 82	
DSARC I	Dec 83/Dec 83	Dec 83	
DSARC II	May 85/May 85	Jun 85	(CH-1)
FSD Contract Award	Jun 85/Jun 85	Jul 85	(CH-2)
First Production Contract Award	Nov 88/Nov 88	Nov 88	
DSARC III	Mar 90/Mar 90	Mar 90	
Delivery (First Ship)	Nov 94/Nov 94	Nov 94	
IOC (First Ship)	Nov 94/Nov 94	Nov 94	

b. Current Changes Explanation --

(CH-1) DSARC II changed from May 85 to Jun 85 due to administrative scheduling delays.

(CH-2) As a result of DSARC II changing from May 85 to Jun 85, the FSD Contract Award was postponed from Jun 85 to Jul 85.

(b)(1)



10. [U] Technical/Operational Characteristics: (Cont'd)

d. [U] References --

OPNAVINST C9010 Ser 02/5C384451 dtd 13 Dec 85, entitled "APPROVED TOP LEVEL REQUIREMENT (TLR) FOR THE SEAWOLF CLASS (SSN 21) NUCLEAR ATTACK SUBMARINE"

11. [U] Program Acquisition Cost

(Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	1724.6	167.1	1891.7
Procurement	1425.0	2262.7	3687.7
Basic Ship Cost	(883.6)	(1140.6)	(2024.2)
GFE	(494.2)	(981.5)	(1475.7)
Other	(2.8)	(25.8)	(28.6)
OF/PD	(44.4)	(110.8)	(155.2)
Contract Design	0	(4.0)	(4.0)
Construction (MILCON)	0	0	0
Total FY85 Base-Year $	3149.6	2429.8	5579.4
Escalation	725.4	515.8	1241.2
Development	(188.0)	(26.8)	(214.8)
Procurement	(537.4)	(489.0)	(1026.4)
Construction (MILCON)	0	0	0
Total Then-Year $	3875.0	2945.6	6820.6
b. Quantities --			
Development (RDT&E)	0	0	0
Procurement	1	2	3
Total	1	2	3
c. Unit Cost --			
Procurement:			
FY85 Base-Year $	1425.0	-195.8	1229.2
Then-Year $	1962.4	-391.0	1571.4
Program:			
FY85 Base-Year $	3149.6	-1289.8	1859.8
Then-Year $	3875.0	-1601.5	2273.5

d. Approved Design to Cost Goal -- N/A. Per NAVSEA letter Ser 01722/299, Subject: Programs Subject to Design to Cost Principles, dated 14 September 1984. The SSN 21 is not subject to formal Design to Cost Principles.

e. Foreign Military Sales -- None.

f. Nuclear Costs -- SSN 21 draws upon general reactor plant research and development work performed by the Department of Energy but this contribution cannot be quantified.

SSN 21, 31 December 1985*

12. [U] Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	6820.6	3875.0	6820.6
(2) Quantity	3	1	3
(3) Unit Cost	2273.5	3875.0	2273.5
b. Current Procurement --	(FY1986)	(FY1986)	(FY1987)
(1) Cost	N/A	N/A	455.3
Less CY Adv Proc	N/A	N/A	454.3
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	N/A	N/A	1.0*
(2) Quantity	N/A	N/A	N/A
(3) Unit Cost	N/A	N/A	N/A

(* Contract Design)

13. [U] Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1912.6	1962.4	0.0	3875.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	0.0	0.0	0.0	0.0
Current Changes:				
Economic	-22.9	-196.9	-	-219.8
Quantity	-	+2688.5	-	+2688.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+216.8	+100.7	-	+317.5
Other	-	-	-	-
Support	-	+159.4	-	+159.4
Subtotal	193.9	2751.7	0.0	2945.6
Total Changes	193.9	2751.7	0.0	2945.6
Current Estimate	2106.5	4714.1	0.0	6820.6

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

(FY1985 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1724.6	1425.0	0.0	3149.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	0.0	0.0	0.0	0.0
Current Changes:				
Quantity	-	2069.3	-	2069.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	167.1	82.6	-	249.7
Other	-	-	-	-
Support	-	110.8	-	110.8
Subtotal	167.1	2262.7	-	2429.8
Total Changes	167.1	2262.7	0.0	2429.8
Current Estimate	1891.7	3687.7	0.0	5579.4

b. Previous Change Explanation --

NONE

13. [U] Cost Variance Analysis (Cont'd)

c. Current Change Explanations

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised Jan 86 Economic Escalation Rates (Economic)	N/A	-22.9
Congressional Adjustments (Estimating)	+17.4	+18.4
Remove Arctic Warfare PE (63522-S1739) From SSN 21 RDT&E (Estimating)	-86.3	-97.6
Addition of FY1991 RDT&E Rqmts for the SSN 21 Program (Estimating)	+205.1	+252.9
Revised Program Rqmts (Estimating)	+30.9	+43.1

(2) Procurement

Revised Jan 86 Economic Escalation Rates (Economic)	N/A	-196.9
Addition of 2 Submarines (Quantity)	+2069.3	+2688.5
Refinement of Estimates to Reflect Later Contract/Pricing Data (Estimating)	+82.6	+100.7
Additional Outfitting/Post Delivery for Quantity Add (Support)	+110.8	+159.4

(3) MILCON -- N/A

d. References -- SECNAV Memo dated 13 Dec 83.

14. [U] Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate --

PAUC (Initial SAR Est)	Changes								PAUC (Current Baseline)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
3875.0	0	0	0	0	0	0	0	0	3875.0

b. Current Baseline to Current Estimate --

PAUC (Current Baseline)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
3875.0	-73.27	-1687.17	-	-	+105.83	-	+53.13	-1601.48	2273.52

SSN 21, 31 December 1985*

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

a. RDT&E

Improved Performance Machinery Program
General Dynamics/EB Division, Groton, CT
N00024-83-C-4181, CPFF
Award: January 10, 1983
Definitized: January 10, 1983

Initial Contract Price		
Target	Ceiling	Qty
24.1	24.1	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
89.4	89.4	N/A	89.4	89.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances 1/	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

1/ The Department of the Navy has not required CPR or C/SSR data on this contract. Action is being taken to obtain such data.

SSN 21 Propulsion Plant Design
Westinghouse Electric Corporation, Pittsburgh, PA
N00024-79-C-4026, CPFF
Award: October 13, 1978
Definitized: October 13, 1978

Initial Contract Price		
Target	Ceiling	Qty
5.6	5.6	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
74.8	74.8	N/A	74.8	74.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances 1/	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

1/ NAVMAT ltr MAT 0244:EAO of 18 Dec 1972 waives the requirements of DOD Instruction 7000.2 for Naval Nuclear Propulsion Contracts.

Large Scale Vehicle Manufacture
Sperry Corporation, Great Neck, NY
N00024-84-C-5339, CPFF
Award: February 10, 1984
Definitized: February 10, 1984

Initial Contract Price		
Target	Ceiling	Qty
18.4	18.4	N/A

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

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
35.4	35.4	N/A	35.4	35.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances 1/	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

1/ The Department of the Navy has not required CPR or C/SSR data on this contract. Action is being taken to obtain such data.

Deep Components
General Dynamics/EB Division, Groton, CT
N00024-84-C-5300, CPFF
Award: October 16, 1984
Definitized: October 16, 1984

Initial Contract Price		
Target	Ceiling	Qty
4.6	4.6	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
24.6	24.6	N/A	24.6	24.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances 1/	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

1/ The Department of the Navy has not required CPR or C/SSR data on this contract. Action is being taken to obtain such data.

SSN 21 Contract Design
General Dynamics/EB Division, Groton, CT
N00024-85-C-2127, CPFF
Award: August 13, 1985
Definitized: August 13, 1985

Initial Contract Price		
Target	Ceiling	Qty
28.9	28.9	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
28.9	28.9	N/A	28.9	28.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0	0
Cumulative Variances to Date	0	0
Net Change	0	0

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

SSN 21 Contract Design
TENNECO/NNS, Newport News, VA
N000-24-85-C-2128, CPFF
Award: July 15, 1985
Definitized: July 15, 1985

Initial Contract Price		
Target	Ceiling	Qty
28.9	28.9	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
28.9	28.9	N/A	28.9	28.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0	0
Cumulative Variances to Date	0	0
Net Change	0	0

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

a. Program Status --

(1) Percent Program Completed: 21.4% (3/14)

(2) Percent Program Cost Appropriated: 11.2% (765.4/6820.6)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY84-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92)	Total
RDT&E	765.4	317.6	1023.5	-	2106.5
Procurement	-	455.3	4036.9	221.9	4714.1
MILCON	-	-	-	-	-
Total	765.4	772.9	5060.4	221.9	6820.6

16. [U] Program Funding Summary (Cont'd)

c. Annual Summary --

Fiscal Year	Qty	FY Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Nonrec	Rec	Total	Advance Proc Debit	Advance Proc Credit	Total	
Appropriation: RDT&E								
1984	0		109.9	109.9			108.5	3.8
1985	0		254.0	254.0			259.4	3.6
1986	0		375.7	375.7			397.5	3.2
1987	0		288.8	288.8			317.6	4.1
1988	0		242.2	242.2			276.0	3.9
1989	0		218.6	218.6			256.7	3.4
1990	0		197.4	197.4			237.9	2.9
1991	0		205.1	205.1			252.9	2.3
Subtotal	0		1891.7	1891.7			2106.5	N/A
Appropriation: Procurement								
1987	0		382.9	382.9		454.3	455.3	4.1
1988	0		133.1	133.1		161.6	162.6	3.9
1989	1		1261.4	1261.4	615.9	393.4	1579.2	3.4
1990	0		180.7	180.7		230.5	231.5	2.9
1991	2		1574.4	1574.4	623.9	0	2063.6	2.3
1992	0		0	0			0	2.3
1993	0		18.3	18.3			25.1	2.3
1994	0		51.0	51.0			71.5	2.3
1995	0		47.0	47.0			67.5	2.3
1996	0		20.2	20.2			29.7	2.3
1997	0		18.7	18.7			28.1	2.3
Subtotal	3		3687.7	3687.7	1239.8	1239.8	4714.1	N/A
Total	3		3687.7	3687.7	1239.8	1239.8	6820.6	N/A

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1984	108.5	108.5	100.1
1985	259.4	258.4	194.6
1986	397.5	165.0	14.4
Total	765.4	531.9	309.1

17. [U] Production Rate Data:

a. Annual Production Rate --

Appropriation: Procurement
N/A

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum*
1986	0	N/A	0	N/A
1987	0	N/A	0	N/A
1988	0	N/A	0	N/A
1989	1	N/A	1	N/A
1990	0	N/A	0	N/A
1991	2	N/A	2	N/A

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	5579.4	N/A	N/A
(TY $)	N/A	N/A	6820.6	N/A	N/A
PAUC (BY $)	N/A	N/A	1859.8	N/A	N/A
(TY $)	N/A	N/A	2273.5	N/A	N/A

c. Schedule Variance --

	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	11/89	N/A	N/A
Duration (in Months)	N/A	N/A	72	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	11/9	N/A	N/A

d. Deliveries (Plan/Actual) --

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

18. [U] Operating and Support (O&S) Costs: Not applicable, not a new SAR.

(5)
N-37 TAO FLEET OILER

SAR-85-053

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

PROGRAM: T-AO 187 CLASS FLEET OILER

AS OF DATE: 31 December 1985*

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1. Designation/Nomenclature (Popular Name):

T-AO 187 CLASS FLEET OILER

CLEARED
APR 1 1986

2. DOD Component:

U.S. Navy (NAVSEA)

3. Responsible Office and Telephone Number:

Auxiliary/Special Mission Ship
Acquisition Project Office (PMS383)
Department of the Navy (NAVSEA)
Washington, D.C. 20362

PM: CAPT W.C. Pfister
Assigned: 10/03/84
Autovon: 222-3507
Commercial: (202) 692-3507

4. Program Elements:

RDT&E: 63564N; 64567N (shared funding)
Procurement (SCN): 24441N, APPN 1611, ICN 5025

5. Related Programs:

AOE 6 Class

OASD(PA) RPOI86-T-0206

AS OF DATE: 31 December 1985*

6. Mission and Description:

DESCRIPTION: A 180,000 barrel capacity twin screw, 20 knot sustained speed, diesel driven Fleet Oiler with a 677.5 foot overall length, a 97.5 foot beam, and a 35 foot maximum navigational draft. Accommodations are for a 106 Military Sealift Command crew, a Navy Command, Control and Communications Team of 21 men and 10 transient personnel; a total of 137.

MISSION: The Fleet Oiler operates as a unit of an underway replenishment group or independently, to furnish petroleum (POL) products to operating forces at sea. The ship transports bulk POL from shore depots to Combat Support Ships (AOE), Replenishment Oilers (AOR) and other Fleet Oilers (AO & T-AO) effecting delivery and consolidation underway. The ship delivers bulk POL and delivers and receives fleet freight, mail and personnel, replenishing combatants and support forces underway and in port. The ship will be capable of replenishing from 5 stations simultaneously.

7. Program Highlights (Since Last Report):

a. Significant Historical Developments - The T-AO-187 Class program was approved by DCP# S0859-SL on 7 December 1981 followed by the production contract award in November 1982. Production started on the first ship in April 1984 with a planned delivery of September 1986.

b. Significant Developments since Last Report - Two additional ships were added in FY91.

c. Changes Since "As of" Date - N/A

8. Decision Coordinating Paper (DCP) Threshold Breaches: N/A

9. Schedule:

a. Milestones	Production Estimate	Current Estimate
CNO Executive Board	June 80	June 80
Characteristics Approved	Feb 81	Feb 81
DSARC I	Mar 80	Mar 80
DCP #S0859-SL Approved	Dec 81	Dec 81
Production Contract Award	Nov 82	Nov 82
Production Started-First Ship	Apr 84	Apr 84
Launch - First Ship	Aug 85	Aug 85
Acceptance Trials-First Ship	Jul 86	Jul 86
Delivery - First Ship	Sep 86	Sep 86
Initial Operating Capability	1st Qtr FY 87	1st Qtr FY 87

b. Explanation of Changes: N/A

c. References: NDCP S0859-SL approved 7 December 1981

AS OF DATE: 31 December 1985*

10. Technical/Operational Characteristics:

	Development Estimate	Demonstrated Performance	Current Estimate
a. Technical			
Length Overall	677.5 feet	N/A	677.5 feet
Beam Max.	97.5 feet		97.5 feet
Draft Navigational	35.0 feet		35.0 feet
Displacement	40,000.0 long tons		40,000.0 long tons
Propulsion			
(1) Type	2 Diesel Engines twin shaft Controllable Reversible Pitch Propellers		2 Diesel Engines twin shaft Controllable Reversible Pitch Propellers
(2) SHP	16,000 Each		16,000 Each
Accomodations	137		137
b. Operational			
Speed Max.	20 Knots	N/A	20 Knots
Endurance	6000 NM		6000 NM
Aramament	None		None
Cargo	180,000 Barrels		180,000 Barrels

c. Previous Change Explanation: N/A

d. Current Change Explanation: N/A

e. References:

Production Estimate: NDCP S0859-SL approved 7 December 1981

Approved Program: FY 1987 Presidents Budget

AS OF DATE: 31 December 1985*

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

a. Cost	Development Estimate	Changes	Current Estimate
Development (RDT&E)	15.8	- 1.6	14.2
Procurement	2591.9	- 40.4	2551.5
Total Sailaway	(2518.4)	(- 56.6)	(2461.8)
Other Weapon System Costs	-	-	-
Initial Spares	-	-	-
Total FY84 Base-Year $	(2518.4)	(- 56.6)	(2461.8)
Escalation	583.0	- 88.2	494.8
Development (RDT&E)	(.4)	(-.4)	-
Procurement	(582.6)	(- 87.8)	(494.8)
Total Then-Year $	3190.7	- 130.2	3060.5
b. Quantities			
Development (RDT&E)	-	-	-
Procurement	17	+ 2	19
Total	17	+ 2	19
c. Unit Cost			
Procurement:			
FY84 Base-Year $	152.46	- 18.17	134.29
Then-Year $	186.79	- 26.41	160.33
Program:			
FY84 Base-Year $	153.39	- 18.35	135.04
Then-Year $	187.69	- 26.61	161.08

d. Approved Design to Cost Goal: N/A

e. Foreign Military Sales: N/A

f. Nuclear Costs: N/A

AS OF DATE: 31 December 1985*

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition			
(1) Cost	3060.5	3190.7	3060.5
(2) Quantity	19	17	19
(3) Unit Cost	161.079	187.688	161.079
b. Current Procurement	(FY 86)	(FY 85)	(FY 87)
(1) Cost	273.2	328.5	292.2
Less CY Adv Proc	-	-	-
Plus PY Adv Proc	-	-	-
Net Total	273.2	328.5	292.2
(2) Quantity	2	3	2
(3) Unit Cost	136.600	164.250	146.100

13. Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Baseline Estimate (PdE)	16.2	3174.5	3190.7
Previous Changes:	-	-	-
Economic	-	-	-
Quantity	-	-	-
Schedule	-	-	-
Engineering	-	-	-
Estimating	-	-	-
Other	-	-	-
Support	-	-	-
SUBTOTAL	0	0	0
Current Changes:	-	-	-
Economic	-	-112.4	-112.4
Quantity	-	+358.4	+358.4
Schedule	-	-	-
Engineering	-	-	-
Estimating	-2.0	-374.2	-376.2
Other	-	-	-
Support	-	-	-
SUBTOTAL	-2.0	-128.2	-130.2
TOTAL CHANGES	-2.0	-128.2	-130.2
CURRENT ESTIMATE	14.2	3046.3	3060.5

13. Cost Variance Analysis (Cont'd):
(FY 1984 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	TOTAL
Baseline Estimate (PdE)	15.8	2591.9	2607.7
Previous Changes:	-	-	-
Economic	-	-	-
Quantity	-	-	-
Schedule	-	-	-
Engineering	-	-	-
Estimating	-	-	-
Other	-	-	-
Support	-	-	-
SUBTOTAL	0	0	0
Current Changes:	-	-	-
Economic	-	-	-
Quantity	-	+270.1	+270.1
Schedule	-	-	-
Engineering	-	-	-
Estimating	-1.6	-310.5	-312.1
Other	-	-	-
Support	-	-	-
SUBTOTAL	-1.6	- 40.4	- 42.0
TOTAL CHANGES	-1.6	- 40.4	- 42.0
CURRENT ESTIMATE	14.2	2551.5	2565.7

b. Previous Change Explanation: N/A

c. Current Change Explanations:

	BASE-YEAR	THEN-YEAR
(1) RDT&E		
- Transfer of contract design to SCN from RDT&EN, FY87 and subsequent. (EST)	- 1.6	- 2.0
(2) Procurement		
- Adjustments for revised inflation indices. (ECONOMIC)	N/A	-112.4
- Two additional ships added to program, FY91. (QUANTITY)	+270.1	+358.4
- Decrease to procurement costs of FY 1987-1990 ships, based on favorable award of FY 1985-1986 ships. (ESTIMATING)	-211.5	-209.9
- Various Congressional adjustments to FY 1982-1986 ships. (ESTIMATING)	- 99.0	-164.3
(3) MILCON	N/A	N/A

d. References: NDCP - S0859-SL approved 7 December 1981

AS OF DATE: 31 December 1985*

14. Program Acquisition Unit Cost (PAUC) History:

a. Initial SAR Estimate to Current Baseline Estimate
Same as current Baseline Estimate.

b. Current Baseline Estimate to Current Estimate

PAUC (Baseline Estimate)	Changes (Then Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
187.7	-6.6	+2.2	-	-	-12.4	-	-9.8	-	161.1

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

a. Procurement

Initial Contract Price

Target	Ceiling	Qty
494.8	593.3	4

Avondale Shipyard, Inc.
New Orleans, LA N00024-83-C-2012 (FPI)
November 12, 1982

Current Contract Price

Target	Ceiling	Qty
495.7	598.9	4

Estimated Price At Completion

Contractor	Program Manager
488.8	494.9

Initial Contract Price

Target	Ceiling	Qty
118.8	128.2	1

Avondale Shipyard, Inc.
New Orleans, LA N00024-85-C-2131 (FPI)
June 28, 1985

Current Contract Price

Target	Ceiling	Qty
118.8	128.2	1

Estimated Price At Completion

Contractor	Program Manager
118.8	118.8

Initial Contract Price

Target	Ceiling	Qty
222.5	262.9	2

Pennsylvania Shipbuilding, Co.
Chester, PA N00024-85-C-2115 (FPI)
May 6, 1985

Current Contract Price

Target	Ceiling	Qty
222.5	262.9	2

Estimated Price At Completion

Contractor	Program Manager
222.5	222.5

	Cost Variance	Schedule Variance
Previous Cumulative Variance	- 8.6	- 2.3
Cumulative Variances to Date	- 22.8	- 2.6
Net change	- 14.2	- .3

AS OF DATE: 31 December 1985*

Explanation of Change:

Shipbuilder for first contract is reporting significant increases to overhead and an overrun to the labor cost. The schedule variance is attributed to labor costs. The Program Manager's estimate remains within approved funding.

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

a. Program Status:

(1) Percent Program Completed: 47.06% (8/17)

(2) Percent Program Cost Appropriated: 44.98% (1376.5/3060.5)

b. Appropriation Summary:

(Then-Year Dollars in Millions)

Appropriation	Current $ Prior Yrs. (FY82-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92)	Total
RDT&E	14.2	-	-	-	14.2
Procurement	1362.2	292.2	1348.8	43.1	3046.3
Total	1376.4	292.2	1348.8	43.1	3060.5

c. Annual Summary:

Fiscal Year	Qty	FY84 Base-Year Dollars			Then-Year Dollars			Escl Rate %
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
Curr/Prior Yrs.	-	-	-	14.2	-	-	14.2	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
Subtotal	-	-	-	14.2	-	-	14.2	-
Appropriation: Procurement								
Curr/Prior Yrs.	9	-	-	1236.8	-	-	1362.2	-
1987	2	-	-	240.7	-	-	292.2	4.1
1988	2	-	-	263.0	-	-	328.0	3.9
1989	2	-	-	259.2	-	-	331.2	3.4
1990	2	-	-	252.6	-	-	330.4	2.9
1991	2	-	-	268.4	-	-	359.2	2.3
Balance to Complete	-	-	-	30.8	-	-	43.1	2.3
Subtotal	19	-	-	2551.5	-	-	3046.3	-
Total	19	-	-	2565.7	-	-	3060.5	-

AS OF DATE: 31 December 1985*

16. Program Funding Summary (cont'd):

d. Obligations and Expenditures

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
Curr/Prior Yrs.	14.2	13.5	13.2
1987	-	-	-
1988	-	-	-
1989	-	-	-
1990	-	-	-
1991	-	-	-
Balance To Complete	-	-	-
Total	14.2	13.5	13.2
Appropriation: SCN			
Curr/Prior Yrs.	1362.2	896.8	378.7
1987	292.2	-	-
1988	328.0	-	-
1989	331.2	-	-
1990	330.4	-	-
1991	359.2	-	-
Balance To Complete	43.1	-	-
Total	3046.3	896.8	378.7

17. Production Rate Data:

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
Curr/Prior Yrs.	N/A	9	9	9
1987	N/A	2	2	2
1988	N/A	2	2	2
1989	N/A	2	2	2
1990	N/A	2	2	2
1991	N/A		2	2

17. Production Rate Data (cont'd):

b. Cost Variance - Dollars in Millions

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	2607.7	- 42.0	2565.7	-	2565.7
	(TY $)	3190.7	-130.2	3060.5	-	3060.5
PAUC	(BY $)	153.4	- 18.4	135.0	-	135.0
	(TY $)	187.7	- 26.6	161.1	-	161.1

c. Schedule Variance -

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date	11/82	-	11/82	-	11/82
Duration	121	20	141	-	141
End Date	12/92	20	8/94	-	8/94

d. Deliveries (Plan/Actual):

	To Date
RDT&E	0/0
Procurement	19/0

18. Operating and Support Costs:

a. Assumptions and Ground Rules - N/A

b. Costs - N/A

b AF-35 SRAM II

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SAR-85-085

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

PROGRAM: SHORT RANGE ATTACK MISSILE II (SRAM II)

As of Date: December 31, 1985

(U) INDEX

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAR 18 1986
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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1. (U) Designation and Nomenclature (Popular Name: XAGM-131A/Short Range Attack Missile II (SRAM II)

2. (U) DOD Component: US Air Force

3. (U) Responsible Office
SRAM II Program Office
Aeronautical Systems Division
Wright-Patterson AFB OH 45433

Col Herbert L. Bevelhymer
Assigned: July 23, 1984
AV 785-5080; COMM (513)255-5080

4. (U) Program Elements/Procurement Line Items:
RDT&E: PE 63364F (No shared funding)
PROCUREMENT: PE 11218F APPN 3020 ICN ADVASM (No shared funding)
O&M: NA
MILCON: NA

5. (U) Related Programs: B-1B and Advanced Technology Bomber (ATB)

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Declassify on: OADR

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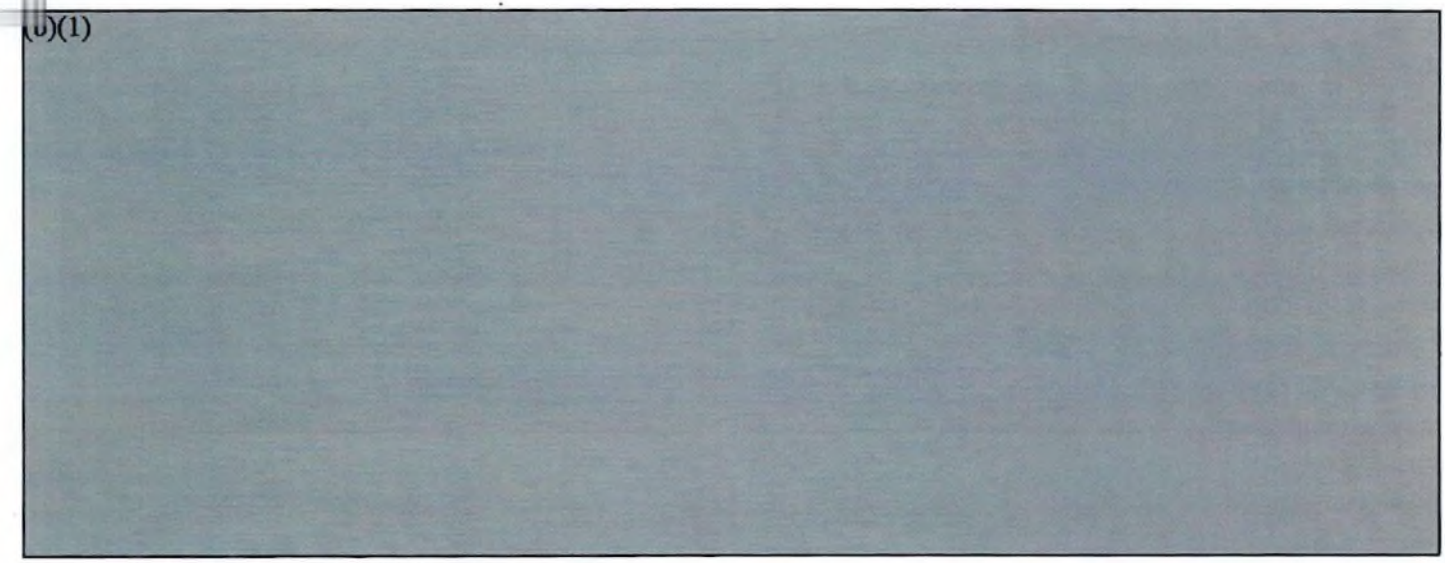

7. (U) Program Highlights:

(U) THE XAGM-131 PROGRAM IS UNDERGOING A MAJOR RESTRUCTURE. THIS ACTIVITY SHOULD BE COMPLETED BY THE JUNE 1986 SAR REPORT AND THAT SAR WILL REFLECT THE RESTRUCTURED BASELINE.

a. (U) Significant Historical Developments -- This is the initial SRAM II SAR submission. The SRAM II program was a new start in FY 85. The decision to initiate the program was made in September 1982, following an unsuccessful attempt to establish a new production source for the existing SRAM rocket motor. An accelerated acquisition approach was chosen for SRAM II because of the need to field an operational system in the early 1990s. Under the accelerated acquisition strategy, the normal Concept Exploration and Demonstration/Validation Phases were replaced by a single system definition phase. A competition was conducted and contracts were awarded to three major aerospace contractors (Boeing Aerospace, Martin-Marietta Orlando Aerospace, and McDonnell Douglas Aeronautics) for system definition studies and component risk reduction testing. These contracts were awarded in February 1985.

(U) Two key factors to be determined during the system definition phase were the missile size and the propulsion system. Following four months of detailed trade studies by the three contractors and a two-month Air Force evaluation of the trade study results, decisions on these key factors were made in August 1985. The missile size will be approximately two-thirds that of the existing SRAM (AGM-69) to allow carriage of twelve missiles on a modified B-1B multipurpose launcher. A solid rocket motor was chosen for the propulsion

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

system since this technology meets all performance requirements at the least estimated cost. The risk reduction work is continuing. Successful firings of full-scale rocket motor candidate designs have been completed as well as test flights in aircraft of candidate missile inertial navigation units. Planning for full-scale development and initial production continues. A draft request for proposal (RFP) was released in August 1985, and a formal RFP for full-scale development and initial production quantities is planned for April 1986.

b. (U) Significant Developments Since Last Report — NA, Initial SAR

(U) The XAGM-131A system is expected to satisfy the mission requirements.

c. (U) Changes Since "As of" Date — NA

8. (U) Systems Concept Paper (SCP) Threshold Breaches: There are currently no SCP (dated 1 February 1985) threshold breaches. The draft SCP was submitted to OSD 9 July 1985 and formal approval is pending.

9. (U) Schedule:

a. (U) Milestones —

	PLANNING ESTIMATE/ APPROVED PROGRAM	CURRENT ESTIMATE
System Concept Paper	Feb 85/Feb 85	Feb 85
Milestone II	Jun 87/Jun 87	Jun 87
Missile PDR	Jul 87/Jul 87	Jul 87
Missile CDR	Jun 88/Jun 88	Jun 88
First Live Launch	Oct 89/Oct 89	Oct 89
AFSARC IIIa (Low Rate Production)	Apr 90/Apr 90	Apr 90
AFSARC IIIb (Full Production)	Sep 91/Sep 91	Sep 91
IOC (50 missiles)	Mar 92/Mar 92	Mar 92

b. (U) Previous Change Explanations — NA, Initial Submission

c. (U) Current Change Explanations — NA, Initial Submission

d. (U) References —

Planning estimate: FY 87 Descriptive Summary
Approved Program: Draft SCP, dated February 1, 1985, subject, "SRAM II Systems Concept Paper"

10. (U) Technical/Operational Characteristics:

	PLANNING ESTIMATE/ APPROVED PROGRAM*	DEMONSTRATED PERFORMANCE	CURRENT ESTIMATE
a. (U) Technical --			
(U) Reliability/Availability			
Reliability excluding warhead	TBD		TBD
Availabilty excluding warhead	TBD		TBD
(U) Size (Length/Diameter) (in)	168/15/168/15		168/15
(U) Weight(lbs)	1800/1800		TBD

b. (U) Operational --

(b)(1)

[redacted]

* (U) Draft SCP, dated 1 Feb 85, Not Yet Approved.

RESTRICTED DATA
This material contains Restricted Data as defined in the Atomic Energy Act of 1954
Unauthorized disclosure subject to administrative and criminal sanctions

Classified by: AASM SCG

Declassify on: OADR

c. (U) Previous Change Explanations -- NA, Initial Submission

d. (U) Current Change Explanations -- NA, Initial Submission

e. (U) References --

Planning Estimate: Draft Systems Concept Paper (SCP) dated February 1, 1985.

Approved Program: Draft Systems Concept Paper (SCP) dated February 1, 1985.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	PLANNING ESTIMATE	CHANGE	CURRENT ESTIMATE
a. Cost --			
Development (RDT&E)	864.2	0.0	864.2
Procurement	1366.9	0.0	1366.9
Airframe	(244.5)	0.0	(244.5)
Engine	(303.0)	0.0	(303.0)
Nav/Guidance	(515.6)	0.0	(515.6)
Total Flyaway	(1063.1)	0.0	(1063.1)
Other Weapon System Cost	(250.5)	0.0	(250.5)
Initial Spares	(53.3)	0.0	(53.3)
Construction (MILCON)	N/A	0.0	N/A
Total FY 83 Base-Year $	2231.1	0.0	2231.1
Escalation	833.4	0.0	833.4
Development (RDT&E)	(216.7)	(0.0)	(216.7)
Procurement	(616.7)	(0.0)	(616.7)
Construction (MILCON)	N/A	(0.0)	N/A
Total Then-Year $	3064.5	0.0	3064.5
b. Quantities --			
Development (RDT&E)	N/A	0.0	N/A
Procurement	1633	0.0	1633
Total	1633	0.0	1633
c. Unit Cost --			
Procurement:			
FY 83 Base-Year $	.837	0.0	.837
Then-Year $	1.215	0.0	1.215
Program:			
FY 83 Base-Year $	1.366	0.0	1.366
Then-Year $	1.877	0.0	1.877

d. Approved Design-to-Cost Goal -- TBD

e. Foreign Military Sales None

f. Nuclear Costs -- TBD

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition —			
(1) Cost	3064.5	3064.5	3064.5
(2) Quantity	1633	1633	1633
(3) Unit Cost	1.877	1.877	1.877
b. Current Procurement --	There are no procurement quantities in the Current Year or Budget Year.		

13. Cost Variance Analysis

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1080.9	1983.6	0.0	3064.5
Previous Changes:				0.0
Economic				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Current Changes:				0.0
Economic				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Total Changes	0.0	0.0	0.0	0.0
Current Estimate	1080.9	1983.6	0.0	3064.5

12. Cost Variance Analysis (Cont'd):

(FY83 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	864.2	1366.9	0.0	2231.1
Previous Changes:				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Current Changes:				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Total Changes	0.0	0.0	0.0	0.0
Current Estimate	864.2	1366.9	0.0	2231.1

b. Previous Change Explanations -- N/A Initial Submission

c. Current Change Explanations -- N/A Initial Submission

d. References --

Planning Estimate: FY 1987 President's Budget, February 1986

14. Program Acquisition Unit Cost (PAUC) History: (Millions of Then Year $)

Initial SAR/Planning Estimate (PE) to Current Estimate (CE) --

PAUC (Initial SAR/PE)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.877	—	—	—	—	—	—	—	—	1.877

15. Contract Information: (Millions of Then Year $)

a. RDT&E —

System Definition Studies	Initial Contract Price Target	Ceiling	Qty
Boeing Aerospace Co., Seattle, WA F33657-84-C-0302, FFP Award: February 13, 1985 Definitized: February 13, 1985	4.230	4.230	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
4.230	4.230	N/A	4.230	4.230

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/31/85)	N/A	N/A

15. Contract Information (cont'd): (Millions of Then Year $)

System Definition Studies	Initial Contract Price Target	Ceiling	Qty
Martin - Marietta, Orlando, FL F33657-84-C-0301, FFP Award: February 13, 1985 Definitized: February 13, 1985	4.356	4.356	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
4.356	4.356	N/A	4.356	4.356

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/31/85)	N/A	N/A

System Definition Studies	Initial Contract Price Target	Ceiling	Qty
McDonnell-Douglas Astronautics Co. St Louis, MO F33657-84-C-0303, FFP Award: February 13, 1985 Definitized: February 13, 1985	4.485	4.485	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
4.485	4.485	N/A	4.485	4.485

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/31/85)	N/A	N/A

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

a. Program Status --

(1) Percent Program Completed: 27.3% (3 yrs/11 yrs)
(2) Percent Program Cost Appropriated: 1.7% ($50.8M/$3064.5

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

Appropriation	Current & Prior Yrs (FY84-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FY FYDP (FY92-94)	Total
RDT&E	50.8	164.7	851.5	13.9	1080.9
Procurement	0	0	908.4	1075.2	1983.6
MILCON	N/A	N/A	-	-	0.0
Total	50.8	164.7	1759.9	1089.1	3064.5

c. Annual Summary --

Fiscal Year	Qty	FY 83 Base Year			Then Year			Escl Rate (%) *
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1984				4.1			4.3	3.8
1985				11.1			12.4	3.6
1986				30.0			34.1	3.2
1987				139.5			164.7	4.1
1988				204.6			250.4	3.9
1989				152.0			191.9	3.4
1990				156.3			202.2	2.9
1991				156.3			207.0	2.3
1992				10.3			13.9	2.3
Subtotal				864.2			1080.9	

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

c. Annual Summary --

Fiscal Year	Qty	FY 83 Base Year			Then Year			Escl Rate (%) *
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1988				1.5	2.0		2.0	3.9
1989	32	1.9	42.3	69.3		(2.0)	94.7	3.4
1990	270	43.1	209.1	281.4			393.7	2.9
1991	180	57.0	116.4	292.1			418.0	2.3
1992	400	9.5	218.5	290.5			425.3	2.3
1993	600	6.0	289.6	343.3			513.9	2.3
1994	151	1.4	68.3	88.8			136.0	2.3
Subtotal	1633	118.9	944.2	1366.9	2.0	(2.0)	1983.6	
Total	1633			2231.1	2.0	(2.0)	3064.5	

*Since outlay rates are not shown, the escalation rate cannot be used to veri the composite index.

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

d. Obligations and Expenditures —

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1984	4.3	4.3	3.4
1985	12.4	11.5	5.6
1986	34.1	.1	.1
To Comp	1030.1	N/A	N/A
Total	1080.9	15.9	9.1

Appropriations: Procurement and MILCON — N/A

Reflects program office records as of 31 Dec 85.

17. Production Rate Data: N/A

18. Operating and Support Costs: N/A

(8) AF-27 MLS

SAR-85-117

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

PROGRAM: MICROWAVE LANDING SYSTEM (MLS)

AS OF DATE: 31 December 1985

CLEARED
FOR OPEN PUBLICATION
MAR 10 1986 18
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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1. Designation and Nomenclature (Popular Name): Microwave Landing System (MLS)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

Airborne Voice Communications Systems Directorate
Electronic Systems Division
Hanscom AFB, MA 01731-5000

PM: Colonel Rodney J. Sayles
Assigned: 14 January 1985
AV 478-4952
Comm (617) 861-4952

4. Program Elements/Procurement Line Items:

RDT&E: PE 35114F Project 2759 (Shared Funding)

PROCUREMENT: APPN 3010 ICN C13000 (Shared Funding)
APPN 3080 ICN 833010 (Shared Funding)

O&M: PE 35114F (Shared Funding)
PE 72207F (Shared Funding)

SAF/PAS
86-158 - T

OASD(PA) DFOISR 86-T-0554

1

Related Programs: None

6. Mission and Description:

a. Mobile Microwave Landing System (MMLS) (formerly Tactical MLS): The Mobile Microwave Landing System is a precision approach guidance system which will provide an off-airfield capability for operation in adverse weather and support initial deployment of ground forces, forward area supply, medical evacuation and special operating forces. The Mobile MLS ground system generates microwave guidance signals enabling MLS equipped aircraft to continuously display aircraft position relative to a pre-selected courseline and glideslope during approach to a minimum guidance altitude (decision height). The MMLS will replace mobile Precision Approach Radars (PAR).

b. Fixed Base MLS: The Fixed Base Microwave Landing System (FBMLS) will be identical to the FAA's civil system and is intended as a replacement for the present fixed base PARs and Instrument Landing Systems (ILSs). The Air Force is consolidating tri-service FBMLS requirements and coordinating with the FAA for systems acquisition under the FAA's second and third MLS contracts.

7. Program Highlights:

a. Significant Historical Developments: In January 1983, the Air Force was designated the lead service for DoD MLS activities and in August 1983, submitted an implementation plan to the Office of the Secretary of Defense (OSD) in coordination with other services. In July 1983, the North Atlantic Treaty Organization (NATO) nations agreed to transition from Precision Approach Radar (PAR) to the MLS as the standard NATO military precision landing system at Main Operating Bases (MOBs).

b. Significant Developments Since Last Report:

(1) In late February 1985, HQ USAF instituted a "ROADMAP Study" to re-evaluate the plan for all Mobile Traffic Control and Landing System (TRACALS) aids including MLS. This study resulted in the Tactical MLS weight requirement being increased from 500 lbs. to a maximum weight of 1000 lbs., deletion of the requirement for air-droppability, and a change from a man-portability concept to one which emphasizes man-transportability. The name of the program was also changed from Tactical MLS to Mobile MLS to reflect the relaxed requirements.

(2) During Congressional review of the FY86 President's Budget, the Appropriation and Authorization Committees deleted the FY86 MLS RDT&E funds. The Congressional committees recognized the need for a tactical system; however, they were concerned about total program development cost and maximizing commonality with the Federal Aviation Administration (FAA) MLS equipment. On 27 November 1985, HQ USAF notified the Chairmen of the House and Senate Armed Service and Appropriations Committees of the restructured Mobile MLS and our intent to continue the program using existing funds from within the TRACALS program element PE 35114F. The restructured program is based on a system specification 85% common with the FAA design. The planned procurement strategy allows full and open competition among the [redacted]nies in the MLS business and achieves the date the using commands established [redacted]n Initial Operational Capability (IOC) while maintaining minimum cost. Release

The Request for Proposals for the Mobile MLS, however, is being held pending further discussions with the Congressional Committees.

(3) As a result of the Congressional action and the restructuring of the Mobile MLS program, out-year funding for the program during the FY87 President's Budget Decision cycle was removed. Sufficient funds have been budgeted in FY87 to continue the program. Internal HQ USAF action to restore the out-year funding is ongoing.

(4) An overall MLS avionics architecture will be recommended to OSD in the first quarter FY87. The OSD approval will be based on the results of an in-depth study which will include cost data for standard military avionics for high performance aircraft as well as a recommended mix of commercial and military avionics. A decision to baseline the total avionics effort will be made at that time.

(5) This is the initial inclusion of Fixed Base Microwave Landing System (FBMLS) in the SAR.

(6) The MMLS, Associated Commercial Avionics, and FBMLS are expected to satisfy the mission requirement as directed.

c. Changes since 31 December 1985 -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: N/A

9. Schedule:

a. Milestones —	Planning Estimate/ Approved Program	Current Estimate
(1) MMLS		
Service Component Program Initiation	Jan 83/Jan 83	Jan 83
System Operational Concept MAC TMLS	Sep 84/Sep 84	Sep 84
System Operational Concept	Sep 85/Sep 85	TBD (Ch-1)
Mobile MLS Development Contract Award	Jun 86/Dec 86	Dec 86 (Ch-1)
Mobile MLS IOT&E Completion	Sep 88/Dec 88	Dec 88 (Ch-1)
Mobile MLS Production Contract Award	Oct 88/Jun 89	Jun 89 (Ch-1)
Mobile MLS Initial Operational Capability	Sep 89/Jun 90	Jun 90 (Ch-1)

Schedule: (Cont'd)

a. Milestones --

	Planning Estimate/ Approved Program	Current Estimate
(2) FBMLS		
FBMLS Program Initiated	Jan 83/Jan 83	Jan 83
FBMLS Production Contract Award (FAA)	TBD/TBD	TBD
FBMLS First System Delivery (FSD)	TBD/TBD	TBD

b. Previous Change Explanations -- None

c. Current Change Explanations -- FBMLS milestones added for first time to this SAR.
(Ch-1) Delays are the result of HQ USAF hold on RFP release pending resolution of Congressional concerns and completion of TRACALS ROADMAP STUDY.

d. References --

(1) Planning Estimate:

(a) Air Force Communications Command (AFCC) General Operating Requirement(GOR) 702-78, Advanced Military Landing System, 16 February 1978.

(b) USDRE Memo, 13 January 1983, Subject: Service Responsibility for Microwave Landing System Activities.

(c) Microwave Landing System (MLS) PMD 4030(1)/PE 35114F, 3 January 1984.

(d) MAC System Operational Concept (SOC), 10 September 1984.

(2) Approved Program: FY87 President's Budget

10. Technical/Operational Characteristics:

	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. Technical --			
(1) MMLS			
Degrees of Azimuth Coverage	±40/±40	N/A	±40
Degrees of Elevation Coverage	0.9 to 15/0.9 to 15	N/A	0.9 to 15
Range in Nautical Miles (Min)	15/15	N/A	15
Operating Temperature Range in degrees Fahrenheit	-60 to +120/-60 to +120	N/A	-60 to +120

Technical/Operational Characteristics: (Cont'd)

	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
(2) FBMLS			
Approach Azimuth Coverage (to 20 NM)	±40/±40	N/A	±40
Approach Elevation Coverage	0.9 to 15/0.9 to 15	N/A	0.9 to 15
DME/P (Range)	20 NM/20 NM	N/A	20 NM
Operating Temperature Range in degrees Fahrenheit	-68 to +131/-68 to +131	N/A	-68 to +131
b. Operational —			
(1) MMLS			
Percent Interoperable with International Civil Aviation Organization (ICAO) MLS Equipment	100/100	N/A	100
Number of selectable channels from 5031 MHz to 5090.7 MHz	200/200	N/A	200
Field Assembly personnel/ time (minutes) required	2/30 / 2/30	N/A	2/30
(2) FBMLS			
Percent Interoperable with International Civil Aviation Organization (ICAO)	100/100	N/A	100
Number of selectable channels from 5031-5090.7 MHz	200/200	N/A	200

c. Previous Change Explanations — None

d. Current Change Explanations -- FBMLS technical/operational characteristics added for the first time in this SAR.

e. References —

(1) Planning Estimate:

(a) Air Force Communications Command (AFCC) General Operating Requirement(GOR) 702-78, Advanced Military Landing System, 16 February 1978.

Technical/Operational Characteristics: (Cont'd)

(b) USDRE Memo, 13 January 1983, Subject: Service Responsibility for Microwave Landing System Activities.

(c) Microwave Landing System (MLS) PMD 4030(1)/PE 35114F, 3 January 1984.

(d) MAC System Operational Concept (SOC), 10 September 1984.

(2) Approved Program: FY87 President's Budget

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11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost —	Planning Estimate	Changes	Current Estimate
(1) Ground Systems			
Development (RDT&E)	29.9	-20.1	9.8
Procurement	47.8	+133.8	181.6
MMLS	(39.4)	(-6.2)	(33.2)
FBMLS	-	(+121.9)	(121.9)
Total Flyaway	(39.4)	(+115.7)	(155.1)
Peculiar Support	-	-	-
Other Weapon/System Cost	-	-	-
Initial Spares	(8.4)	(+18.1)	(26.5)
MMLS	(8.4)	(-0.1)	(8.3)
FBMLS	-	(+18.2)	(18.2)
Operations & Maintenance (O&M)	-	+10.9	10.9
Total FY82 Base-Year $	77.7	+124.6	202.3
Escalation	26.2	+56.8	83.0
Development (RDT&E)	(7.4)	(-5.4)	(2.0)
Procurement	(18.8)	(+57.3)	(76.1)
Ops & Maint (O&M)	-	(+4.9)	(4.9)
Total Then-Year $	103.9	+181.4	285.3
(2) Associated Commercial Avionics			
Development (RDT&E)	4.7	-2.3	2.4
Procurement	16.4	+1.0	17.4
Comm Avionics	(15.2)	(+0.8)	(16.0)
Total Flyaway	(15.2)	(+0.8)	(16.0)
Peculiar Support	-	-	-
Other Weapon/System Cost	-	-	-
Initial Spares	(1.2)	(+0.2)	(1.4)
Operations & Maintenance (O&M)	6.7	+0.1	6.8
Total FY 82 Base-Year $	27.8	-1.2	26.6
Escalation	12.3	-0.5	11.8
Development (RDT&E)	(0.9)	(-0.4)	(0.5)
Procurement	(9.1)	(-0.1)	(9.0)
Ops & Maint (O&M)	(2.3)	(0)	(2.3)
Total Then-Year $	40.1	-1.7	38.4

11. Program Acquisition Cost (Cont'd) (Current Estimate in Millions of Dollars)

	Planning Estimate	Changes	Current Estimate
b. Quantities --			
(1) Ground Systems			
Development (RDT&E)	2	0	2
Procurement	128	+210	338
Total	130	+210	340
(2) Associated Commercial Avionics			
Development (RDT&E)	0	0	0
Procurement	376	0	376
Total	376	0	376
c. Unit Cost --			
(1) Ground Systems			
Procurement:			
FY82 Base-Year $	0.373	+0.164	0.537
Then-Year $	0.520	+0.202	0.762
Program:			
FY82 Base-Year $	0.598	-0.003	0.595
Then-Year $	0.799	+0.040	0.839
(2) Associated Commercial Avionics			
Procurement:			
FY 82 Base-Year $	0.044	+0.002	0.046
Then-Year $	0.068	+0.002	0.070
Program:			
FY 82 Base-Year $	0.074	-0.003	0.071
Then-Year $	0.107	-0.005	0.102

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

e. Foreign Military Sales -- N/A

f. Nuclear Costs -- N/A

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition —			
(1) Ground Systems			
(a) Cost	285.3	103.9	285.3
(b) Quantity	340	130	340
(c) Unit Cost	0.839	0.799	0.839
(2) Associated Commercial Avionics			
(a) Cost	38.4	40.1	38.4
(b) Quantity	376	376	376
(c) Unit Cost	0.102	0.107	0.102
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Ground Systems			
(a) Cost	N/A	N/A	4.7
Less CY Adv Proc	N/A	N/A	0
Plus PY Adv Proc	N/A	N/A	0
Net Total	N/A	N/A	4.7
(b) Quantity	N/A	N/A	7
(c) Unit Cost	N/A	N/A	0.671

(2) Associated Commercial Avionics

No procurement program in the current or budget year.

13. Cost Variance Analysis:

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

(1) Ground Systems

	RDT&E	PROC	O&M	TOTAL
Planning Estimate	37.3	66.6	0	103.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.4	-1.8	-	-2.2
Quantity	-	+157.0	+15.8	+172.8
Schedule	-	+1.5	-	+1.5
Engineering	-	-	-	-
Estimating	-25.1	+8.3	-	-16.8
Other	-	-	-	-
Support	-	+26.1	-	+26.1
Subtotal	-25.5	+191.1	+15.8	+181.4
Total Changes	-25.5	+191.1	+15.8	+181.4
[illegible]ent Estimate	11.8	257.7	15.8	285.3

(FY 1982 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	O&M	TOTAL
Planning Estimate	29.9	47.8	0	77.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	+109.7	+10.9	+120.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-20.1	+6.0	-	-14.1
Other	-	-	-	-
Support	-	+18.1	-	+18.1
Subtotal	-20.1	+133.8	+10.9	+124.6
Total Changes	-20.1	+133.8	+10.9	+124.6
[illegible]nt Estimate	9.8	181.6	10.9	202.3

13. Cost Variance Analysis (Cont'd):

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

(2) Associated Commercial Avionics

	RDT&E	PROC	O&M	TOTAL
Planning Estimate	5.6	25.5	9.0	40.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.1	-1.2	-0.2	-1.5
Quantity	-	-	-	-
Schedule	-	+0.4	+0.1	+0.5
Engineering	-	-	-	-
Estimating	-2.6	+1.5	+0.2	-0.9
Other	-	-	-	-
Support	-	+0.2	-	+0.2
Subtotal	-2.7	+0.9	+0.1	-1.7
Total Changes	-2.7	+0.9	+0.1	-1.7
Current Estimate	2.9	26.4	9.1	38.4

(FY 1982 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	O&M	TOTAL
Planning Estimate	4.7	16.4	6.7	27.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-2.3	+0.9	+0.1	-1.3
Other	-	-	-	-
Support	-	+0.1	-	+0.1
Subtotal	-2.3	+1.0	+0.1	-1.2
Total Changes	-2.3	+1.0	+0.1	-1.2
Current Estimate	2.4	17.4	6.8	26.6

13. Cost Variance Analysis (Cont'd):

b. Previous Change Explanations -- None

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) Ground Systems		
(a) RDT&E		
Revised economic escalation indices (Economic)	-	-0.4
OSD reduction pending further definition of development effort. Still a valid requirement. Restoration of funds being worked internally. (Estimating)	-20.1	-25.1
(b) Procurement		
Revised economic escalation indices (Economic)	-	-1.8
Added 256 Fixed Base MLS and reduced MMLS by 46 (Quantity)	+109.7	+157.0
Compressed MMLS buy from four to two years (Schedule)	-	+1.5
Increase in MMLS estimated costs (Estimating)	+6.0	+8.3
Added initial spares for 256 Fixed Base MLS (Support)	+18.1	+26.1
(c) O&M		
Added installation of 256 Fixed Base MLS (Quantity)	+10.9	+15.8

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanations -- (Cont'd)	(Dollars in Millions) Base-Year	Then-Year
(2) Associated Commercial Avionics		
(a) RDT&E --		
Revised economic escalation indices (Economic)	-	-0.1
OSD reduction pending further definition of development effort. Still a valid requirement. Restoration of funds being worked internally. (Estimating)	-2.3	-2.6
(b) Procurement		
Revised economic escalation indices (Economic)	-	-1.2
One year delay in procurement due to	+0.1	+0.6
o Delay in flyaway procurement (Schedule)	(-)	(+0.4)
o Delay in support procurement (Support)	(+0.1)	(+0.2)
Increase in estimated cost of B-Kit (Estimating)	+0.9	+1.5
(c) O&M		
Revised economic escalation indices (Economic)	-	-0.2
One year delay in installation (Schedule)	-	+0.1
Increase in estimated installation cost (Estimating)	+0.1	+0.2

d. Reference -- FY86 President's Budget

NOTE: These funding profiles are based on a restructuring of this program to a Mobile MLS. These costs should not be used as program management costs until the hardware, software and content of the restructured program has been defined.

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

Initial SAR/Planning Estimate to Current Estimate

(1) Ground Systems

PAUC (Initial SAR/ Planning Est)	Changes (Then Year Dollars in Millions								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
0.799	-0.006	+0.015	+0.004	-	-0.049	+0.076	-	+0.040	0.839

(2) Associated Commercial Avionics

PAUC (Initial SAR/ Planning Est)	Changes (Then Year Dollars in Millions								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
0.107	-0.004	-	+0.001	-	-0.003	+0.001	-	-0.005	0.102

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

None

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

a. Program Status —

(1) Ground Systems

(a) Percent Program Completed: 23.1% (3 yrs/13 yrs)

(b) Percent Program Cost Appropriated: 2.1% ($5.9/$285.3)

(2) Associated Commercial Avionics

(a) Percent Program Completed: 28.6% (2 yrs/7 yrs)

(b) Percent Program Cost Appropriated: 4.4% ($1.7/$38.4)

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

b. Appropriation Summary —

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY84-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-92)	Beyond FYDP (FY93-96)	Total
(1) Ground Systems					
RDT&E	5.9	5.9	-	-	11.8
Procurement	-	4.7	209.0	44.0	257.7
O&M	-	-	4.6	11.2	15.8
Total	5.9	10.6	213.6	55.2	285.3
(2) Associated Commercial Avionics					
RDT&E	1.7	1.2	-	-	2.9
Procurement	-	-	26.4	-	26.4
O&M	-	-	9.1	-	9.1
Total	1.7	1.2	35.5	-	38.4

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

c. Annual Summary —

(1) Ground Systems

Fiscal Year	Qty	FY 82 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) *
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1984	-	-	-	0.7	-	-	0.8	-
[illegible]85	-	-	-	0.9	-	-	1.0	3.6
[illegible]86	-	-	-	3.4	-	-	4.1	3.2
[illegible]87	-	-	-	4.8	-	-	5.9	4.1
Subtotal	2	-	-	9.8	-	-	11.8	
Appropriation: Procurement								
1987	7	-	3.3	3.7	-	-	4.7	4.1
1988	7	-	3.3	3.7	-	-	4.9	3.9
1989	42	-	19.5	24.0	-	-	32.5	3.4
1990	90	-	37.3	44.7	-	-	62.2	2.9
1991	79	-	36.4	41.9	-	-	59.6	2.3
1992	60	-	29.7	34.2	-	-	49.8	2.3
1993	40	-	19.4	22.3	-	-	33.2	2.3
1994	13	-	6.2	7.1	-	-	10.8	2.3
Subtotal	338	-	155.1	181.6	-	-	257.7	
Appropriation: O&M								
1990	-	-	-	0.6	-	-	0.9	2.9
1991	-	-	-	0.6	-	-	0.8	2.3
1992	-	-	-	2.0	-	-	2.9	2.3
1993	-	-	-	4.6	-	-	6.7	2.3
1994	-	-	-	1.2	-	-	1.7	2.3
1995	-	-	-	1.3	-	-	1.9	2.3
[illegible]	-	-	-	0.6	-	-	0.9	2.3
[illegible]tal	-	-	-	10.9	-	-	15.8	
[illegible]al	-	-	-	202.3	-	-	285.3	

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

c. Annual Summary (Cont'd) —

(2) Associated Commercial Avionics

Fiscal Year	Qty	FY 82 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) *
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1985	-	-	-	0.9	-	-	1.0	3.6
1986	-	-	-	0.5	-	-	0.7	3.2
1987	-	-	-	1.0	-	-	1.2	4.1
1988	-	-	-	-	-	-	-	
1989	-	-	-	-	-	-	-	
Subtotal	-	-	-	2.4	-	-	2.9	
Appropriation: Procurement								
1988	157	-	7.2	7.8	-	-	11.5	3.9
1989	139	-	5.7	6.2	-	-	9.5	3.4
1990	80	-	3.1	3.4	-	-	5.4	2.9
Subtotal	376	-	16.0	17.4	-	-	26.4	
Appropriation: O&M								
1989	-	-	-	2.9	-	-	3.8	3.4
1990	-	-	-	2.7	-	-	3.7	2.9
1991	-	-	-	1.2	-	-	1.6	2.3
Subtotal	-	-	-	6.8	-	-	9.1	
Total	376	-	-	26.6	-	-	38.4	

* Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite rates.

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

d. Obligations and Expenditures —

(1) Ground Systems (Note 1)

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1984	0.8	0.8	0.8
1985	1.0	1.0	1.0
1986	4.1	-	-
1987	5.9	-	-
Total	11.8	1.8	-

(2) Associated Commercial Avionics (Note 1)

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1985	1.0	1.0	0.8
1986	0.7	-	-
1987	1.2	-	-
Total	2.9	1.0	-

17. Production Rate Data: N/A

18. Operating and Support Costs:

/A

NOTE 1: Reflects Program Office data as of 16 January 1986 ESD/STAR.

(7)
AF-5 ATF

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SAR-85-068

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: ADVANCED TACTICAL FIGHTER

AS OF DATE: December 31, 1985

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AS AMENDED
MAR 18 1986
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation/Nomenclature (Popular Name): Advanced Tactical Fighter / ATF

2. (U) DoD Component: U.S. Air Force

3. (U) Responsible Office and Telephone Number:

ATF Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH

PM: Col A. Piccirillo
Assigned: 15 June, 1983
AV 785-4167/COMM (513)255-4167

4. (U) Program Elements:

RDT&E: PE63230F, non-shared
PE64239F, non-shared

5. (U) Related Programs: Integrated Electronic Warfare System (INEWS), Integrated Communication-Navigation-Identification Avionics (ICNIA), PAVE PILLAR, Simulator

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~~Declassify On: OADR~~

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6. (U) Mission and Description:

The Advanced Tactical Fighter (ATF) program addresses demonstration validation and full scale development of the next generation manned tactical fighter aircraft to meet the post 1995 Air-to-Air threat. The ATF is a new high technology fighter concept emphasizing high lethality, high performance, large mission radius, and efficient supersonic cruise capability coupled with greatly increased supportability. The ATF concept is characterized by a new advanced materials airframe, new engine, balanced controlled observables and advanced avionics in a highly integrated design.

7. (U) Program Highlights:

a. (U) Significant Historical Developments — Seven airframe contractors participated in the concept development phase with their final reports being delivered in May 84. The Joint Advanced Fighter Engine program awarded two contracts in Sept 83 to build demonstrator engines with new techologies required to support the ATF mission.

b. (U) Significant Developments Since Last Report — Seven contracts were awarded for the Integrated Avionics pre-design effort. VHSIC insertion efforts were started for equipment which would be necessary to complete a fully integrated aircraft. The Request for Proposal for the Demonstration/Validation phase was released to industry in October 1985. It is anticipated up to four contractors will be selected to participate during this thirty two month effort which refines their concept designs and allows them to mature the critical technologies necessary for an acceptably low risk full scale development starting in late Fiscal Year 89.

The ATF as currently planned will satisfy its mission requirements.

c. (U) Changes Since "As of" Date — None

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches — No DCP

(ATF, December 31, 1985)

9. (U) Schedule:

a. (U) Milestones

	Planning Estimate/ Approved Program*	Current Estimate	
Mission Element Need Statement Approval	Nov 81/Nov 81	Nov 81	
Concept Development Contract Award	Sep 83/ --	Sep 83	
DSARC I	Sep 85/ --	Sep 86	(Ch-1)
DEM/VAL Contract Award	Oct 85/ --	Sep 86	(Ch-2)
DSARC II	Dec 88/ --	Dec 88	
DSARC III A	Dec 91/ --	Dec 91	
IOC**	Sep 95/Sep 95	TBD	(Ch-3)

* Approved program sets beginning date, and year of IOC goal, but does not contain detailed schedule milestones.

** IOC is defined as delivery of one combat-coded squadron.

b. (U) Previous Change Explanations -- None

c. (U) Current Change Explanations --

(Chg 1) DSARC I was delayed by decisions of Air Force leadership.

(Chg 2) Dem/Val Contract award was delayed by decisions of Air Force leadership to delay DSARC I.

(Chg 3) IOC will be determined following decision on the new start of the Full Scale Development.

d. (U) References -- Planning Estimate: Advanced Tactical Fighter, Mission Element Need Statement, approved by Defense Resources Board Nov 23, 1981 Approved Program: Tactical Air Forces (TAF), Statement of Operational Need, Nov 9, 1984

(ATF, December 31, 1985)

10. (U) Technical/Operational Characteristics:

	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. (U) Technical*			
(b)(1) [redacted]			
b. (U) Operational*			
(U) TAKE-OFF GROSS WEIGHT (Primary Air Superiority Mission) (Internal Fuel Only) (Lbs)	50,000/TBD		50,000
(b)(1) [redacted]			

c. (U) Previous Change Explanations -- None

d. (U) Current Change Explanations -- None

e. (U) References -- Planning Estimate: Advanced Tactical Fighter, Mission Element Need Statement, approved by Defense Resources Board Nov 23, 1981
Approved Program: Tactical Air Forces (TAF), Statement of Operational Need, Nov 9, 1984

*(U) Specific technical and operational characteristics for this aircraft are still being determined. These planning estimates may change markedly as tradeoffs are accomplished during the Demonstration/Validation Phase (currently FY 86-89).

(ATF, December 31, 1985)

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Planning Estimate	Changes	Current Estimate
a. (U) Cost —			
Development (RDT&E)	$ 11785.5	$ -1817.2	$ 9968.3
Procurement	—	—	—
Construction (MILCON)	—	—	—
Total: FY 85 Base-Year $	11785.5	-1817.2	9968.3
Escalation	3508.5	-1087.1	2421.4
Development (RDT&E)	(3508.5)	(-1087.1)	(2421.4)
Procurement	—	—	—
Total Then Year $	$ 15294.0	$ -2904.3	$ 12389.7
b. (U) Quantities --			
Development (RDT&E)	12	—	12
Procurement	N/A	N/A	N/A
Total	12	—	12

c. (U) Unit Cost -- Not Applicable

d. (U) Approved Design to Cost Goal -- None.

e. (U) Foreign Military Sales -- None.

f. (U) Nuclear Costs -- None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. (U) Program Acquisition—			
(1) Cost*	12389.7	15294.0	12389.7
(2) Quantity*	12	12	12
(3) Unit Cost	N/A	N/A	N/A

* RDT&E only

b. (U) Current Procurement -- Not Applicable

(ATF, December 31, 1985)

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Planning Estimates	15294.0	—	15294.0
Previous Changes			
Economic	0.0	—	0.0
Quantity	0.0	—	0.0
Schedule	0.0	—	0.0
Engineering	0.0	—	0.0
Estimating	0.0	—	0.0
Other	0.0	—	0.0
Support	0.0	—	0.0
Subtotal	0.0	—	0.0
Current Changes			
Economic	-634.5	—	-634.5
Quantity	0.0	—	0.0
Schedule	+257.8	—	+257.8
Engineering	0.0	—	0.0
Estimating	-2527.6	—	-2527.6
Other	0.0	—	0.0
Support	0.0	—	0.0
Subtotal	-2904.3	—	-2904.3
Total Changes	-2904.3	—	-2904.3
Current Estimate	12389.7	—	12389.7

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

a. (U) Summary (Cont'd) — (FY 1985 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	TOTAL
Planning Estimates	11785.5	--	11785.5
Previous Changes			
Economic	0.0	—	0.0
Quantity	0.0	—	0.0
Schedule	0.0	—	0.0
Engineering	0.0	—	0.0
Estimating	0.0	—	0.0
Other	0.0	--	0.0
Support	0.0	—	0.0
Subtotal	0.0	—	0.0
Current Changes			
Economic	0.0	—	0.0
Quantity	0.0	—	0.0
Schedule	0.0	—	0.0
Engineering	0.0	—	0.0
Estimating	-1817.2	--	-1817.2
Other	0.0	—	0.0
Support	0.0	--	0.0
Subtotal	-1817.2	--	-1817.2
Total Changes	-1817.2	--	-1817.2
Current Estimate	9968.3	--	9968.3

b. (U) Previous Change Explanations -- None

c. (U) Current Change Explanations —

	(Dollars in Millions) Base-Year $	Then-Year $
(1) (U) RDT&E		
Revised Jan 86 economic escalation indices. (Economic)	$ 0.0	$ -634.5

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

c. (U) Current Change Explanations (Cont'd)

	(Dollars in Millions) Base-Year $	Then-Year $
(1) (U) RDT&E (Cont'd)		
Air Force leadership decisions delayed DSARC I, causing corresponding delays in subsequent program milestones. (schedule)	0.0	+257.8
Adjustment for Prior Year escalation. (estimating)	+1.8	+1.9
Estimates for airframe, propulsion, test and evaluation, and other government costs have been reduced based on updated historical cost data and refinements in estimating methodology. (estimating)	-1819.0	-2529.5

(2) (U) Procurement -- Not Applicable

(3) (U) Milcon -- Not Applicable

d. (U) References -- Planning Estimate: FY 86 President's Budget, 1 Feb, 1985.

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

Not Applicable

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

a. (U) RDT&E

	Initial Contract Price		
	Target	Ceiling	Qty
ENGINE	$ 207.6	N/A	2

Pratt & Whitney Aircraft Group,
West Palm Beach, Florida
F33657-83-C-0092, FFP
Award: September 30, 1983
Definitized: September 30, 1983

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 207.6	N/A	2	$ 207.6	$ 207.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances		
Cumulative Variances to Date (11/30/84)	N/A*	N/A*
Net Change		

Explanation of Change: Quantity of 1 shown on 12/84 SAR was incorrect.

	Initial Contract Price		
	Target	Ceiling	Qty
ENGINE	$ 207.6	N/A	2

General Electric Co., Cincinnati, OH
F33657-83-C-0281, FFP
Award: September 30, 1983
Definitized: September 30, 1983

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 207.6	N/A	2	$ 207.6	$ 207.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances		
Cumulative Variances to Date (11/30/84)	N/A*	N/A*
Net Change		

Explanation of Change: Quantity of 1 shown on 12/84 SAR was incorrect.

* N/A: No CPR on FFP contracts

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

b. (U) Procurement -- Not Applicable

c. (U) Milcon -- Not Applicable

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

a. (U) Program Status --

(1) Percent Program Completed: 30.8 % (4/13)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 2.5 % ($ 309.1/$ 12389.7)
(Funds Appropriated To Date in Millions/Total Program Funding in Millions)

b. (U) Appropriation Summary --

(Then Year Dollars in Millions)

Appropriation	Current & Prior Years (FY83-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-95)	Total
RDT&E	$ 309.1	$ 294.1	$ 4438.2	$ 7348.3	$ 12389.7
Procurement	$ --	$ --	$ *	$ --	$ *
MILCON	$ --	$ --	$ --	$ --	$ --
Total	$ 309.1	$ 294.1	$ 4438.2	$ 7348.3	$ 12389.7

* A preliminary planning estimate of $283.0 M for FY 91 Long Lead procurement for ten aircraft is included in the Procurement Annex.

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

c. (U) Annual Summary —

FISCAL YEAR	FY 85 BASE-YEAR DOLLARS				THEN-YEAR DOLLARS			ESCL* RATE (%)
	QTY	FLYAWAY (NONADD)		TOTAL	ADV PROCUREMENT		TOTAL	
		NONREC	REC		(DEBIT)	(CREDIT)		
APPROPRIATION: RDT&E								
1983	—	—	—	21.1	—	—	20.0	4.9
1984	—	—	—	34.1	—	—	33.6	3.8
1985	—	—	—	89.1	—	—	90.9	3.6
1986	—	—	—	155.9	—	—	164.6	3.2
1987	—	—	—	267.8	—	—	294.1	4.1
1988	—	—	—	301.9	—	—	343.5	3.9
1989	—	—	—	494.4	—	—	579.9	3.4
1990	—	—	—	846.9	—	—	1019.6	2.9
1991	—	—	—	2027.0	—	—	2495.2	2.3
1992	—	—	—	2758.0	—	—	3475.1	2.3
1993	—	—	—	1798.8	—	—	2318.7	2.3
1994	—	—	—	914.7	—	—	1205.6	2.3
1995	—	—	—	258.6	—	—	348.9	2.3
SUBTTL	12	1/	1/	9968.3	—	—	12389.7	
APPROPRIATION: PROCUREMENT								
1991	—	—	—	—	2/	—		
SUBTTL		0.0	0.0	0.0	2/	0.0	0.0	
TOTAL	12	1/	1/	9968.3	2/	—	12389.7	

1/ Not Available
2/ A preliminary planning estimate of $283.0 M for FY 91 Long Lead procurement for ten aircraft is included in the Procurement Annex.

* Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. (U) Obligations and Expenditures --

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	Total	Obligated *	Expended *
Appropriation: RDT&E			
1983	20.0	19.9	19.8
1984	33.6	33.5	33.2
1985	90.9	89.8	72.9
1986	164.6	67.5	65.4
TO COMPLETE	12080.6	N/A	N/A
TOTAL	12389.7	210.7	191.3

e. (U) No Procurement Obligations or Expenditures

17. (U) Production Rate Data:

Not Applicable.

18. (U) Operating and Support Costs:

Not Applicable.

* Reflects Program Office records as of January 31, 1986.

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SELECTED ACQUISITION REPORT (RCS: DD COMP (Q&A) 823)
PROGRAM: (U) Mark XV Identification, Friend or Foe (IFF) System

AS OF DATE: December 31, 1985

(U) INDEX

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MAR 14 1986 18
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature: Mark XV Identification, Friend or Foe (IFF) System

2. (U) DoD Component: U.S. Air Force is lead service in this tri-service program.

3. (U) Responsible Office and Telephone Number:

Combat Identification System Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433-6503

Mr Thomas J. Fowler
Assigned: 21 Jan 85
AV: 785-3810;
Comm: (513) 255-3810

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

RDT&E:	Air Force	PE 63742F Project 642599	(Shared funding)
		PE 64725F Project 642598	(Shared funding)
	Army	PE 63706A Project D297	(Shared funding)
		PE 64709A Project D530	(Shared funding)
	Navy	PE 64211N Project W1253	(Shared funding)

5. (U) Related Programs: Mark XII Technical Improvement Program (Mark XII TIP), Integrated Communication Navigation Identification Avionics (ICNIA) and Non Cooperative Target Recognition (NCTR) programs.

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Review On: OADR SAF/PAS

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6. (U) Mission and Description: The Mark XV is a replacement for the outdated Mark X/XII direct, cooperative aircraft Identification Friend or Foe (IFF) system. It is required to realize the full potential of our beyond visual range weapons. The Mark XV is an Air Force lead tri-service, NATO interoperable, retrofit acquisition program with a goal of maximum form, fit, function and plug compatibility (F3PC). It will provide necessary performance improvements including resistance to deception (spoofing), jamming, and exploitation, while maintaining compatibility with existing Mark X/XII systems and current and future civil air traffic control functions.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- A concept design phase was initiated in Jun 80 with the approval of the Joint Mission Element Need Statement (JMENS) and concept design contracts were awarded to three contractor teams in Oct 80. Final contractor reports were submitted in Aug 81. An RFP for Demonstration/Validation was issued in Jul 82. The RFP was restructured in Jan 83 into a two phase program. Phase I (brassboard waveform demonstration) contracts were awarded to Bendix and Texas Instruments in May 83. A Multi-Command Required Operational Capability (MROC) document, which details the tri-service requirement for an improved Question and Answer (Q&A) system, was approved by all services in Jul 84. DSARC I was held in Jul 84 and resulted in a Secretary of Defense Decision Memorandum (SDDM) directing exercise of the Phase II Demonstration/Validation contract options, restructure of the Mark XV program to include more Form, Fit and Function risk reduction studies, acceleration of the program to start FSD in FY87, and a requirement to stay within approved funding levels. Subsequent to the SDDM, Congressional funding cuts in FY85 slipped the start of FSD to FY88. Funding constraints in the FY86 budget delay FSD contract award until FY90.

b. (U) Significant Developments Since Last Report -- Contract modifications implementing SDDM direction are now on contract.

The Mark XV system is expected to satisfy the mission requirements.

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

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: The date of the latest SDDM is 22 Aug 84. The date of the latest SCP is 16 Nov 84, and is currently being held by the Army Undersecretary of Defense pending Army requirements decision. There are no thresholds established in these documents.

9. (U) Schedule:

a. (U) Milestones --

	Planning Estimate/ Approved Program	Current Estimate
Program Initiated	Jun 80/Jun 80	Jun 80
Initial PMD	Nov 81/Nov 81	Nov 81
DSARC I	Jul 84/Jul 84	Jul 84
DSARC II	Mar 88/Mar 88	Mar 88
FSD Contract Award	Jun 88/Jun 88	Jun 90
Critical Design Review	Jun 89/Jun 89	Jun 91
DSARC IIIA	Sep 91/Sep 91	Sep 93
First Production Contract Award	Oct 91/Oct 91	Oct 93
DSARC IIIB	Sep 92/Sep 92	Sep 94
IOC	Sep 94/Sep 94	Sep 96

b. (U) Previous Change Explanations -- FSD Contract Award and subsequent milestones delayed two years to accommodate low funding amount in FY86 budget.

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

d. (U) References --

Planning Estimate: Secretary of Defense Decision Memorandum (SDDM), 22 August 84 (Unclassified); Message Program Management Directive (PMD), August 84.

Approved Program: SDDM, 22 August 84 (Unclassified), SCP (draft) 16 November 84 (Secret), PMD 4015(13)/63742F, 5 April 85 (Unclassified), AFSC Form 56, 63742-85-122, 28 August 85 (Unclassified).

10. (U) Technical/Operational Characteristics:

	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. (U) Technical: (Note 1)			
(b)(1)			
(2) (U) Volume:			
(a) (U) Transponder (based on APX-100) (cu in)	610/610		610
(b) (U) Interrogator (based on APX-76) (cu in)	1027/1027		1027

Notes:

(1) (U) Standard Transponder and Fighter Interrogator.

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	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
b. ( ) Operational:			
(1) (U) System Compatibility (Signals) (Note 1)	MK XV, MK XII, ATCRBS, MODE S/ MK XV, MK XII, ATCRBS, MODE S		MK XV, MK XII ATCRBS, MODE S
(2) (U) Form, Fit, Function and Plug Compatible (F^3PC) (Note 2)	Direct MK XII retrofit/ Direct MK XII retrofit		Direct MK XII retrofit
(3) (U) Frequency Band	L(D)/L(D)		L(D)
(4) (U) Mean Time Between Failures (MTBF) (Hrs) (Note 3)	1000/1000		1000
(5) (U) Mean Time Between Critical Failures (HTBCF) (Hrs) (Note 4)	370/370		370
(6) (U) Mean Time Between Maintenance (MTBM) (Hrs) (Note 4)	177/177		177
(7) (U) Maintenance False Removal Rate (MFRR) Percent (%)	2/2		2
(8) (U) Mean Time to Repair-On Equipment (Hrs)	0.5/0.5		0.5
(9) (U) Mean Time to Repair-Off Equipment (Hrs)	2.5/2.5		2.5
(10) (U) Maintenanue Manhour Per Operating Hour (MMH/OH)	0.0075/0.0075		0.0075

(b)(1)

[redacted]

Notes:
(1) (U) Standard Transponder and Fighter Interrogator.
(2) (U) F^3PC to the maximum extent possible is a design goal.
(3) (U) Contractual, FSD phase at completion of FSD Reliability Qualification Test (RQT).
(4) (U) Fielded MTBF for airborne system based on 1000 hours achieved during RQT.
(5) (U) Friend rejection probability per ID attempt is defined as the probability, for any identification of a friendly target, that the system will declare that target "no friend" given adequate S/J in jamming or S/N in a benign environment. This probabiiity also assumes that all hardware is within minimum performance specification (avionics shop check all right).
(6) (U) Enemy acceptance probability per ID attempt for a random guesser is defined as the probability the system declares an enemy a friend when the enemy is randomly guessing the correct reply to each interrogation.
(7) (U) Exploitation probability per interrogation attempt by a random guesser is a measure of the ability of an enemy interrogator to randomly guess a correct interrogation on a single try resulting in the victim transponder replying.

c. (U) Previous Change Explanation -- None.

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

e. (U) References --
Planning Estimate: Mark XV MROC, 16 July 84 ~~(Secret)~~, SDDM, 22 August 84 (Unclassified), and SCP (draft), 16 November 84 ~~(Secret)~~.

Approved Program: Mark XV MROC, 16 July 84 ~~(Secret)~~, SDDM, 22 August 84 (Unclassifed), and SCP (draft), 16 November 84 ~~(Secret)~~.

11. (U) Program Acquisition Cost (Current estimate in Millions of Dollars)

a. (U) Cost --	Planning Estimate	Changes	Current Estimate
Development (RDT&E)	1200.6	+5.8	1206.4
Total FY82 Base-Year $	1200.6	+5.8	1206.4
Escalation	471.5	+0.5	472.0
Development (RDT&E)	(471.5)	(+0.5)	(472.0)
Total Then-Year $	1672.1	+6.3	1678.4
b. (U) Quantities --	N/A		N/A
Development (RDT&E)			
Total			
c. (U) Unit Cost --	N/A		N/A

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

e. (U) Foreign Military Sales -- N/A

f. (U) Nuclear Costs -- N/A

12. (U) Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions) -- N/A

12. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1672.1	N/A	N/A	1672.1
Previous Changes:	-			-
Economic	-			-
Quantity	-			-
Schedule	+90.1			+90.1
Engineering	-			-
Estimating	-			-
Other	-			-
Support	-			-
Subtotal	+90.1			+90.1
Current Changes:	-			-
Economic	-81.7			-81.7
Quantity	-			-
Schedule	-8.9			-8.9
Engineering	-			-
Estimating	+0.1			+0.1
Other	-			-
Support	+6.7			+6.7
Subtotal	-83.8			-83.8
Total Changes	+6.3			+6.3
Current Estimate	1678.4			1678.4

(FY 1982 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1200.6	N/A	N/A	1200.6
Previous Changes:	-			-
Economic	-			-
Quantity	-			-
Schedule	-			-
Engineering	-			-
Estimating	-			-
Other	-			-
Support	-			-
Subtotal	-			-
Current Changes:	-			-
Economic	-			-
Quantity	-			-
Schedule	-			-
Engineering	-			-
Estimating	+0.1			+0.1
Other	-			-
Support	+5.7			+5.7
Subtotal	+5.8			+5.8
Total Changes	+5.8			+5.8
Current Estimate	1206.4			1206.4

(U) Cost Variance Analysis: (Cont'd)

b. (U) Previous Change Explanations --

(U) RDT&E
Schedule: Schedule extended two years to FY95 to accommodate low funding amounts in FY 1986 PB.

(U) Procurement -- N/A

(U) MILCON -- N/A

c. (U) Current Change Explanations --

(Dollars in Millions)

	Base-Year $	Then-Year $
(1) (U) RDT&E		
Revised economic escalation indices (Economic)	N/A	-81.7
Schedule refined to accomplish program efforts earlier (Schedule)	0	- 8.9
Adjustment for current and prior year escalation change (Estimating)	+ 0.1	+ 0.1
Additional technical data needed to support NATO interoperability (Support)	+ 5.7	+ 6.7

(2) (U) Procurement -- N/A

(3) (U) MILCON -- N/A

d. (U) References --
Planning Estimate: FY 1986 President's Budget

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

Initial SAR/Planning Estimate (PE) to Current Estimate (CE)

PAUC (Initial SAR/ PE)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
N/A	-	-	-	-	-	-	-	-	N/A

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

a. (U) RDT&E — Mark XV IFF:
Bendix Co., Baltimore MD
F33657-83-C-2099, FPIF,
Award: May 19, 1983
Definitized: June 29, 1983

Initial Contract Price		
Target	Ceiling	Qty
$14.1	$16.4	-0-

Current Contract Price		
Target	Ceiling	Qty
$23.7	$27.6	-0-

Estimated Price at Completion	
Contractor	Program Manager
$23.3	$25.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$- .2	$- .1
Cumulative Variances To Date (11/30/85)	$-1.2	$-2.3
Net Change	$-1.0	$-2.2

(U) Explanation of Change: An August 85 Engineering Change Proposal (ECP) increased the current contract price by $10.5M (from $13.2M reported in the 31 December 84 SAR to $23.7M). This ECP and FY85 contractor performance trend data resulted in a $10.0 increase in the program manager's estimated price at completion (from $15.3M to $25.3M). The increases in unfavorable cost and scheduling variances are primarily due to unanticipated design and engineering complexities required to achieve specified performance levels. The variances are primarily reflected in Prime Mission Equipment (PME) and Systems Engineering. The cost variance has no programmatic impact at this time because the contractor's Estimate At Completion (EAC) is 4% below budgeted target price. To reduce the unfavorable schedule variance the contractor has added personnel to the program and has instituted an overtime work schedule. The current unfavorable schedule variance reflects a moderate risk to the planned delivery of advanced development models. The schedule variance is projected to improve without impacting the planned date for DSARC II.

15. (U) Contract Information (cont'd)

Mark XV, 31 December 1985

Mark XV IFF:
Texas Instruments Co., Lewisville TX
F33657-83-C-2102, FPIF,
Award: May 19, 1983
Definitized: May 19, 1983

Initial Contract Price		
Target	Ceiling	Qty
$18.9	$23.7	-0-

Current Contract Price		
Target	Ceiling	Qty
$28.9	$36.2	-0-

Estimated Price at Completion	
Contractor	Program Manager
$33.7	$36.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$-1.8	$ -0-
Cumulative Variances To Date (11/30/85)	$-7.8	$-3.1
Net Change	$-6.0	$-3.1

(U) Explanation of Change: An August 1985 ECP increased the current contract price by $10.0M (from $18.9M reported in the 31 December 1984 SAR to $28.9M). This ECP and FY85 contractor performance trend data resulted in a $12.6M increase in the program manager's estimated price at completion (from $23.6M to $36.2M). The increases in unfavorable cost and schedule variances are primarily due to unanticipated design and engineering complexities required to achieve specified performance levels. Although the contractor's Estimate At Completion (EAC) is 6.9% below ceiling, the government's computed price is 10.2% above ceiling. Therefore, the government has budgeted to ceiling and the cost variance does not impact the program at this time. Program management and program control are closely monitoring cost performance trends and updates to estimate at completion. The current unfavorable schedule variance reflects a moderate risk to the scheduled delivery of advanced development models. Contractor management efforts have been directed to reduce schedule variance. Schedule variance is projected to improve without impacting the planned date for DSARC II.

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

a. (U) Program Status —

(1) (U) Percent Program Completed: 43.8% (7 yrs/16 yrs)

(2) (U) Percent Program Cost Appropriated: 6.5% ($109.8/$1678.4)

b. (U) Appropriation Summary —

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY80-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Balance To Complete Beyond FYDP (FY91-95)	Total
RDT&E	109.8	30.6	512.5	1025.5	1678.4
Total	109.8	30.6	512.5	1025.5	1678.4

c. (U) Annual Summary —

Fiscal Year	Qty	FY82 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E Tri-Service								
1980	N/A	N/A	N/A	9.8	N/A	N/A	8.5	-
1981				6.5			6.2	11.9
1982				13.4			13.6	9.2
1983				11.0			11.8	4.9
1984				16.3			18.2	3.8
1985				20.6			23.6	3.6
1986				23.4			27.9	3.2
1987				24.7			30.6	4.1
1988				56.4			72.5	3.9
1989				72.8			96.3	3.4
1990				131.0			177.9	2.9
1991				119.4			165.8	2.3
1992				199.2			283.0	2.3
1993				225.6			328.1	2.3
1994				194.3			289.0	2.3
1995				82.0			125.4	2.3
Subtotal				1206.4			1678.4	-
Total				1206.4			1678.4	-

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Air Force

1980	N/A	N/A	N/A	6.9	N/A	N/A	6.0	-
1981				1.3			1.2	11.9
1982				5.9			6.0	9.2
1983				6.8			7.3	4.9
1984				8.7			9.7	3.8
1985				14.3			16.4	3.6
1986				5.3			6.3	3.2
1987				8.1			10.0	4.1
1988				14.0			18.0	3.9
1989				26.1			34.5	3.4
1990				72.2			98.0	2.9
1991				96.5			134.0	2.3
1992				32.1			45.6	2.3
1993				23.7			34.5	2.3
1994				15.1			22.5	2.3
1995				5.0			7.6	2.3
Subtotal				342.0			457.6	-

Army

1980	N/A	N/A	N/A	2.9	N/A	N/A	2.5	-
1981				2.6			2.5	11.9
1982				5.8			5.9	9.2
3				2.8			3.0	4.9
4				3.6			4.0	3.8
5				3.7			4.2	3.6
1986				8.5			10.1	3.2
1987				5.2			6.5	4.1
1988				8.8			11.3	3.9
1989				5.7			7.6	3.4
1990				5.9			8.0	2.9
1991				6.3			8.7	2.3
1992				46.4			65.9	2.3
1993				73.6			107.0	2.3
1994				76.3			113.5	2.3
1995				31.4			48.4	2.3
Subtotal				289.5			409.1	-

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Navy

0	N/A	N/A	N/A	-	N/A	N/A	-	-
1981				2.6			2.5	11.9
1982				1.7			1.7	9.2
1983				1.4			1.5	4.9
1984				4.0			4.5	3.8
1985				2.6			3.0	3.6
1986				9.6			11.5	3.2
1987				11.4			14.1	4.1
1988				33.6			43.2	3.9
1989				41.0			54.2	3.4
1990				52.9			71.9	2.9
1991				16.6			23.1	2.3
1992				120.7			171.5	2.3
1993				128.3			186.6	2.3
1994				102.9			153.0	2.3
1995				45.6			69.4	2.3
Subtotal				574.9			811.7	-

d. (U) Obligations and Expenditures — (As of: 15 Jan 86)

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
Tri-Service			
1980	8.5	8.5	8.5
1981	6.2	6.2	6.2
1982	13.6	13.6	13.6
1983	11.8	11.8	11.6
1984	18.2	18.2	15.6
1985	23.6	23.6	8.8
1986	27.9	7.8	0.5
To Complete	1568.6	-	-
Total	1678.4	89.7	64.8
Air Force			
1980	6.0	6.0	6.0
1981	1.2	1.2	1.2
1982	6.0	6.0	6.0
1983	7.3	7.3	7.2
1984	9.7	9.7	9.6
1985	16.4	16.4	4.9
1986	6.3	1.1	0.0
To Complete	404.7	-	-
al	457.6	47.7	34.9

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Army

1980	2.5	2.5	2.5
1981	2.5	2.5	2.5
1982	5.9	5.9	5.9
1983	3.0	3.0	3.0
1984	4.0	4.0	3.8
1985	4.2	4.2	1.4
1986	10.1	3.2	0.1
To Complete	376.9	-	-
Total	409.1	25.3	19.2

Navy

1980	-	-	-
1981	2.5	2.5	2.5
1982	1.7	1.7	1.7
1983	1.5	1.5	1.4
1984	4.5	4.5	2.2
1985	3.0	3.0	2.5
1986	11.5	3.5	0.4
To Complete	787.0	-	-
Total	811.7	16.7	10.7

17. (U) Production Rate Data:

(U) Deliveries (Plan/Actual) —

	To Date
RDT&E	0/0

18. (U) Operating and Support Costs: N/A

UNCLASSIFIED

AF:33. SMALL MISSILE (ICBM) ~~SECRET~~ SAR-85-084

1

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

AS OF DATE: December 31, 1985

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1. Designation and Nomenclature (Popular Name): None assigned to date (Small ICBM)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

Ballistic Missile Office
Norton AFB, CA 92409-6468

Brig Gen Edward P. Barry, Jr.
Assigned: 4 September 1985
AV 876-6014; COMM (714) 382-6014

4. Program Elements/Procurement Line Items:

RDT&E: 64312F, (Shared funding)

PROCUREMENT: N/A

MILCON: N/A

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AS AMENDED
MAR 12 1986
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD—PA)
DEPARTMENT OF DEFENSE
OASD(PA) DFOISR 86-T-0599

5. Related Programs: Peacekeeper

~~Classified by: Small ICBM Security Classification Guide (1 Mar 85)~~
~~Declassify: OADR~~

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SAF/PAS
86-152 - T

~~SECRET~~

6. Mission and Description: The mission of the Small ICBM weapon system is to enhance the deterrent posture of US strategic forces. Should deterrence fail, the Small ICBM must be able to effectively attack the full spectrum of designated targets with nuclear weapons. The system must provide a prompt retaliatory capability. Small ICBM does not replace an existing system.

7. Program Highlights:

a. Significant Historical Developments: In April 1983, the President approved the report of his commission on Strategic Forces and forwarded that report to Congress. Recommendations included in the report called for the development of a Small ICBM. The Authorization Act of 1984 directed the DoD to proceed. Implementing Air Force program direction directed the engineering design of a 30,000 pound, single reentry vehicle ICBM which would have a range of 6,000 nautical miles and be compatible with mobile and fixed basing. That direction also called for a vigorous program of competition. Competitive contracts were awarded in late 1983 to perform conceptual design studies, effectiveness analyses, and tests to validate feasibility of technological improvements. Additional competitions have been held to downselect (reduce) the number of contractors for various system elements: from four competitors, two contractors have been selected to develop and analyze designs for hard mobile launchers (HML), fabricate mobility test vehicles, and conduct subscale hardness tests. The mobility test vehicles have currently undergone contractor testing and will be delivered to the Air Force for testing in January 1986. For each of the three solid propellant missile stages, two contractors have been selected to design, fabricate, and test stages incorporating advanced technologies. To date, eight of eight successful stage case bursts have been demonstrated. From four competitors, a five year contract was awarded to one contractor for development of the post boost vehicle and shroud, assembly and test of the missile, and general system support. One contractor has also been competitively selected for design and integration of the guidance and control assembly. Guidance and control contracts were awarded to three contractors to develop alternate inertial navigation systems. Internal components of these systems have undergone over 11,000 hours of government testing with performance better than expected.

b. Significant Developments Since Last Report: Small ICBM is expected to meet all mission requirements. This is Small ICBM's initial Selected Acquisition Report.

c. Changes Since "As Of" Date: Mobility Test Vehicles were delivered to the Air Force on schedule.

8. Decision Coordinating Paper (DCP) Threshold Breaches: N/A. There currently are no DCP or SDDMs for Small ICBM.

9. Schedule:

	Planning Estimate/ Approved Program	Current Estimate
a. Milestones --		
Initial Program Management Directive	Sep 83/Sep 83	Sep 83 *
Full Scale Development Start	Dec 86/Dec 86	Dec 86
System Design Review	Mar 87/Mar 87	Mar 87 1/
First Flight Test	Mar 89/Mar 89	Mar 89 1/
First Contract Award for Production	Dec 89/Dec 89	Dec 89 1/
IOC	Dec 92/Dec 92	Dec 92 1/

b. Previous Change Explanations -- None. Initial report.

c. Current Change Explanations -- None. Initial report.

d. References--

Planning Estimate: Secretary of Defense Memorandum, dated November 1, 1983 National Security Decision Directive 178, dated July 10, 1985.

Approved Program: Same as Development Estimate.

* Reflects actual dates of accomplishment.
1/ Contingent on FSD in Dec 86.

10. (U) Technical/Operational Characteristics:

a. (U) Technical --	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
Missile Weight (Lbs)	30,000/30,000	N/A	30,000
Range (NM)	6,000/6,000	N/A	6,000

b. (U) Operational --

(b)(1)

c. (U) Previous Change Explanations -- None. Initial report.

d. (U) Current Change Explanations -- None. Initial report.

e. (U) References

Planning Estimate: Secretary of Defense Memorandum, dated November 1, 1983, and National Security Decision Directive 178, dated July 10, 1985.

Approved Program: Same as Development Estimate.

1/ (U) Accuracy is defined in terms of Circular Error Probable (CEP) which is the radius of a circle within which 50 percent of the reentry vehicles will impact at a range of 6000 nautical miles with a 27.5 degree reentry angle.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars) 1/

	Planning Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	10,585.5	---	10,585.5
Procurement	---	---	---
Missile Flyaway	---	---	---
Other Weapon System	---	---	---
Support	---	---	---
Initial Spares	---	---	---
Construction (MILCON)	---	---	---
Total FY 84 Base-Year $	10,585.5		10,585.5
Escalation	2,114.5	---	2,114.5
Development (RDT&E)	(2,114.5)	---	(2,114.5)
Procurement	(---)	---	(---)
Construction (MILCON)	(---)	---	(---)
Total Then-Year $	12,700.0		12,700.0
b. Quantities --			
Development (RDT&E)	22	---	22
Procurement	---	---	---
Total	22	---	22
c. Unit Cost --			
Procurement:			
FY 84 Base Year $	N/A	---	N/A
Then Year $	N/A	---	N/A
Program			
FY 84 Base Year $	N/A	---	N/A
Then Year $	N/A	---	N/A

d. Approved Design to Cost Goal -- None

e. Foreign Military Sales -- None

f. Nuclear Costs -- N/A

1/ RDT&E only reported. Procurement and MILCON data are not available at this time. Procurement and MILCON data will be reported in the December 31, 1986 SAR.

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

N/A. RDT&E only reported. Procurement and MILCON data are not available at this time. Procurement and MILCON data will be reported in the December 31, 1986 SAR.

13. Cost Variance Analysis: 1/

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	12,700.0	---	---	12,700.0
Previous Changes:	NONE	INITIAL	REPORT	
Economic	---	---	---	---
Quantity	---	---	---	---
Schedule	---	---	---	---
Engineering	---	---	---	---
Estimating	---	---	---	---
Other	---	---	---	---
Support	---	---	---	---
Subtotal	---	---	---	---
Current Changes:				
Economic	---	---	---	---
Quantity	---	---	---	---
Schedule	---	---	---	---
Engineering	---	---	---	---
Estimating	---	---	---	---
Other	---	---	---	---
Support	---	---	---	---
Subtotal	---	---	---	---
Total Changes	---	---	---	---
Current Estimate	12,700.0	---	---	12,700.0

(FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	10,585.5	---	---	10,585.5
Previous Changes:	NONE	INITIAL	REPORT	
Quantity	---	---	---	---
Schedule	---	---	---	---
Engineering	---	---	---	---
Estimating	---	---	---	---
Other	---	---	---	---
Support	---	---	---	---
Subtotal	---	---	---	---
Current Changes:				
Quantity	---	---	---	---
Schedule	---	---	---	---
Engineering	---	---	---	---
Estimating	---	---	---	---
Other	---	---	---	---
Support	---	---	---	---
Subtotal	---	---	---	---
Total Changes	---	---	---	---
Current Estimate	10,585.5	---	---	10,585.5

1/ RDT&E only reported. Procurement and MILCON data are not available at this time. Procurement and MILCON data will be reported in the December, 31, 1986 SAR.

13. Cost Variance Analysis (cont'd):

b. Previous Change Explanations -- None. Initial report.

c. Current Change Explanations -- None. Initial report.

d. References --

Planning Estimate: FY 1987 President's Budget, February 1986

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

N/A. RDT&E only reported. Procurement and MILCON data are not available at this time. Procurement and MILCON data will be reported in the December 31, 1986 SAR.

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

a. RDT&E

	Initial Contract Price		
	Target	Ceiling	Qty
Post Boost Vehicle/Assembly & Test Martin Marietta, Denver CO F04704-85-C-0039, FPIF Awarded: 26 June 1985 Definitized: 26 June 1985	$ 333.5M	$ 376.0M	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$333.5M	$376.0M	N/A	$333.5M	$333.5M

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date (Dec 85)	$-0.4M	$-1.8M

Explanation of Change: (Initial SAR) Net changes are not significant. Contract is currently 5.0% complete. Too early to assess contract impact. No program impact.

15. Contract Information (con't): (Then-Year Dollars in Millions)

	Initial Contract Price		
	Target	Ceiling	Qty
Guidance and Control Integration Rockwell International (Autonetics) Anaheim CA F04704-84-C-0061, CPIF/AF Awarded: 25 May 1984 Definitized: 26 May 1984	$196.8M	N/A	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$196.8	N/A	N/A	$196.8	$197.5M

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date (Dec 85)	$-0.8M	$-0.3M

Explanation of Change: (Initial SAR). Unfavorable schedule variance is due to delays in board and console checkout activities, caused by changes in requirements. Also, slow start on Electronics Computer Assembly (ECA) Design caused ECA and software development to be behind schedule. Cost variance is due to greater use of manpower to recover/maintain schedule in ECA and Inertial Performance Measurement System (IPMS). Contractor is meeting program milestones; some cost growth expected in parts development, IPMS and ECA. Program Manager estimates the Price at Complete will exceed the Target Price. No program impact.

	Initial Contract Price		
	Target	Ceiling	Qty
System Support Martin Marietta, Denver CO F04704-85-C-0040, CPIF/AF Awarded: 26 June 1985 Definitized: 26 June 1985	$121.8M	N/A	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$121.8	N/A	N/A	$125.2M	$125.2M

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date (Dec 85)	$0.2M	$-0.2M

Explanation of Change: (Initial SAR) Net changes are not significant. Contract is currently 4.2% complete. Too early to assess contract impact. No program impact.

16. Program Funding Summary: (Current Estimate in Millions of Dollars) 1/

a. Program Status --

(1) Percent Program Completed: 30%, 3/10

(2) Percent Program Cost Appropriated: 11.0%, 1,394.7/12,700.0

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

Appropriation	Current & Prior Yrs (FY84-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-93)	TOTAL
RDT&E	1394.7	1375.5	8835.0	1094.8	12,700.0
Procurement	--	--	--	--	--
MILCON	--	--	--	--	--
TOTAL	1394.7	1375.5	8835.0	1094.8	12,700.0

c. Annual Summary --

FISCAL YEAR	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate 2/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		(%)
Appropriation: RDT&E								
1984				321.2			328.3	3.8
1985				434.2			458.5	3.6
1986				555.2			607.9	3.2
1987				1208.7			1375.5	4.1
1988				2116.1			2494.9	3.9
1989				2252.8			2737.1	3.4
1990				1708.3			2130.2	2.9
1991				1154.2			1472.8	2.3
1992				652.6			851.6	2.3
1993				182.2			243.2	2.3
Subtotal	22			10585.5			12700.0	---
Total	22			10585.5			12700.0	---

1/ RDT&E only reported. Procurement and MILCON data are not available at this time. Procurement and MILCON data will be reported in the December 31, 1986 SAR.

2/ Since outlay rates are not shown, the escalation rates cannot be used to specify the composite indices.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1984	328.3	328.3	304.5
1985	458.5	458.5	224.2
1986	607.9	235.2	0.3
To Complete	11305.3	---	---
Total	12700.0	1022.0	529.0

17. Production Rate Data: (Not applicable prior to Milestone II)

18. Operating and Support Costs: (Not applicable prior to Milestone II)

AF-11 . CSRL

SAR-85-106

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

PROGRAM: Common Strategic Rotary Launcher

AS OF DATE: December 31, 1985

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Designation and Nomenclature (Popular Name): Common Strategic Rotary Launcher (CSRL)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

B-52 Program Office
Aeronautical Systems Division
Wright-Patterson AFB, OH 45433

Col Phil Roberts
Assigned: July 85
AV 785-7057 COMM (513) 255-7057

4. Program Elements/Procurement Line Items:

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RDT&E: PE 63258F (No shared funding)
PE 64234F (No shared funding)

PROCUREMENT: APPN 3010 ICN B05200
PE 11122F

MILCON: N/A

O&M: APPN 3400 PE 11113F (Shared funding)

Related Programs: OAS/CMI, B-1B, ATB, SRAM II, ALCM, ACM, and future standoff conventional weapons

86 0579

Mission and Description:

The Common Strategic Rotary Launcher (CSRL) is a multipurpose weapons launcher for strategic internal weapons carriage. The CSRL will accommodate current and projected gravity nuclear weapons, Short Range Attack Missiles, and cruise missiles (ALCM and ACM). Space provisions are also provided for MIL-STD 1760 avionics and wiring permitting carriage of future conventional standoff munitions and SRAM II. The CSRL will be common to the B-52H, B-1B, and ATB to the maximum extent practical. For B-52H/B-1B, it provides each aircraft with internal capability to safely load, carry, launch/release, and jettison the following weapons: eight SRAMs (AGM-69A), eight ALCMs (AGM-86B), four ACMs (B-1B only), eight B-61s, eight B-83s, and four B-28s (B-52 only). Weapon loading requirements for the ATB are covered within the security constraints of that program. The CSRL does not replace any weapon system since the B-52 and B-1 do not presently have internal cruise missile capability.

7. Program Highlights:

a. Significant Historical Developments -- The FSD program is currently 78.7% complete. No significant technical problems have been identified to date. From Oct 84 - Oct 85, the CSRL underwent a totally successful qualification testing program which included proof load testing, ground vibration tests, power drive system qualification tests, durability tests, damage tolerance tests and ultimate load tests. All requirements were satisfactorily met or exceeded. Additional CSRL ground tests were initiated with the arrival of the flight test aircraft at Edwards AFB on 1 Aug 85. The ground test to verify upload, download, and reconfiguration requirements were successfully completed on 16 Sep 85. The flight test program began on 17 Sep 85 and included ALCM and gravity bomb jettisons and releases. All flight objectives have been successfully completed with no significant CSRL hardware related problems. Launcher rotation, weapon ejection, and aircraft software/launcher hardware interfaces have been successfully demonstrated. CSRL flight test will conclude on 24 Jan 86. AFOTEC will continue the evaluation of B-52 OAS software for five additional months to ensure all existing B-52 capabilities have not been disturbed by the addition of the CSRL to the B-52. A final IOT&E test report will be released to HQ USAF on 31 Aug 86 evaluating the CSRL and the associated aircraft software. An interim report briefed the HQ USAF Modification Review Group on 31 Oct 85 stated there were no hardware/software problems identified during the first 60% of the flight test program. HQ AFSC, HQ AFLC, HQ AFOTEC, and HQ SAC unequivocably recommended, and HQ USAF approved proceeding with low rate initial production (3 modified aircraft/5 launchers). All program objectives and milestones are on schedule to support the directed initial B-52H operational capability of March 1990. B-1B flight test program will start in March 1986.

b. Significant Developments Since Last Report -- N/A Initial Submission
The CSRL is expected to satisfy the mission requirement.

c. Changes Since "As Of" Date -- None

Decision Coordinating Paper (DCP) Threshold Breaches -- No DCP

Schedule:

a. Milestones --

	Production Estimate/ Approved Program	Current Estimate
Demonstration/Validation	Jun 82 / Jun 82	Jun 82
Source Selection	Jun 83 / Jun 83	Jun 83
Full Scale Development	Jun 83 / Jun 83	Jun 83
PDR	Sep 83 / Sep 83	Sep 83
CDR	Mar 84 / Mar 84	Mar 84
B-52 CSRL Flight Test Initiation	Aug 85 / Aug 85	Aug 85
Completion of B-52 CSRL Qualification Testing	Oct 85 / Oct 85	Oct 85
Low rate initial production	Nov 85 / Nov 85	Nov 85
B-52 CSRL Flight Test Completion	Jan 86 / Jan 86	Jan 86
IOT&E Final Report (AFOTEC)	Aug 86 / Aug 86	Aug 86
Full rate production	Nov 86 / Nov 86	Nov 86
B-52 FAC *	Sep 89 / Sep 89	Sep 89
B-52 IOC **	Mar 90 / Mar 90	Mar 90

* B-52 First Alert Capability (FAC) is defined as the capability to place on alert, if so directed, three Offensive Avionics System (OAS) modified B-52Hs loaded with two cruise missiles pylons, cruise missiles and a CSRL.

** B-52 Initial Operational Capability (IOC) consists of one squadron with internal/external cruise missile capability and associated support equipment.

b. Previous Change Explanations -- N/A Initial Submission

c. Current Change Explanations — N/A Initial Submission

d. References --

Production Estimate: PMD NR. R-Q 2087(5), Dated 22 Apr 85
PMD NR. 4126(3)/3142, dated 31 Oct 85

Approved Program: Same as Above

echnical/Operational Characteristics:

a. Technical —	Production Est/ Approved Program	Demonstrated Performance 1)	Current Estimate
Time required to rotate from an adjacent station (sec)	5/5	5	5
Maximum time required to jettison full weapon load (sec)	60/60	55 3)	55 3)
In-commision rate (%) 2)	93/93	93 3)	93
Weapon system reliability (%)	96/96	96 3)	96
Maximum design weight (lbs)	5000/5000	4466 4)	4466 4)
b. Operational —			
Capability to carry/release AGM-86B (missiles)	8/8	8	8
Capability to carry/release B-61 (bombs)	8/8	8	8
Capability to carry/release B-28 (bombs)	4/4	4	4
Capability to carry/release B-83 (bombs)	8/8	8	8
Mean time to upload/download a weapon-configured CSRL in B-52H bomb bay (min)	60/60	40 5)	40 5)
Mean time to perform single weapon exchange (min)	60/60	30 5)	30 5)

1) Worst case
2) Percentage of CSRLs capable of performing the specific mission with no corrective maintenance required
3) Current predictions being validated by AFOTEC at Edwards AFB
4) Verified weight of final production configuration
5) Actual times experienced by SAC/AFOTEC load crews at Edwards AFB

c. Previous Change Explanations — N/A Initial Submission

d. Current Change Explanations — N/A Initial Submission

e. References —

Production Estimate: PMD NR. R-Q 2087(5), dated 22 Apr 85
PMD NR. 4126(3)/3142, dated 31 Oct 85

Approved Program: Same as Above

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Production Estimate	Change	Current Estimate
a. Cost --			
Development (RDT&E)	265.6	0.0	265.6
Procurement	326.6	0.0	326.6
Nonrecurring	(12.2)	(0.0)	(12.2)
Group A - Integration	(66.3)	(0.0)	(66.3)
Group B - Launcher	(172.7)	(0.0)	(172.7)
Total Flyaway	(251.2)	(0.0)	(251.2)
Other Weapon Systems Cost	(51.5)	(0.0)	(51.5)
Initial Spares	(23.9)	(0.0)	(23.9)
Construction (MILCON)	0.0	0.0	0.0
O&M	23.1	0.0	23.1
Total FY82 Base-Year $	615.3	0.0	615.3
Escalation	198.5	0.0	198.5
Development (RDT&E)	(34.6)	(0.0)	(34.6)
Procurement	(155.3)	(0.0)	(155.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
O&M	(8.6)	(0.0)	(8.6)
Total Then-Year $	813.8	0.0	813.8
b. Quantities --			
Development (RDT&E: 1 used for destructive testing)	(7)	(7)	(7)
Procurement (includes retrofit of 6 FSD)	104	104	104
Total	104	104	104
c. Unit Cost --			
Procurement:			
FY82 Base-Year $	3.140	0.0	3.140
Then-Year $	4.634	0.0	4.634
Program:			
FY82 Base-Year $	5.916	0.0	5.916
Then-Year $	7.825	0.0	7.825

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

e. Foreign Military Sales -- N/A

f. Nuclear Costs -- N/A

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	813.8	813.8	813.8
(2) Quantity	104	104	104
(3) Unit Cost	7.825	7.825	7.825
b. Current Procurement --	(FY86)	(FY86)	(FY87)
(1) Cost	75.9	75.9	108.1
Less CY Adv Proc	0.0	0.0	0.0
Plus PY Adv Proc	0.0	0.0	0.0
Net Total	75.9	75.9	108.1
(2) Quantity	5	5	26
(3) Unit Cost	15.180	15.180	4.158

13. Cost Variance Analysis

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

	RDT&E	PROC	O&M	TOTAL*
Production Estimate	300.2	481.9	31.7	813.8
Previous Changes:				
Economic				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Current Changes:				
Economic				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Total Changes	0.0	0.0	0.0	0.0
Current Estimate	300.2	481.9	31.7	813.8

* MILCON: N/A

13. Cost Variance Analysis (Cont'd):

(FY82 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL*
Production Estimate	265.6	326.6	23.1	615.3
Previous Changes:				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Current Changes:				0.0
Quantity				0.0
Schedule				0.0
Engineering				0.0
Estimating				0.0
Other				0.0
Support				0.0
Subtotal	0.0	0.0	0.0	0.0
Total Changes	0.0	0.0	0.0	0.0
Current Estimate	265.6	326.6	23.1	615.3

* MILCON: N/A

b. Previous Change Explanations -- N/A Initial Submission

c. Current Change Explanations -- N/A Initial Submission

d. References --

Production Estimate: PMD NR. R-Q 2087(5), dated 22 Apr 85
PMD NR. 4126(3)/3142, dated 31 Oct 85

1 rogram Acquisition Unit Cost (PAUC) History: (Millions of Then Year $)

Initial SAR/Production Estimate (PdE) to Current Estimate (CE)

PAUC (Initial SAR Est/ PdE)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.825	—	—	—	—	—	—	—	—	7.825

15. Contract Information: (Millions of Then Year $)

a. RDT&E —

Common Strategic Rotary Launcher:

Boeing Military Airplane Company, Wichita, KS F33657-83-C-0533, FPI Award: June 22, 1983 (CSRL) April 22, 1984 (CSRL Integration) Definitized: June 22, 1983 (CSRL) April 22, 1984 (CSRLI)		Initial Contract Price Target	Ceiling	Qty
	CSRL	$25.1	$29.2	2
	CSRLI	$84.3	$98.1	
	CSRL/CSRLI Total	$109.4	$127.3	2

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$137.2	$156.5	7	$137.7 *	$134.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date 26 Dec 85	$+2.3	$-.7
Net Change	$+2.3	$-.7

* Includes $ .5M of unpriced effort.

Explanation of Change: Initial Submission

b. Procurement — N/A (Definitization anticipated Feb 86)

c. MILCON — N/A

d. O&M — N/A

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

a. Program Status --

(1) Percent Program Completed: 41.7% (5 yrs/12 yrs)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 43.6% ($354.7M/$813.8M)
(Funds Appropriated To Date/Total Program Funding)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY82-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92-93)	Total
RDT&E	278.8	14.6	6.8	0.0	300.2
Procurement	75.9	108.1	297.4	.5	481.9
MILCON	-	-	-	-	0.0
O&M	-	-	20.8	10.9	31.7
Total	354.7	122.7	325.0	11.4	813.8

c. Annual Summary --

Fiscal Year	Qty	FY 82 Base Year			Then Year			Escl Rate (%) *
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1982				21.4			21.9	9.2
1983				59.4			63.6	4.9
1984				55.0			61.2	3.8
1985				53.3			61.3	3.6
1986				59.4			70.8	3.2
1987				11.8			14.6	4.1
1988				4.6			5.8	3.9
1989				.7			1.0	3.4
Subtotal	(7)			265.6			300.2	

* Since outlay rates are not shown, the escalation rate cannot be used to verify the composite index.

1 rogram Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty	FY 82 Base Year			Then Year			Escl Rate (%) *
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1986	5	12.2	25.2	55.6			75.9	4.1
1987	26		59.9	75.9			108.1	4.1
1988	23		52.3	73.9			109.5	3.9
1989	24		51.3	62.1			95.1	3.4
1990	26		50.3	58.7			92.6	2.9
1991				.1			.2	2.3
1992				.1			.2	2.3
1993				.2			.3	2.3
Subtotal	104	12.2	239.0	326.6	0.0	0.0	481.9	
Appropriation: MILCON								
N/A							0.0	N/A
Appropriation: O&M (Qty represent A/C installs)								
1988	1			.8			1.0	3.9
1989	21			4.9			6.4	3.4
1990	21			4.9			6.6	2.9
1991	21			4.9			6.8	2.3
1992	21			5.0			7.1	2.3
1993	11			2.6			3.8	2.3
Subtotal	(96)			23.1			31.7	
Total	104	12.2	239.0	615.3	0.0	0.0	813.8	

* Since outlay rates are not shown, the escalation rate cannot be used to verify the composite index.

16 Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1982	21.9	21.8	21.8
1983	63.6	59.8	59.8
1984	61.2	59.2	59.2
1985	61.3	56.2	42.0
1986	70.8	1.0	.1
To Comp	21.4	N/A	N/A
Total	300.2	197.0	182.8
Appropriation: Procurement			
1986	75.9	0.0	0.0
To Comp	406.0	N/A	N/A
Total	481.9	N/A	N/A
Appropriation: MILCON			
Total	N/A	N/A	N/A
Appropriation: O&M			
Total	31.7	N/A	N/A

Reflects program office records as of 24 Jan 86.

I. Production Rate Data: (Based upon the Surge Rate)

Fiscal Year	Production Rates (Quantity/Year)			
	Dev Est	Prd Est	Cur Est	Max
1986	6	6	6	6
1987	21.5	21.5	21.5	21.5
1988	24	24	24	48
1989	24	24	24	48
1990	24	24	24	48

b. Cost Variance -- Dollars in Millions
(NOTE: Subject to production rate limitations)

Item		Prod Estimate	Variance (CE - PdE)	Current Estimate	Variance (CE - Max)	Maximum
Prog Acq Cost	(BY82 $)	615.3	0.0	615.3	0.1	615.2
	(TY $)	813.8	0.0	813.8	5.3	808.5
PAUC	(BY82 $)	5.916	0.0	5.916	.001	5.915
	(TY $)	7.825	0.0	7.825	.051	7.774

c. Schedule Variance -- (NOTE: Subject to production rate limitations)

Item	Prod Estimate	Variance (CE - PdE)	Current Estimate	Variance (CE - Max)	Maximum
Start Date (Mo/Yr) *	12/87	-	12/87	-	12/87
Duration (Months)	59	-	59	24	35
End Date (Mo/Yr) *	10/92	-	10/92	24	10/90

* Based upon delivery rates

d. Deliveries To Date (Plan/Actual) -- RDT&E 4/4
Proc 0/0

18. Operating and Support Costs: This program qualifies for O & S reporting under the new requirements, but no O & S estimate has been prepared.

AF-9 CELV

SAR-85-086

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

AS OF DATE: December 31, 1985

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1. Designation and Nomenclature (Popular Name): Titan 34D7/Complementary Expendable Launch Vehicle (CELV)

2. DOD-Component: United States Air Force

3. Responsible Office and Telephone Number:

Space Launch and Control Systems
Deputy for Expendable Launch
Vehicle, Space Division
Los Angeles AFS, Ca 90009-2960

Col Victor W. Whitehead/Program Director
Assigned: July 1, 1983
AV 833-0210; COMM (213)643-0210

Col William H. Anders/Program Manager
Assigned: March 4, 1985
AV 833-1785, COMM (213)643-1785

4. Program Elements/Procurement Line Items:

RDT&E: PE 35119F (Shared funding)
PE 35171F (Shared funding)
PE 34111F (Shared funding)

PROCUREMENT: APPN 3020 ICN MSBSTR

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

5. Related Programs: Defense Support Program; Milstar; Space Shuttle Operations (IUS)

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OASD(PA) DEC 86-T-0589

6. Mission and Description: The CELV program will not replace any defense programs. It will assure continued access to space for the nation's highest priority space systems. The CELV 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 CELV consists of a liquid propellant core of two stages with a pair of large solid rocket motors attached to the core to provide the initial stage of boost from liftoff. While a variety of upper stages may be compatible with the booster, the two upper stages baselined for use on the CELV are the Inertial Upper Stage (IUS) and the Centaur G-prime mod. When configured with the Centaur G-prime mod, a single stage liquid propellant restartable upper stage, the CELV is capable of matching the Shuttle/Centaur performance by placing a 10,000 pound payload into geosynchronous orbit (GSO).

7. Program Highlights:

a. Significant Historical Developments -- Development of the CELV program is in direct response to a National Security Decision Directive which directed the DoD to provide assured access to space for critical DoD satellites. Since contract award in February 1985, the program has moved forward in a number of technical areas. Program Design Reviews have been accomplished for the Payload Fairing, Solid Rocket Motors, and a number of core vehicle sub-systems. Cold Flow testing of the Solid Rocket Motors began in September 1985. Stress analysis has been completed on the Liquid Rocket Engines and the core vehicles' component qualification is nearing completion. A series of booster/Centaur qualification tests will occur prior to the first launch.

b. Significant Developments Since Last Report -- None. First report. The CELV is expected to satisfy mission requirements.

c. Changes Since "As Of Date" -- None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: None. There are no SDDMs, SCPs, or DCPs applicable to the CELV program.

9. Schedule:

a. Milestones --

	Development Estimate/ Approved Program	Current Estimate
Initial Contract Award	Feb 85/Feb 85	Feb 85
Production Start	Oct 85/Oct 85	Oct 85
System Preliminary Design Review	Apr 86/Apr 86	Apr 86
System Critical Design Review	Nov 86/Nov 86	Nov 86
First Delivery to Cape Canaveral Air Force Station	Feb 88/Feb 88	Feb 88
Initial Launch Capability	Oct 88/Oct 88	Oct 88

b. Previous Change Explanations -- None. First report.

c. Current Change Explanations -- None. First report.

d. References --
Development Estimate: FY 1987 President's Budget, dated February, 1986.
Approved Program: Same as Development Estimate.

10. Technical/Operational Characteristics:

	Dev Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. Technical --			
System Reliability (%)	98	N/A	98
Solid Rocket Motors:			
Length (ft)	112.2/112.2	N/A	112.2
Diameter (ft)	10.2/10.2	N/A	10.2
Thrust (M/lbs)	1.6/1.6	N/A	1.6
Core Vehicle:			
Stage One			
Length (ft)	86.5/86.5	N/A	86.5
Diameter (ft)	10.0/10.0	N/A	10.0
Engine Thrust (k/lbs)	546/546	N/A	546
Stage Two			
Length (ft)	32.6/32.6	N/A	32.6
Diameter (ft)	10.0/10.0	N/A	10.0
Engine Thrust (k/lbs)	104/104	N/A	104
Payload Fairing:			
Diameter (ft)	16.7/16.7	N/A	16.7
Length (ft)	86/86	N/A	86
b. Operational --			
Payload to geosynchronous (k/lbs)	10/10	N/A	10

c. Previous Change Explanations -- None. First Report.

d. Current Change Explanation -- None. First Report.

e. References--
Development Estimate: FY 1987 President's Budget, dated February, 1986.
Approved Program: Same as Development Estimate.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current 1/ Estimate
a. Cost --			
Development (RDT&E)	$ 579.7	-	$ 579.7
Program Development	(488.7)	-	(488.7)
RDT&E Funded Centaurs	(91.0)	-	(91.0)
Procurement	1570.8	-	1570.8
Total Flyaway	(1106.6)	-	(1106.6)
Other Weapon Systems Costs	(464.2)	-	(464.2)
Total FY 85 Base-Year $	2150.5	-	2150.5
Escalation	378.7	-	378.7
Development (RDT&E)	(61.4)	-	(61.4)
Procurement	(317.3)	-	(317.3)
Total Then-Year $	$ 2529.2	-	$ 2529.2
b. Quantities --			
Development (RDT&E)	-	-	-
Procurement	10	-	10
Total	10	-	10
c. Unit Cost --			
Procurement:			
FY 85 Base-Year $	$ 157.080	-	$ 157.080
Then-Year $	188.810	-	188.810
Program:			
FY 85 Base-Year	215.050	-	215.050
Then-Year $	$ 252.920	-	252.920

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

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

1/ Current Estimate will be changed to implement FY 86 Congressional direction to fully fund procurement versus an incrementally funded procurement. The Air Force is currently in the process of requesting approval of multiyear procurement authority in the FY 87 Authorization and Appropriation Bills.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate 1/	UCR Baseline Estimate (Dec 85 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition --			
(1) Cost	$2529.2	$2529.2	$2529.2
(2) Quantity	10	10	10
(3) Unit Cost	$ 252.920	$252.920	$ 252.920
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	$ 153.2	$ 153.2	$ 371.7
Less CY Adv Proc	-120.2	-120.2	-230.0
Plus PY Adv Proc	--	--	+120.2
Net Total	$ 33.0	$ 33.0	$ 261.9
(2) Quantity	-	-	1
(3) Unit Cost	N/A	N/A	261.900

13. Cost Variance Analysis:

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

	RDT&E	PROC	TOTAL
Development Estimate	641.1	1888.1	2529.2
Previous Changes: None. First Report.			
Economic			
Quantity			
Schedule			
Engineering			
Estimating			
Other			
Support			
Subtotal	-	-	-
Current Changes: None. First Report.			
Economic			
Quantity			
Schedule			
Engineering			
Estimating			
Other			
Support			
Subtotal	-	-	-
Total Changes	-	-	-
Current Estimate 1/	641.1	1888.1	2529.2

1/ Current Estimate will be changed to implement FY 86 Congressional direction to fully fund procurement versus an incrementally funded procurement. The Air Force is currently in the process of requesting approval of multiyear procurement authority in the FY 87 Authorization and Appropriation Bills.

13. Cost Variance Analysis (Cont'd):
(FY 1985 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	TOTAL
Development Estimate	579.7	1570.8	2150.5
Previous Changes: None. First Report.			
Quantity			
Schedule			
Engineering			
Estimating			
Other			
Support			
Subtotal	-	-	-
Current Changes: None. First Report.			
Quantity			
Schedule			
Engineering			
Estimating			
Other			
Support			
Subtotal	-	-	-
Total Changes	-	-	-
Current Estimate 1/	579.7	1570.8	2150.5

b. Previous Change Explanations --

RDT&E

None. First Report.

Procurement

None. First Report.

c. Current Change Explanations --

(1) RDT&E -- First Report.

(2) Procurement -- First Report.

d. References --
Development Estimate: FY 1987 President's Budget, February 1986.

1/ Current Estimate will be changed to implement FY 86 Congressional direction to fully fund procurement versus an incrementally funded procurement. The Air Force is currently in the process of requesting approval of multiyear procurement authority in the FY 87 Authorization and Appropriation Bills.

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

Initial SAR/Development Estimate to Current Estimate —

PAUC (Initial SAR/Dev Estimate)	Changes								PAUC (Current Estimate) 1/
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
252.920	-	-	-	-	-	-	-	-	252.920

15. Contract Information 2/: (Then-Year Dollars in Millions)

RDT&E/Procurement —
CELV:
Martin Marietta Corp., Denver, CO
F04701-85-C-0019, FPIF
Award: February 28, 1985
Definitized: March 1, 1985

Initial Contract Price		
Target	Ceiling	Qty
$2095.8	$2287.8	10

Current Contract Price		
Target	Ceiling	Qty
$2095.8	$2287.8	10

Estimated Price At Completion	
Contractor	Program Manager
$2100.6	$2100.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (31 Dec 85)	$ +5.3	$ -2.1
Net Change	+5.3	-2.1

Explanation of Change: It is too early in the performance of the contract (3% complete) to determine the impacts of the cost and schedule variances. At the present time, the contractor's performance measurement system is in review for validation. Until the system is validated, the data received is not reliable for performance measurement. The review is expected to be completed in June, 1986.

+ = favorable - = unfavorable

1/ Current Estimate will be changed to implement FY 86 Congressional direction to fully fund procurement versus an incrementally funded procurement. The Air Force is currently in the process of requesting approval of multiyear procurement authority in the FY 87 Authorization and Appropriation Bills.

2/ The CELV contract is in the process of being restructured to a fully funded approach. It is anticipated that the restructured contract will take effect in early FY 87.

7

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

a. Program Status --

(1) Percent Program Complete: 22.2% (2 yrs/9 yrs)

(2) Percent Program Cost Appropriated: 16.1% ($407.6/$2529.2)

b. Appropriation Summary 1/ --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY85-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Balance To Complete Beyond FYDP (FY92-93)	Total
RDT&E	254.4	152.6	200.1	34.0	641.1
Procurement	153.2	371.7	1152.0	211.2	1888.1
Total	407.6	524.3	1352.1	245.2	2529.2

c. Annual Summary 2/ --

Fiscal Year	Qty	FY 85 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 3/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1985				37.5			38.2	3.6
1986				204.7			216.2	3.2
1987				139.0			152.6	4.1
1988				100.5			114.4	3.9
1989				26.5			31.1	3.4
1990				22.5			27.1	2.9
1991				22.3			27.5	2.3
1992				14.3			18.0	2.3
1993				12.4			16.0	2.3
Subtotal				579.7			641.1	-

1/ Current Estimate will be changed to implement FY 86 Congressional direction to fully fund procurement versus an incrementally funded procurement. The Air Force is currently in the process of requesting approval of multiyear procurement authority in the FY 87 Authorization and Appropriation Bills.

2/ FY's 86, 87, and 88 amounts includes the purchase of two RDT&E funded Centaurs for Shuttle/Centaur RDT&E missions.

3/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the componite index.

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

c. Annual Summary 1/ --

Fiscal Year	Qty	FY 85 Base-Year Dollars			Then-Year Dollars			Escl Rate (%) 2/
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: Procurement								
1985			-	-			-	
1986		8.1		138.1	120.2		153.2	4.1
1987	1	64.4	70.9	323.8	230.0	120.2	371.7	4.1
1988	3	43.2	243.2	429.7	97.3	230.0	508.8	3.9
1989	2		225.6	210.1		97.3	255.3	3.4
1990	2		225.6	146.5			182.2	2.9
1991	2		225.6	161.6			205.7	2.3
1992				102.0			132.7	2.3
1993				59.0			78.5	2.3
Subtotal	10	115.7	990.9	1570.8	447.5	447.5	1888.1	
Total	10	115.7	990.9	2150.5	447.5	447.5	2529.2	

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated 3/	Expended 3/
Appropriation: RDT&E			
1985	38.2	23.2	20.7
1986	216.2	95.8	-
To Complete	386.7	-	-
Total	641.1	119.0	20.7
Appropriation: Procurement			
1986	153.2	65.0	-
To Complete	1734.9	-	-
Total	1888.1	65.0	-

1/ Current Estimate will be changed to implement FY 86 Congressional direction to fully fund procurement versus an incrementally funded procurement. The Air Force is currently in the process of requesting approval of multiyear procurement authority in the FY 87 Authorization and Appropriation Bills.

2/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

3/ Reflects Program Office records as of 31 Dec 85.

17. Production Rate Data: 1/

a. Annual Production Rates --

The Production Rate Data is contingent upon associate contractors' and subcontractors' ability to provide the prime contractor the required hardware, on schedule, to complete the build of a CELV at the rate specified.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1987	.9	N/A	.9	N/A
1988	2.0	N/A	2.0	N/A
1989	2.4	N/A	2.4	N/A
1990	1.9	N/A	1.9	N/A
1991	1.4	N/A	1.4	N/A
1992	.9	N/A	.9	N/A
1993	.5	N/A	.5	N/A

b. Cost Variance -- (Dollars in Millions)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	2150.5	N/A	N/A
(TY $)	N/A	N/A	2529.2	N/A	N/A
PAUC (BY $)	N/A	N/A	215.050	N/A	N/A
(TY $)	N/A	N/A	252.920	N/A	N/A

c. Schedule Variance -- None

Item	Production Estimate	Variance (CE vs PdE)	Current Estimate 2/	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	Oct/85	N/A	N/A
Duration (i_n Months)	N/A	N/A	84	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	Jun/93	N/A	N/A

d. Deliveries (Plan/Actual) --

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

1/ The CELV contract is in the process of being restructured to a fully funded approach. The Air Force is currently in the process of requesting approval of multiyear procurement authority in the FY 87 Authorization and Appropriation Bills. The production rate data will change commensurate with Congressional direction to have an annual buy or multiyear procurement.

2/ Start of production- Oct 85; Last delivery- Jun 93

18. Operating and Support Costs:

a. Assumptions and Ground Rules -- Launch and Range Support costs are based on historical data from Titan 34D launches adjusted for any Titan 34D7 peculiar launch requirements.

b. Costs --
(FY 85 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CELV Launch
Launch Support	40.4
Range Support	9.7
Total	50.1

The average annual cost per launch is based on the cost to launch ten vehicles at a rate of two per year. The costs include contractor launch support at Cape Canaveral and the indirect support required at the Martin Marietta and subcontractor plants.

AF-22 JSTARS

~~SECRET~~

SAR-85-062

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

Program: Joint STARS

AS OF DATE: 31 December 1985

INDEX

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1. Designation and Nomenclature (Popular Name): Joint Surveillance Target Attack Radar System (Joint STARS)

2. DoD Component: U.S. Air Force, U.S. Army

3. Responsible Office and Telephone Number:

Joint STARS Program Office
Electronic Systems Division
Hanscom AFB, MA 01731-5000

PM: Col Charles E. Franklin
Assigned: 9 Dec 1985
AUTOVON 478-5724
Commercial: (617)-861-5724

4. Program Elements/ Procurement Line Items:

RDT&E: 63770F (No shared funding)
64770A (No shared funding)
64770D (No shared funding)
64770F (No shared funding)
64616F (No shared funding)
PROCUREMENT: APPN 3010 ICN JSTARS
APPN 2035A ICN 7310BA1080
MILCON: 64770F (No shared funding)

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

5. Related Programs: Global Positioning System(GPS), Joint Tactical Information Distribution System(JTIDS), Single Channel Ground Air Radar System(SINCGARS), F-15, F-16, Inertial Navigation Unit(INU), C-18, HAVE QUICK

SAF/PAS
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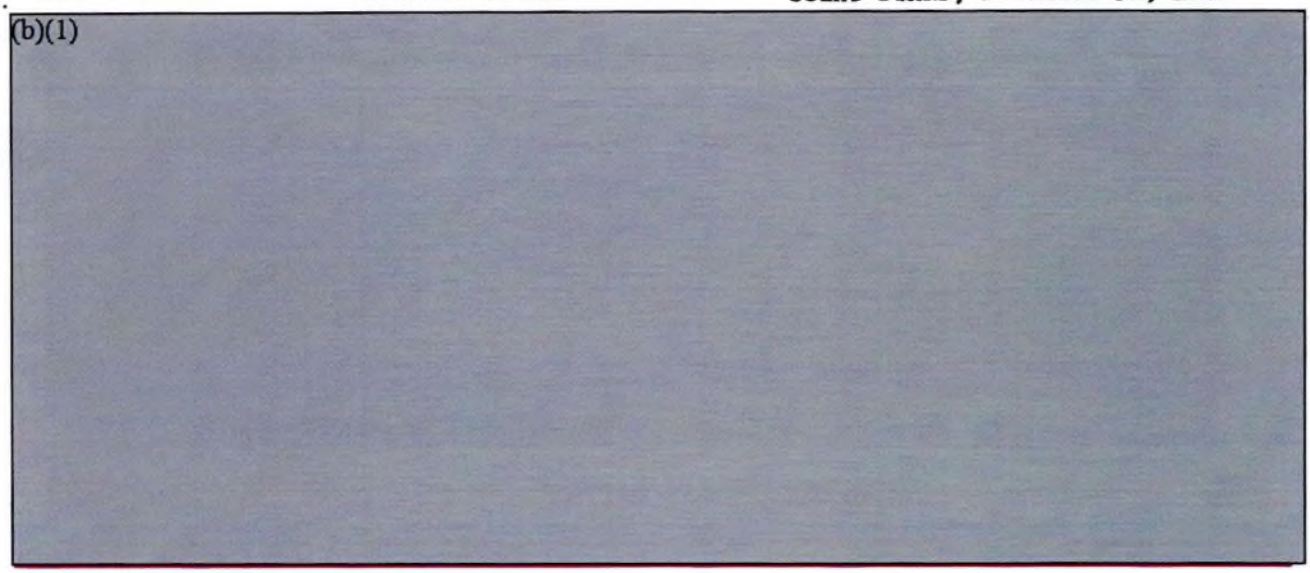
~~CLASSIFIED BY: ESD JSTARS SCG, [illegible] 84~~
~~DECLASSIFY ON: OADR~~

OASD(PA) DFOI 86-F-0628

6. (b)(1)



7. (U) Program Highlights:

a. Significant Historical Developments -- On May 1982, an OSD/USRDE memorandum directed that a Joint Air Force/Army Program Management Office be established under Air Force lead to develop a single multi-mode target acquisition and weapon guidance system. The Joint STARS program resulted from this directive and was organized from PAVE MOVER and SOTAS program offices. The Army Ground Station Module (GSM) FSED contract was awarded to Motorola Corporation in August 1984. A Joint STARS Airborne System RFP was released in March 1984 involving three separate radar platforms. The RFP process was halted when Army and Air Force Chiefs of Staff directed use of only one radar platform-the C-18 - to simultaneously support Joint Army/Air Force missions. A revised RFP reflecting this guidance was released on 28 September 1984.

b. Significant Developments Since Last Report -- New direction to restructure the airborne system for affordability brought forth an amended RFP in March 1985. The Army/Air Force Selected Acquisition Review Council briefings were completed in July 1985 and the initial Defense Systems Acquisition Review Council briefings began in August 1985. These briefings culminated in a Secretary of Defense Decision Memorandum on 26 September 1985. On 27 September 1985 the FSD contract for the airborne segment of Joint STARS was awarded to Grumman Aerospace Corporation. OSD supports an initial force structure of 10 platforms (8 new and 2 refurbished FSD aircraft). Procurement of these aircraft has not been directed. DT&E is scheduled to start in December 1988. A field test demonstration which tests the airborne and ground system in the NATO field environment is also scheduled for November 1989. Due to limited test assets the field test demonstration was reduced from 18 flight test months to 12 flight test months. The Joint STARS program is expected to satisfy its mission requirements.

c. Changes Since "As of" Date -- None.

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP dated 27 August 1985 or SDDM dated 26 September 1985 breaches.

9.(U)Schedule:

a.(U)Milestones --	Planning Estimate/ Approved Program	Current Estimate
(U)Ground Station FSD Award	Aug 84/Aug 84	Aug 84
(U)Milestone IIA	Apr 85/Apr 85	Sep 85 (Ch-1)
(U)Radar/Aircraft FSD Award	May 85/May 85	Sep 85 (Ch-1)
(U)PDR Hardware	Jan 86/Jan 86	May 86 (Ch-1)
(U)Software	- /Sep 86	Sep 86 (Ch-2)
(U)CDR Hardware	Aug 86/Aug 86	Nov 86 (Ch-1)
(U)Software	- /Apr 87	Apr 87 (Ch-2)
(U)Milestone IIB	- /Mar 87	Mar 87 (Ch-2)
(U)DT&E Start	Nov 88/Nov 88	Dec 88 (Ch-1)
(U)Ground Station Production Award	- /Jun 87	Jun 87 (Ch-2)
(U)First Delivery	- /Oct 88	Oct 88 (Ch-2)
(b)(1)		
(U)Last Delivery	- /Nov 92	Nov 92 (Ch-2)
(U)Radar/Aircraft Production Award	- /Aug 90	Aug 90 (Ch-3)
(U)First Delivery	- /Aug 91	Aug 91 (Ch-2)
(U)IOC	TBD /TBD	TBD (Ch-3)
(U)Last Delivery	- /Sep 94	Sep 94 (Ch-2)

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

c.(U)Curent Change Explanations --

(Ch-1) Milestone II decision was delayed from Apr 85 to Sep 85 due to affordability considerations and examination of alternatives.

(Ch-2) Added milestones.

(Ch-3) These milestone dates were established as a result of the Milestone IIA SDDM.

d.(U)References --

Planning Estimate: Army and Air Force R&D Descriptive Summaries. Joint STARS Program Management Directive, 21 Sep 1984.

Approved Program: SDDM dated 26 September 1985, subject Joint STARS Full-Scale Development Approval.

10.(U)Technical/Operational Characteristics:

a.(U)Technical--	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate *
(b)(1)			

* (U) Preliminary Design Review (PDR) has not occured -a current estimate will be included after completion of PDR.

c. Previous Change Explanations -- none.

d. Current Change Explanations --
(Ch-1) Added milestone.

e. References --
Planning Estimate: Draft Joint STARS JSOR dated 26 September 1984. Joint STARS System Specification dated 24 September 1984, revised 17 October 1984.
Approved Program: DCP dated 26 August 1985. PE is in terms of goals, Approved Program is in terms of thresholds.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)
Production costs based on assumed production profile of 10 units (2 refurbished FSD and 8 new).

Air Force and Army

	Planning Estimate	Changes*	Current Estimate
a. Cost --			
Development (RDT&E)	1185.3	+ 218.2	1,403.5
Procurement	TBD	+1,471.5	1,471.5
Flyaway		(+929.8)	(929.8)
Other Wpn Sys Cost		(+332.6)	(332.6)
Initial Spares		(+127.2)	(127.2)
Refurbishment		(+ 81.9)	(81.9)
Construction (MILCON)	TBD	+ 40.6	40.6
Total: Constant FY 1983 $	1185.3	+1,730.3	2,915.6
Escalation	202.9	+ 679.7	882.6
Development (RDT&E)	(202.9)	(+ 58.2)	(261.1)
Procurement	(TBD)	(+608.9)	(608.9)
Construction (MILCON)	(TBD)	(+ 12.6)	(12.6)
Total Program Cost (Then-Year)	1388.2	+2,410.0	3,798.2
b. Quantities --			
Development (RDT&E)		(See individual Air Force and Army Sections)	
Procurement			
Total			
c. Unit Cost --			
Procurement:			
FY 83 Base-Year $			
Then-Year $		(See individual Air Force and Army Sections)	
Program:			
FY 83 Base-Year $			
Then-Year $			

d. Approved Design to Cost Goal -- TBD at DSARC II B Mar 1987.
e. Foreign Military Sales -- none
f. Nuclear Costs -- none

*This is the first SAR that reports Procurement and MILCON funding.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)
Production costs based on assumed production profile of 10 units (2 refurbished FSD and 8 new).

	Planning Estimate	Changes *	Current Estimate
a. Cost --			
Development (RDT&E)	963.3	+ 225.0	1,188.3
Procurement	TBD	+1,035.8	1,035.8
Flyaway		(+602.9)	(602.9)
Other Wpn Sys Cost		(+279.2)	(279.2)
Initial Spares		(+ 71.8)	(71.8)
Refurbishment (Flyaway)		(+ 81.9)	(81.9)
Construction (MILCON)	TBD	+ 40.6	40.6
Total FY 83 Base-Year $	963.3	+1,301.4	2,264.7
Escalation	179.5	+ 545.1	724.6
Development (RDT&E)	(179.5)	(+ 54.7)	(234.2)
Procurement	(TBD)	(+477.8)	(477.8)
Construction (MILCON)	(TBD)	(+ 12.6)	(12.6)
Total Then-Year $	1,142.8	+1,846.5	2,989.3
b. Quantities --			
Development	TBD		(2)#
Procurement	TBD		10
Total	TBD		10#

#The 2 Development units will be refurbished.

c. Unit Cost --			
Procurement:			
FY 83 Base-Year $	N/A	+ 103.580	+ 103.580
Then-Year $		+ 151.360	+ 151.360
Program:			
FY 83 Base-Year $		+ 226.470	+ 226.470
Then-Year $		+ 298.930	+ 298.930

d. Approved Design to Cost Goal -- TBD DSARC II B - Mar 1987
e. Foreign Military Sales -- none
f. Nuclear Costs -- none

*This is the first SAR that reports Procurement and MILCON funding.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Planning Estimate	Changes *	Current Estimate
a. Cost --			
Development (RDT&E)	222.0	- 6.8	215.2
Procurement	TBD	+ 435.7	435.7
Flyaway		(+326.9)	(326.9)
Other Wpn Sys Cost		(+ 53.4)	(53.4)
Initial Spares		(+ 55.4)	(55.4)
Total FY 83 Base-Year $	222.0	+ 428.9	650.9
Escalation	23.4	+ 134.6	158.0
Development (RDT&E)	(23.4)	(+ 3.5)	(26.9)
Procurement	(TBD)	(+131.1)	(131.1)
Total Then-Year $	245.4	+ 563.5	808.9
b. Quantities --			
Development (RDT&E)	8	-	8
Procurement	TBD	+ 95	95
Total	TBD		103
c. Unit Cost --			
Procurement:			
FY 83 Base-Year $	TBD	+ 4.586	4.586
Then-Year $	TBD	+ 5.966	5.966
Program:			
FY 83 Base-Year $	TBD	+ 6.319	6.319
Then-Year $	TBD	+ 7.853	7.853

d. Approved Design to Cost Goal -- TBD DSARC II B - Mar 1987
e. Foreign Military Sales -- none
f. Nuclear Costs -- none

*This is the first SAR that reports Procurement and MILCON funding.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

Air Force only	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	2,989.3	2,989.3	2,989.3
(2) Quantity	10	10	10
(3) Unit Cost	298.930	298.930	298.930

b. Current Procurement -- No quantities in Current or Budget Year.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

Army only	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	808.9	808.9	808.9
(2) Quantity	103	103	103
(3) Unit Cost	7.853	7.853	7.853
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	N/A	N/A	70.3
Less CY Adv Proc	N/A	N/A	0.0
Plus PY Adv Proc	N/A	N/A	0.0
Net Total	N/A	N/A	70.3
(2) Quantity	N/A	N/A	9
(3) Unit Cost	N/A	N/A	7.811

13. Cost Variance Analysis: Air Force and Army
a. Summary -- (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1,388.2	-	-	1,388.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	- 19.2	-	-	- 19.2
Quantity	-	+1,425.1	+ 53.2	+1,478.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+ 295.6	-	-	+ 295.6
Other	-	-	-	-
Support	-	+ 655.3	-	+ 655.3
Subtotal	+ 276.4	+2,080.4	+ 53.2	+2,410.0
Total Changes	+ 276.4	+2,080.4	+ 53.2	+2,410.0
Current Estimate	1,664.6	2,080.4	53.2	3,798.2

13. Cost Variance Analysis (Cont'd):
(FY 83 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1,185.3	-	-	1,185.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	+1,011.7	+ 40.6	+1,052.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+ 218.2	-	-	+ 218.2
Other	-	-	-	-
Support	-	+ 459.8	-	+ 459.8
Subtotal	+218.2	+1,471.5	+ 40.6	+1,730.3
Total Changes	+218.2	+1,471.5	+ 40.6	+1,730.3
Current Estimate	1,403.5	1,471.5	40.6	2,915.6

b. Previous Change Explanations -- none.

c. Current Change Explanations -- See individual Air Force and Army sections.

d. References --
Planning Estimate: FY 1986 President's Budget.

Air Force only

13. Cost Variance Analysis:
a. Summary --(Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1,142.8	-	-	1,142.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-12.0	-	-	-12.0
Quantity	-	+1,000.0	+53.2	+1,053.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+291.7	-	-	+291.7
Other	-	-	-	-
Support	-	+513.6	-	+513.6
Subtotal	+279.7	+1,513.6	+53.2	+1,846.5
Total Changes	+279.7	+1,513.6	+53.2	+1,846.5
Current Estimate	1,422.5	1,513.6	53.2	2,989.3

13. Cost Variance Analysis (Cont'd)
(FY 83 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	963.3	-	-	963.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	+684.8	+40.6	+725.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+225.0	-	-	+225.0
Other	-	-	-	-
Support	-	+351.0	-	+351.0
Subtotal	+225.0	+1,035.8	+40.6	+1,301.4
Total Changes	+225.0	+1,035.8	+40.6	+1,301.4
Current Estimate	1,188.3	1,035.8	40.6	2,264.7

b. Previous Change Explanations -- none.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-12.0
Refinement and Rephasing of Program estimate (Estimating)	+225.0	+291.7
(2) Procurement		
Addition of Procurement (Flyaway) costs for ten aircraft (Quantity)	+684.8	+1,000.0
Addition of Procurement Support costs associated with 10 added units (Support)	+351.0	+513.6
(3) MILCON		
Addition of MILCON cost associated with Joint STARS procurement program (Quantity)	+40.6	+53.2

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	245.4	-	N/A	245.4
Previous Changes:	-	-	-	-
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-7.2	-	-	-7.2
Quantity	-	+425.1	-	+425.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3.9	-	-	+3.9
Other	-	-	-	-
Support	-	+141.7	-	+141.7
Subtotal	-3.3	+566.8	N/A	+563.5
Total Changes	-3.3	+566.8	N/A	+563.5
Current Estimate	242.1	566.8	N/A	808.9

13. Cost Variance Analysis (Cont'd):
(FY 83 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	222.0	-	N/A	222.0
Previous Changes:	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	+326.9	-	+326.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-6.8	-	-	-6.8
Other	-	-	-	-
Support	-	+108.8	-	+108.8
Subtotal	-6.8	+435.7	N/A	+428.9
Total Changes	-6.8	+435.7	N/A	+428.9
Current Estimate	215.2	435.7	N/A	650.9

b. Previous Change Explanations -- none

13. Cost Variance Analysis (Cont'd):

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-7.2
Refinement and Rephasing of program estimate (Estimating)	-6.8	+3.9
(2) Procurement		
Addition of procurement flyaway costs for 95 ground stations (Quantity)	+326.9	+425.1
Addition of procurement support costs associated with the 95 ground stations (Support)	+108.8	+141.7

14. Program Acquisition Unit Cost (PAUC) History: Air Force only (Millions of Then-Year Dollars)

Initial SAR/Planning Estimate (PE) to Current Estimate (CE)

*PAUC (Initial SAR/PE)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Tot	
571.400	-1.200	-351.800	-	-	+29.170	-	+51.360	-272.470	298.930

*This is not a true PAUC-- this number was derived by dividing RDT&E costs in the initial SAR by the 2 FSD units.

Army only

*PAUC (Initial SAR/PE)	Changes								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Tot	
30.675	-0.070	-24.166	-	-	+0.038	-	+1.376	-22.822	7.853

* This is not a true PAUC--this number was derived by dividing RDT&E costs in the initial SAR by the 8 FSED units.

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

a. RDT&E

Initial Contract Price

Radar/Aircraft Platform	Target	Ceiling	Qty
Grumman Aerospace Corp., Bethpage NY	657.0	657.0	2
F19628-85-C-0053 FPIF			
Award: 27 September 1985			
Definitized: 27 September 1985			

Current Contract Price

Target	Ceiling	Qty
657.0	657.0	2

Estimated Price At Completion

Contractor	Program Manager
657.0	(b)(4)

	Cost Variance	Schedule Variance
Previous Cumulative Variances	0.0	0.0
Cumulative Variances To Date	0.0	0.0
Net Change (No valid CPR data to date)	0.0	0.0

*This includes typical ECO historical levels and options that have not yet been exercised.

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

GSM FSED Contract	Initial Contract Price Target	Ceiling	Qty
Motorola Inc, Tempe AZ	31.5	35.4	6

DAAK-20-84-C-0879 FPIF
Award: February 1983
Definitized: February 1983

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
33.9	49.7	8	46.4	*

* The Program Manager Estimated Price at Completion is unavailable pending outcome of negotiations on scope definitions.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	+0.129	-0.611
Cumulative Variances to Date (11/24/85)	-2.288	-2.937
Net Change	-2.417	-2.326

Contractor encountered mechanical design and documentation difficulties necessitating appreciably more effort over an extended time period. Poor subcontractor/vendor performance in BIT and wiring boards added to schedule variances. Management actions are improving this variance. The cost variance is still being assessed.

Design, Develop & Deploy 1 GSM	Initial Contract Price Target	Ceiling	Qty
Motorola Inc, Tempe, AZ	4.4	4.4	1

DAAK-20-83-C-0880 CPIF
Award: August 1984
Definitized: August 1984

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
10.0	19.2	1	18.0	18.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-1.533	-0.041
Cumulative Variances To Date (11/24/85)	+0.174	+0.205
Net Change	+1.707	+0.246

Cost and Schedule variances reflect continuing field test and system demonstrations in operational theaters. This testing will decrease the time/cost required for DT/OT, reducing the negative impact of contractor variances in the GSM FSED contract.

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

a. Program Status --

(1) Percent Program Completed: 45.5% (5/11)

(2) Percent Program Cost Appropriated: 13.9% (529.3/3,798.2)

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

Appropriation	Current & Prior Yrs (82-86)	Budget Year (87)	Balance to Complete FYDP (88-91)	Beyond FYDP (92)	Total
RDT&E	529.3	383.9	646.4	105.0*	1,664.6
Procurement	-	70.3	815.4	1,194.7*	2,080.4
MILCON	-	-	53.2	-	53.2
Total	529.3	454.2	1,515.0	1,299.7*	3,798.2

c. Annual Summary -- Air Force and Army

Fiscal Year	Qty	FY 83 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1982	-	-	-	37.5	-	-	36.7	9.2
1983	-	-	-	66.2	-	-	67.8	4.9
1984	-	-	-	100.6	-	-	108.8	3.8
1985	-	-	-	89.5	-	-	99.7	3.6
1986	-	-	-	189.2	-	-	216.3	3.2
1987	-	-	-	324.3	-	-	383.9	4.1
1988	-	-	-	279.1	-	-	341.8	3.9
1989	-	-	-	182.8	-	-	230.9	3.4
1990	-	-	-	53.9	-	-	69.8	2.9
1991	-	-	-	2.9	-	-	3.9	2.3
* 1992	-	-	-	77.5	-	-	105.0	2.3
Sub Tot	-	-	-	1,403.5			1,664.6	
Appropriation: Procurement (3010 is Air Force Procurement, 2035 is Army Procurement -- see individual Air Force and Army sections for funding profiles)								
Appropriation: MILCON								
1988	-	-	-	3.8	-	-	4.8	3.9
1989	-	-	-	17.4	-	-	22.6	3.4
1990	-	-	-	19.4	-	-	25.8	2.9
Sub Tot	-	-	-	40.6	-	-	53.2	-
* Total	N/A	51.8	959.9	2,915.6	32.2	32.2	3,798.2	-

* This program is currently being restructured to remain within available funding levels. Future SARs will report the impact and extent of this restructure when it has been accomplished.

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

c. Annual Summary -- Air Force only

Fiscal Year	Qty	FY 83 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1982	-	-	-	33.5	-	-	32.6	9.2
1983	-	-	-	30.7	-	-	31.3	4.9
1984	-	-	-	38.6	-	-	41.0	3.8
1985	-	-	-	45.3	-	-	49.7	3.6
1986	-	-	-	152.3	-	-	173.0	3.2
1987	-	-	-	301.2	-	-	355.7	4.1
1988	-	-	-	274.1	-	-	335.5	3.9
1989	-	-	-	178.3	-	-	225.0	3.4
1990	-	-	-	53.9	-	-	69.8	2.9
1991	-	-	-	2.9	-	-	3.9	2.3
1992	-	-	-	77.5	-	-	105.0	2.3
Total	(2)#	-	-	1,188.3	-	-	1,422.5	-
Appropriation: Procurement								
1989	-	-	15.5	20.5	23.5	-	28.2	3.4
1990	1	15.5	37.8	72.7	8.7	23.5	102.2	2.9
1991	2	9.5	81.1	131.0	-	8.7	188.5	2.3
1992	7	-	525.4	811.6	-		1,194.7	2.3
Total	10#	25.0	659.8	1,035.8	32.2	32.2	1,513.6	-
Appropriation: MILCON								
1988	-	-	-	3.8	-	-	4.8	3.9
1989	-	-	-	17.4	-	-	22.6	3.4
1990	-	-	-	19.4	-	-	25.8	2.9
Sub Tot	-	-	-	40.6	-	-	53.2	-
Total	10#	25.0	659.8	2,264.7	32.2	32.2	2,989.3*	-

* This program is currently being restructured to remain within available funding levels. Future SARs will report the impact and extent of this restructure when it has been accomplished.

The 2 FSD units will be refurbished and used as Production Units.

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

c. Annual Summary -- Army only

Fiscal Year	Qty	FY 83 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1982	-	-	-	4.0	-	-	4.1	7.6
1983	-	-	-	35.5	-	-	36.5	4.9
1984	-	-	-	62.0	-	-	67.8	3.8
1985	-	-	-	44.2	-	-	50.0	3.6
1986	-	-	-	36.9	-	-	43.3	3.2
1987	-	-	-	23.1	-	-	28.2	4.1
1988	-	-	-	5.0	-	-	6.3	3.9
1989	-	-	-	4.5	-	-	5.9	3.4
To Comp	-	-	-	-	-	-	-	-
Sub Tot	8	-	-	215.2	-	-	242.1	-
Appropriation: Procurement								
1987	9	3.7	41.0	57.7	-	-	70.3	4.1
1988	24	6.0	67.5	96.3	-	-	121.5	3.9
1989	24	6.0	67.5	96.2	-	-	125.1	3.4
1990	24	6.5	72.6	107.7	-	-	143.8	2.9
1991	14	4.6	51.5	77.8	-	-	106.1	2.3
To Comp	-	-	-	-	-	-	-	
Sub Tot	95	26.8	300.1	435.7	-	-	566.8	
Total	103	26.8	300.1	650.9	-	-	808.9	

16. Program Funding Summary (Cont'd): Air Force and Army
d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated ****	Expended ****
	Appropriation: RDT&E		
1982	36.7	31.1	30.7
1983	67.8	65.6	65.2
1984	108.8	103.7	69.5
1985	99.7	69.7	12.2
1986	216.3	4.2	0.4
To Complete	1,135.3	-	
Total	1,664.6	274.3	178.0
	Air Force only		
1982	32.6	27.1	26.7
1983	31.3	29.1	28.7
1984	41.0	41.0	13.5
1985	49.7	44.7	5.0
1986	173.0 *	0.1	0.0
To Complete	1,094.9	-	-
Total	1,422.5	142.0	73.9
	Army only		
1982	4.1	4.0	4.0
1983	36.5	36.5	36.5
1984	67.8	62.7	56.0
1985	50.0 **	25.0	7.2
1986	43.3 ***	4.1	0.4
To Complete	40.4	-	-
Total	242.1	132.3	104.1

* Only $4.8M has been released as of 31 Dec 85
** Only $30.0M has been released (includes $4M of TRACE funds) and Congressional approval has been requested to reprogram $20.0M.
*** Only $5.0M has been released as of 31 Dec 85
**** Reflects program office records as of 31 December 1985.

17. Production Rate Data:

Deliveries (Plan/Actual) --

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

18. Operating and Support Costs: N/A

AF-32 SFW

SAR-85-082

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

PROGRAM: Sensor Fuzed Weapon

AS OF DATE: December 31, 1985

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1. Designation and Nomenclature (Popular Name): CBU-97/B, Sensor Fuzed Weapon (SFW)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

Sensor Fuzed Weapon Program Office
Armament Division
Eglin AFB, FL 32542

PM: Lt Col Marty T. Runkle
Assigned: February 4, 1985
AV 872-5382; COMM (904)882-5382

4. Program Elements/Procurement Line Items:

RDT&E: PE 64607F (No Shared Funding)
PE 64604F Project 643086 (Shared Funding)
PE 64602F Project 643244 (Shared Funding)

PROCUREMENT: PE 28030F APPN 3080 ICN 813520 (Shared Funding)

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DEPARTMENT OF DEFENSE

18

5. Related Programs: SUU-64/B Tactical Munitions Dispenser
CNU-411 Container
FZU-39 Proximity Sensor

SAF/PAS

86-153 - T

OASD(PA) DEI 86-T-0574

6. Mission and Description: The objective of the Sensor Fuzed Weapon (SFW) program is to develop and produce a conventional munition capable of multiple vehicle kills per pass against operating armored vehicles, air defense units, and other support vehicles. The SFW (CBU-97/B) consists of ten BLU-108/B submunitions packaged within the Tactical Munitions Dispenser (TMD). Within each BLU-108/B submunition are four self forging fragment warheads. Each of the 40 warheads within the SFW is independently targeted by a dual channel infrared sensor.

7. Program Highlights:

a. Significant Historical Developments -- During formulation of the FY85 Program Objective Memorandum, the Air Force separated the development of conventional submunitions from the development and integration of these submunitions into a weapon system (i.e., CBU). This decision was made to preclude termination of promising submunition designs when the carrier vehicles were terminated. Hence, the BLU-108/B submunition development is funded by program element 64604F while program element 64607F funds development of the SFW system. The Army/DARPA Assault Breaker and the Air Force Extended Range Antiarmor Munition (ERAM) Programs provided technology used in the Sensor Fuzed Weapon (SFW) design. The development of the SFW was divided into two phases--Risk Reduction and Full Scale Development. The Risk Reduction Phase testing was successfully completed in September 1985, during which four warheads were simultaneously released from a single BLU-108/B submunition and each warhead hit a different tank target resulting in significant target damage.

b. Significant Developments Since Last Report -- The Preliminary Design Review (PDR) was successfully conducted in October 1985, completing the 15 month Risk Reduction Phase. On 25 November 1985, SAF/AL authorized the SFW program to proceed into the Full Scale Development phase. The FSD contract option was signed on 29 November 1985.

The SFW system is expected to satisfy the mission requirement.

c. Changes since "As of Date" -- None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: No DCP.

9. Schedule:

a. Milestones --

	Planning Estimate/ Approved Program	Current Estimate
Contract Start	Jul 84/Jul 84	Jul 84
Preliminary Design Review (Risk Reduction Phase Completion)	Jul 85/Oct 85	Oct 85
SAF/AL Approval for FSD	Aug 85/Nov 85	Nov 85
Critical Design Review	Dec 86/Jul 87	Jul 87
Complete DT&E/IOT&E	Aug 88/Jun 89	Jun 89
Production Decision	Sep 88/Nov 88	Nov 88
Production Contract Award	Sep 88/Dec 88	Dec 88
IOC (First Delivery to Inventory)	Sep 90/Jul 90	Jul 90

b. Previous Change Explanations -- This paragraph describes the differences between the Planning Estimate Column and the Approved Program columns above. PDR and SAF/AL Approval for FSD were delayed due to a redesign of the submunition ejection system and late subcontractor deliveries of detectors. CDR was moved to July 1987 due to the PDR slip and a no cost schedule extension of the FSD effort which was negotiated because of the FY86 President's Budget constraints. The DT&E/IOT&E completion milestone was delayed because of the FSD extension and the additional time required to allow a thorough assessment of SFW delivery mode alternatives in light of recent inputs from AFOTEC. The Production Decision, Production Contract Award, and First Delivery to Inventory milestones were revised to reflect an acquisition strategy in which Low Rate Intitial Production (LRIP) will be initiated during the latter stages of IOT&E. This will allow OT&E to be conducted using production representative articles consistent with Public Law 9894.

c. Current Change Explanations -- N/A

d. References --

Planning Estimate: FY 1986 RDT&E Descriptive Summary

Approved Program: Draft FY 1986 PMD 4064(5)/64607F

10. Technical/Operational Characteristics:

a. Technical --	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
Submunition Capacity: (Number of Submunitions/Number of Integrated Warheads or Sensors per Submunition)	(10/4)/(10/4)	N/A	10/4
Aircraft Compatibility:[1]		N/A	
Shelf Life out of Container: (Yrs)	1/1	N/A	1
Storage Life in Container: (Yrs)	10/10	N/A	10
Maintenance Concept:[2]		N/A	
b. Operational --			
Kills per pass:	Multiple/Multiple	N/A	Multiple
Delivery Envelope:[3]		N/A	

c. Previous Change Explanations -- N/A

d. Current Change Explanations -- N/A

e. References --

Planning Estimate: -- PMD 4064(1)/64607F, March 23, 1984
-- PMD 4065(1)/64604F, March 23, 1984

Approved Program: -- Draft FY 1986 PMD 4064(5)/64607F
-- Draft FY 1986 PMD 4065(4)/64604F

[1] Compatible with A-7, A-10, F-4, F-15, F-16, F-111, and a future potential compatibility with B-52 and NATO aircraft. This applies to Planning Estimate, Approved Program, and Current Estimate.

[2] No scheduled testing, calibration, or maintenance. This applies to Planning Estimate, Approved Program, and Current Estimate.

[3] Within the ground attack envelope of modern fighter aircraft and a future potential compatibility with B-52 and NATO aircraft. This applies to Planning Estimate, Approved Program, and Current Estimate.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost --	Planning Estimate	Changes	Current Estimate
Development (RDT&E)	73.1	8.8	81.9
Procurement	N/A	1101.8	1101.8
Total Flyaway		(1090.4)	(1090.4)
Other Weapon System Cost		(11.4)	(11.4)
Initial Spares		(-0-)	(-0-)
Construction (MILCON)	-0-	-0-	-0-
TOTAL BASE YEAR (79$)	73.1	1110.6	1183.7
Escalation	42.1	1108.6	1150.8
Development (RDT&E)	(42.1)	(6.8)	(48.9)
Procurement	(N/A)	(1101.9)	(1101.9)
Construction (MILCON)	(-0-)	(-0-)	(-0-)
TOTAL THEN-YEAR $	115.2	2219.3	2334.5
b. Quantities --			
Development (RDT&E)	84*	-0-	84
Procurement	N/A	14000	14000
Total	84*	13995	14084
c. Unit Cost --			
Procurement:			
Constant FY79 $	N/A	0.079	0.079
Current (Then-Year) $	N/A	0.157	0.157
Program:			
Constant FY79 $	N/A	0.084	0.084
Current (Then-Year) $	N/A	0.166	0.166

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

e. Foreign Military Sales -- None.

f. Nuclear Costs -- None.

*Correction of a reporting error in last SAR.

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	2334.5	N/A	2334.5
(2) Quantity	14084.0	N/A	14084.0
(3) Unit Cost	0.166	N/A	0.166
b. Current Procurement -	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	N/A	N/A	N/A
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	N/A	N/A	N/A
(2) Quantity	N/A	N/A	N/A
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	115.2	N/A	-0-	115.2
Previous Changes:				
Economic				
Quantity				
Schedule				
Engineering				
Estimating	-1.1			-1.1
Other				
Support				
Subtotal	-1.1	-0-	-0-	-1.1
Current Changes:				
Economic	-0.4			-0.4
Quantity		+2180.8		+2180.8
Schedule				
Engineering				
Estimating	+17.1			+ 17.1
Other				
Support		+ 22.9		+ 22.9
Subtotal	+16.7	+2203.7	-0-	+2220.4
Total Changes	+15.6	+2203.7	-0-	+2219.3
Current Estimate	130.8	2203.7	-0-	2334.5

13. Cost Variance Analysis (Cont'd):

(FY 1979 Constant Dollars (Base-Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	73.1	N/A	-0-	73.1
Previous Changes:				
Quantity				
Schedule				
Engineering				
Estimating	-0.7			-0.7
Other				
Support				
Subtotal	-0.7	-0-	-0-	-0.7
Current Changes:				
Quantity		+1090.4		+1090.4
Schedule				
Engineering				
Estimating	+ 9.5			+ 9.5
Other				
Support		+ 11.4		+ 11.4
Subtotal	+ 9.5	+1101.8	-0-	+1111.3
Total Changes	+ 8.8	+1101.8	-0-	+1110.6
Current Estimate	81.9	1101.8	-0-	1183.7

b. Previous Change Explanations --

RDT&E

Estimating: Correction to 31 Dec 84 SAR; funding information provided to the program office did not match the FY86 PB.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year $	Then-Year $
(1) RDT&E		
Revised Jan 86 economic escalation indices. (Economic)	N/A	-0.4
Adjusted for prior year escalation. (Estimating)	+0.3	+0.4
Adjustment of funds required to restore previous cut (Estimating)	+9.2	+16.7

(2) Procurement

Inclusion of Production Funding which was not reported in Dec 1984 or Sep 1985 SARs.	+1101.8	+2203.7
o Production of 14,000 SFWs (Quantity)	(+1090.4)	(+2180.8)
o Data for 14,000 SFWs (Support)	(+11.4)	(+22.9)

d. References --

Planning Estimate: FY 1986 RDT&E Descriptive Summary

14. Program Acquisition Unit Cost (PAUC) History:

Planning Estimate to Current Estimate --

PAUC (Planning Estimate)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
-	-	0.163	-	-	0.001	0.002	-	0.166	0.166

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

RDT&E --

Sensor Fuzed Weapon	Initial Contract Price Target	Ceiling	Qty
Avco Corp. Wilmington, MA F08635-84-C-0182, FPIF Award: July 9, 1984 Definitized: July 9, 1984	$79.5	$85.5	84

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$83.1 (Ch-1)	$89.4	84	$89.4	$89.4 (Ch-1)

Changes Since Previous Report:

(Ch-1) - The 30 September 1985 SFW SAR showed only the Risk Reduction Phase contract price. The amounts shown above in the Initial and Current Contract Price columns now reflect the total Avco contract including the Risk Reduction Phase and the FSD option.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-5.5	-4.8
Cumulative Variances To Date (30 Nov 85)	-8.3	-.0
Net Change	-2.8	+4.8

Explanation of Change: Avco's unfavorable cost variance is due to tactical redesign efforts on the submunition ejection system and the airborne sensor. The unfavorable schedule variance has improved due to completion of the risk reduction activities. Government liability is limited to ceiling.

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

a. Program Status --

(1) Percent Program Completed: 28.6% (4/14)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 3.6% ($83.9/2334.5)
(Funds Appropriated To Date in Millions/Total Program Funding in Millions)

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

Appropriation	Current & Prior Yrs (FY83-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY92-96)	Total
RDT&E	83.9	15.1	31.8	-0-	130.8
Procurement	-0-	-0-	525.8	1677.9	2203.7
MILCON	-0-	-0-	-0-	-0-	-0-
Total	83.9	15.1	557.6	1677.9	2334.5

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

c. Annual Summary --

Fiscal Year	Qty	Base-Year Dollars			Then-Year Dollars			Escl Rate %
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1983		*	*	2.9			4.2	4.9
1984				11.2			16.7	3.8
1985				23.8			** 36.6	3.6
1986				16.6			26.4	3.2
1987				9.1			15.1	4.1
1988				10.6			18.1	3.9
1989				7.7			13.7	3.4
Subtotal	84			81.9			130.8	N/A
Appropriation: Procurement								
1989	400	12.3	49.2	62.0			112.8	3.4
1990	680	8.1	84.9	93.9			174.9	2.9
1991	1340	-0-	123.5	124.9			238.1	2.3
1992	1500	12.3	143.6	157.4			307.0	2.3
1993	2000	5.5	153.1	160.3			319.8	2.3
1994	2500	-0-	159.8	161.5			329.5	2.3
1995	2700	-0-	166.1	167.9			350.4	2.3
1996	2880	-0-	172.0	173.9			371.2	2.3
Subtotal	14000	38.2	1052.2	1101.8	-0-	-0-	2203.7	N/A
Appropriation: MILCON								
Subtotal				-0-			-0-	
Total	14084	38.2	1052.2	1183.7	-0-	-0-	2334.5	N/A

*Information not available

**Differs from the budget documentation because $0.4M was shifted from SFW to another project at the PE level.

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

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars		
	Total	Obligated	Expended
Appropriation: RDT&E			
1983	4.2	4.2	4.2
1984	16.7	16.7	16.2
1985	36.6	35.8	12.3
1986	26.4	.3	.1
To Complete	46.9	-0-	-0-
TOTAL	130.8	57.0	32.8

17. Production Rate Data: N/A

18. Operating and Support Costs: N/A

SAR-85-087

AF-37 TRI-TAC

SELECTED ACQUISITION REPORT (RCS: DD-COMP (Q&A823))

PROGRAM: JOINT TACTICAL COMMUNICATIONS (TRI-TAC) PROGRAM

AS OF DATE: 31 December 1985

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CLEARED
FOR OPEN PUBLICATION
MAR 10 1986 18
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

1. **Designation/Nomenclature/(Popular Name):** CNCE (AN/TSQ-111), TROPO (AN/TRC-170), and Others/Joint Tactical Communications (TRI-TAC) Program

2. **DoD Component:** U.S. Air Force

3. **Responsible Office and Telephone Number:**

CTC Systems Program Office — PM: Lt Col P. Starnell
Electronic Systems Division — Assigned: July 29, 1985
Hanscom AFB, MA 01731-5000 — AV 478-5980, Ext 186-3138
COMM (617) 271-3138

-6 MAR 1986 15
SAF/PAS
INCOMING

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

RDT&E: PE 28010F (No Shared Funding)

PROCUREMENT: APPN 3080 ICN 835100 (No Shared Funding)

MILCON: N/A

5. **Related Program:** N/A

SAF/PAS
86-149 -T

6. MISSION and DESCRIPTION:

The TRI-TAC Program is a multi-service DOD directed effort to develop and acquire joint communications equipment for the tactical forces. Within the TRI-TAC effort, USAF is the executive agent for the development and production of two large programs, the Communications Nodal Control Element (CNCE) and the Troposcatter Radio Terminal (TROPO). TRI-TAC is a continuing program.

a. CNCE (AN/TSQ-111). The CNCE is an automated technical control facility which provides centralized management and control for a tactical communications node. It provides the interface among analog and digital nodal switches, common-user and dedicated interfaces and the internodal radio and cable transmission networks. The CNCE is a single S-280 shelter configuration. It will eventually replace the AN/TSC-62 Communications Van.

b. TROPO (AN/TRC-170). The TROPO is a family of three tactical, digital, troposcatter radio assemblages designed to provide a capability for transmission and reception of digital voice and data group rates up to 2048 Kb/s. Each assemblage is capable of operating in either line-of-sight or troposcatter mode of propagation in the 4.4-5.0 GHz frequency band. Set V-2 is the middle size family member and provides secure communications at nominal ranges up to 150 miles. Set V-3, the smallest member of the family, provides secure communications at nominal ranges of up to 100 miles. The TROPO will eventually replace the AN/TRC-97 radio.

In addition to the two large programs for which it is the executive agent, USAF is the executive for one small program, the TA-954 Digital Non-Secure Voice Terminal (DNVT). USAF is also responsible for procuring TRI-TAC equipment developed by other services including switches (AN/TTC-39, AN/TYC-39, AN/TTC-42, and SB-3865), Tactical Digital Facsimiles, terminals (AN/UGC-137 and CV-3591), Modular Tactical Communications Centers (MTCC), and various Digital Group Multiplexers (DGM). COMSEC for TRI-TAC equipment is developed and produced by the National Security Agency (NSA).

7. PROGRAM HIGHLIGHTS:

a. Significant Historical Developments —

TRI-TAC was established by the Director, Telecommunications and Command and Control Systems (DTACCS), under DoD Directive No. 5148.7, dated 27 May 1971, Subject: Charter for the Joint Tactical Communications (TRI-TAC) Program (later revised as of 16 February 1976 and 20 January 1978). Under this charter, DTACCS issued Memoranda of Task Assignment and instruction to a particular military Service or the National Security Agency which then became the executive agent for the development of specific equipment. The assigned Service would later provide production acquisition and initial logistics support for all Services. The Memoranda of Task Assignment and Instruction for programs on which USAF is the executive agent were issued as follows: CNCE on 23 September 1972, TROPO on 15 September 1972, and DNVT on 16 July 1974. On 28 December 1983, USD (R&E) directed the Air Force to assume responsibility for the Tactical Digital Facsimile (TDF), which had been developed by the Navy.

7. PROGRAM HIGHLIGHTS (Cont'd)

CNCE. In May 1975, a contract was awarded to Martin Marietta Corporation for the development of four CNCEs. Government test of the CNCE at Ft Huachuca, AZ, was completed in October 1981. During October 1982 - May 1983, the Army studied a less capable, lower cost alternative to the CNCE. In June 1983, DUSD (C^3I) directed the Air Force to explore a descoped alternative to the CNCE which would satisfy minimum Army and Air Force requirements. This resulted in a modular CNCE. An agreement was reached to allow the Army to meet its near-term requirements by modifying the AN/TTC-39 while retaining the option to procure CNCE production units in later years.

A production contract for 58 CNCEs was awarded on 31 August 1984. The contract is firm fixed price with a basic buy of seven CNCEs, with options for 20, 17, and 14 respectively. Option 1 was awarded on 1 November 1984. Production has continued on schedule with the design, fabrication, and validation of production tools and special test equipment.

TROPO. In June 1976, a contract was awarded to Raytheon Company for the development of three sets of TROPOs. Each version has successfully completed joint DT&E/IOT&E at Ft Huachuca, AZ.

In April 1982, a 3-year multi-year, firm fixed price contract was awarded to Raytheon for 105 Air Force and 5 REDCOM radio terminals. An option for Army requirements (51 units) was awarded in April 1983. First production delivery was 3 months early in October 1984 and deliveries continue on or ahead of schedule. A follow-on contract was awarded to Raytheon on 10 September 1985 for 57 additional Army units.

b. Significant Developments Since Last Report--

CNCE. On 1 November 1985, option 2 for 17 units was exercised. The acquisition plan and justification documents were initiated to buy the final 12 units concurrent with the exercise of the November 1986 option. Production is continuing on schedule. Preparation has begun for the Dynamic and Climatic Qualification Testing and for the Hardware/Software Integration Testing. Follow-on Test & Evaluation is scheduled for November 1986.

The system is expected to satisfy its current mission requirements and comply with all performance requirements.

TROPO. The effort to compete the FY 86 - FY 88 units has been initiated. To date ESD has compiled a list of potential offerors, presented briefings to industry, opened documentation libraries, and briefed the business strategy panel. Contract award is scheduled for 4th quarter FY 86.

The system is expected to satisfy its current mission requirements and comply with all performance requirements.

c. Changes Since December 31, 1985-- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: N/A

9. Schedule:

(1) CNCE

a. Milestones

	Production Estimate/ Approved Program	Current Estimate
Contract Award	May 75/May 75	May 75
Preliminary Design Review - Hardware	Dec 75/Dec 75	Dec 75
Preliminary Design Review - Software	Aug 76/Aug 76	Aug 76
Critical Design Review - Hardware	Apr 77/Apr 77	Apr 77
Critical Design Review - Software Part I	Aug 77/Aug 77	Aug 77
Critical Design Review - Software Part II	Jan 78/Jan 78	Jan 78
Contractor Development Testing Completed	Dec 78/Dec 78	Dec 78
Software Delivery	Jun 80/Jun 80	Jun 80
Service Testing Begins	Aug 80/Aug 80	Aug 80
Service Testing Completed	Oct 81/Oct 81	Oct 81
Variant Development Completed	Dec 83/Dec 83	Dec 83
Production Begins	Jul 84/Jul 84	Aug 84
Initial Operational Capability 1/	N/A	N/A
First Delivery	Aug 86/Aug 86	Aug 86
Last Delivery	Mar 88/Jun 88	Jun 88 (Ch-1)

b. Previous Change Explanations -- CNCE production award slipped one month from Jul 84 to Aug 84 due to difficult negotiations.

c. Current Change Explanations — (Ch-1) Last delivery has changed from Mar 88 to Jun 88. It now includes the delivery of the final 12 CNCEs.

d. References --

Production Estimate: FY 85 President's Budget, January 1984.

Approved Program: FY 87 President's Budget, January 1986.

1/ There is no directed or defined IOC for CNCE.

(2) TROPO

a. Milestones

	Production Estimate/ Approved Program	Current Estimate
Production Begins	Apr 82/Apr 82	Apr 82
Initial Operational Capability 1/	N/A	N/A
First Delivery	Dec 84/Dec 84	Oct 84
Last Delivery 2/	Dec 86/Dec 86	Dec 86
Follow-on Production	Mar 85/Mar 85	Sep 85

b. Previous Change Explanations -- TROPO first delivery was three months early in Oct 84 vice Dec 84 due to aggressive management. TROPO Follow-on production award slipped six months from Mar 85 to Sep 85 due to unplanned competition and the time required to obtain reprocurement data.

9. Schedule (Cont'd):

c. Current Change Explanations -- No Changes

d. References --

Production Estimate: FY 85 President's Budget, January 1984.

Approved Program: FY 87 President's Budget, January 1986.

1/ There is no directed or defined IOC for TROPO.

2/ Last delivery date is the last delivery for USAF units on the initial production contract.

10. Technical/Operational Characteristics:

a. Technical	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(1) CNCE			
Capacity			
(Digital Channels)	756/756	N/A	756
(Analog Channels)	390/390	N/A	390
Weight (lbs)	10,000/10,000	N/A	10,000
Mean Time Between Incidents (MTBI) (Hrs)	50/50	N/A	94
Mean Corrective Time (MCT) (MINS)	15/15	N/A	9.4
(2) TROPO			
Capacity (Digital Channels)	60/60	60	60
Range (Miles)			
V-2	150/150	150	150
V-3	100/100	100	100
Weight (lbs)			
V-2	9,300/9,300	9,016-	9,016
V-3	6,200/6,200	6,077	6,077
Mean Time Between Failures (MTBF) (Hrs)			
V-2	308/308	N/A	520
V-3	472/472	N/A	800
Mean Time to Repair (MTTR) (Mins)	15-45/15-45	N/A	15-30

10. Technical/Operational Characteristics (Cont'd):

b. Operational	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(2) CNCE			
Footprint (No. of Shelters)	1/1	N/A	1
Maximum Set Up/Tear Down Times (Min)	45/45	N/A	45
(2) TROPO			
Footprint			
V-2 (No. of Shelters)	1	1	1
(No. of Antennas)	2	2	2
V-3 (No. of Shelters)	1	1	1
(No. of Antennas)	1	1	1
Maximum Set Up/Tear Down Times (Hrs)			
V-2	2/5	4/4	4/4
V-3	1/2	1/1	1/1

c. Previous Change Explanations -- TROPO's Maximum Set Up/Tear Down Time, Range, and Weight were demonstrated during Acceptance Testing at Ft. Huachuca, AZ. TROPO's MTBF current estimate changed as a result of on-going field tests.

d. Current Change Explanations -- No Changes from September 30, 1985.

e. References --

Production Estimate: FY 85 President's Budget, January 1984.

Approved Program: FY 87 President's Budget, January 1986.

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)
System: TRI-TAC (CNCE)

	Production Estimate	Changes	Current Estimate
a. Cost --			
Development	112.8	+ 1.8	114.6
Procurement	-	+148.1	148.1
Total Flyaway	-	(+133.2)	(+133.2)
Peculiar Spt Eqp	-	(+ 11.0)	(+ 11.0)
Other Wpn Sys Cost	-	(+ 3.9)	(+ 3.9)
Initital Spares	-	-	-
Construction	-	-	-
Total FY 76 Base-Year $	112.8	+149.9	262.7
Escalation	36.9	+150.2	187.1
Development	(36.9)	(+ 1.8)	(38.7)
Procurement	-	(+148.4)	(148.4)
Construction	-	-	-
Total Then-Year $	149.7	+300.1	449.8
b. Quantities --			
Development	4	-	4
Procurement	-	+ 68	68
Total	4	+ 68	72
c. Unit Cost --			
Procurement:			
FY 76 Base-Year $	-	+ 2.178	2.178
Then-Year $	-	+ 4.360	4.360
Program:			
FY 76 Base-Year $	28.200	- 24.551	3.649
Then-Year $	37.425	- 31.178	6.247

d. Approved Design to Cost Goal -- None

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

System: TRI-TAC (TROPO)

	Production Estimate	Changes	Current Estimate
a. Cost			
Development	37.3	+ 7.0	44.3
Procurement	306.4	+ 51.9	358.3
Total Flyaway	(285.1)	(+ 45.3)	(330.4)
Peculiar Spt Eqp	(17.1)	(- 1.5)	(15.6)
Other Wpn Costs	(4.2)	(+ 8.1)	(12.3)
Initial Spares	-	-	-
Construction	-	-	-
Total FY 76 Base-Year $	343.7	+ 58.9	402.6
Escalation	353.6	+ 63.4	417.0
Development	(11.2)	(+ 8.3)	(19.5)
Procurement	(342.4)	(+ 55.1)	(397.5)
Construction	-	-	-
Total Then-Year $	697.3	+122.3	819.6

11. Program Acquisition Cost (Cont'd) (Current Estimate in Millions of Dollars)

System: TRI-TAC (TROPO)

	Production Estimate	Changes	Current Estimate
b. Quantities --			
Development	9	-	9
Procurement	350	+ 72	422
Total	359	+ 72	431
c. Unit Cost --			
Procurement:			
FY 76 Base-Year $	0.875	- 0.026	0.849
Then-Year $	1.854	- 0.063	1.791
Program:			
FY 76 Base-Year $	0.957	- 0.023	0.934
Then-Year $	1.942	- 0.040	1.902

d. Approved Design to Cost Goal -- None

11. Program Acquisition Cost (Cont'd) (Current Estimate in Millions of Dollars)

System: TRI-TAC (Support/Systems Integration/Other)

	Production Estimate	Changes	Current Estimate
a. Cost			
Development	80.7	- 1.7	79.0
Procurement	589.8	- 86.5	503.3
Total Flyaway	-	-	-
Peculiar Spt Eqp	-	-	-
Other Wpn Costs	(478.0)	(- 91.8)	(386.2)
Initial Spares	(111.8)	(+ 5.3)	(117.1)
Construction	-	-	-
Total FY 76 Base-Year $	670.5	- 88.2	582.3
Escalation	707.7	- 93.4	614.3
Development	(35.8)	(- 1.0)	(34.8)
Procurement	(671.9)	(- 92.4)	(579.5
Construction	-	-	-
Total Then-Year $	1378.2	-181.6	1196.6
b. Quantities --	N/A		
c. Unit Cost --	N/A		

d. Approved Design to Cost Goal -- None

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)
System: TRI-TAC (CNCE)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	449.8	445.7	449.8
(2) Quantity	72	72	72
(3) Unit Cost	6.247	6.190	6.247
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	57.9	57.9	84.3
Less CY Adv Proc	0	0	0
Plus PY Adv Proc	0	0	0
Net Total	57.9	57.9	84.3
(2) Quantity	17	17	26
(3) Unit Cost	3.406	3.406	3.242

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

System: TRI-TAC (TROPO)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	819.6	872.9	819.6
(2) Quantity	431	463	431
(3) Unit Cost	1.902	1.885	1.902
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	30.0	30.0	58.5
Less CY Adv Proc	0	0	0
Plus PY Adv Proc	0	0	0
Net Total	30.0	30.0	58.5
(2) Quantity	18	18	37
(3) Unit Cost	1.667	1.667	1.581

13. Cost Variance Analysis:
System: Joint Tactical Communications (TRI-TAC) Program

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	314.7	1910.5	N/A	2225.2
Previous Changes:				
Economic	-0.6	-33.0	-	-33.6
Quantity	-	+353.8	-	+353.8
Schedule	-	+ 2.7	-	+ 2.7
Engineering	-	+ 4.2	-	+ 4.2
Estimating	+1.0	- 6.0	-	- 5.0
Other	-	-	-	-
Support	-8.9	+81.7	-	+ 72.8
Subtotal	-8.5	+403.4	-	+394.9
Current Changes:				
Economic	-1.0	- 46.4	-	- 47.4
Quantity	-	- 85.9	-	- 85.9
Schedule	-	+ 7.2	-	+ 7.2
Engineering	+15.7	-	-	+ 15.7
Estimating	+ 0.7	- 1.7	-	- 1.0
Other	-	-	-	-
Support	+ 9.3	- 52.0	-	- 42.7
Subtotal	+24.7	-178.8	-	-154.1
Total Changes	+16.2	+224.6	-	+240.8
Current Estimate	330.9	2135.1	-	2466.0

(FY 1976 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	230.8	896.2	N/A	1127.0
Previous Changes:				
Quantity	-	+145.7	-	+145.7
Schedule	-	-	-	-
Engineering	-	+ 2.0	-	+ 2.0
Estimating	+ 0.4	- 2.6	-	- 2.2
Other	-	-	-	-
Support	- 5.1	+ 33.4	-	+ 28.3
Subtotal	-4.7	+178.5	-	+173.8
Current Changes:				
Quantity	-	- 39.1	-	- 39.1
Schedule	-	-	-	-
Engineering	+ 7.2	-	-	+ 7.2
Estimating	+ 0.4	- 0.9	-	- 0.5
Other	-	-	-	-
Support	+ 4.2	- 25.0	-	- 20.8
Subtotal	+11.8	- 65.0	-	- 53.2
Total Changes	+ 7.1	+113.5	-	+120.6
Current Estimate	237.9	1009.7	-	1247.6

13. Cost Variance Analysis:
System: TRI-TAC (Communications Nodal Control Element)

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	149.7	-	N/A	149.7
Previous Changes:				
Economic	- 0.1	- 4.7	-	- 4.8
Quantity	-	+278.8	-	+278.8
Schedule	-	-	-	-
Engineering	-	+ 4.2	-	+ 4.2
Estimating	-	- 2.2	-	- 2.2
Other	-	-	-	-
Support	- 1.4	+ 21.4	-	+ 20.0
Subtotal	- 1.5	+297.5	-	+296.0
Current Changes:				
Economic	- 0.2	- 2.6	-	- 2.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+ 0.2	- 6.5	-	- 6.3
Other	-	-	-	-
Support	+ 5.1	+ 8.1	-	+ 13.2
Subtotal	+ 5.1	- 1.0	-	+ 4.1
Total Changes	+ 3.6	+296.5	-	+300.1
Current Estimate	153.3	296.5	-	449.8

(FY 1976 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	112.8	-	N/A	112.8
Previous Changes:				
Quantity	-	+135.3	-	+135.3
Schedule	-	-	-	-
Engineering	-	+ 2.0	-	+ 2.0
Estimating	-	- 1.0	-	- 1.0
Other	-	-	-	-
Support	- 0.7	+ 10.8	-	+ 10.1
Subtotal	- 0.7	+147.1	-	+146.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+ 0.1	-3.1	-	-3.0
Other	-	-	-	-
Support	+ 2.4	+4.1	-	+6.5
Subtotal	+ 2.5	+ 1.0	-	+ 3.5
Total Changes	+ 1.8	+148.1	-	+149.9
Current Estimate	114.6	148.1	-	262.7

13. Cost Variance Analysis (Cont'd):
System: TRI-TAC (Communications Nodal Control Element)

b. Previous Change Explanations --

RDT&E
Economic: revised economic escalation indices
Support: training simulator requirements reduced

Procurement
Economic: revised economic escalation indices
Quantity: addition of 68 CNCEs
Engineering: CNCE configuration change
Estimating: revised contractual costs based on negotiated amounts
Support: refined hardware Peculiar Support Equipment requirements; increased support costs associated with production of 68 units

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	- 0.2
Adjustment for prior year escalation. (Estimating)	+ 0.1	+ 0.2
Revised estimate for Peculiar Support Equipment based on Contractor's cost proposal. (Support)	+ 2.4	+ 5.1
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	- 2.6
Adjustment for prior year economic escalation impact. (Estimating)	+ 1.0	+ 1.6
Adjustment to refine the mix of previous support and estimating changes primarily related to the impact of escalation on current and prior years.	0.0	0.0
Amount to be added to support to balance to proper mix. (Support)	(+ 4.1)	(+ 8.1)
Amount to be taken from estimating to balance to proper mix. (Estimating)	(- 4.1)	(- 8.1)

d. References --

Production Estimate: FY 1985 President's Budget, January 1984.

13. Cost Variance Analysis:
System: TRI-TAC (TROPO)

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	48.5	648.8	N/A	697.3
Previous Changes:				
Economic	- 0.2	- 10.8	-	- 11.0
Quantity	-	+155.6	-	+155.6
Schedule	-	+ 2.7	-	+ 2.7
Engineering	-	-	-	-
Estimating	+ 1.0	- 4.7	-	- 3.7
Other	-	-	-	-
Support	- 1.1	+ 30.0	-	+ 28.9
Subtotal	- 0.3	+172.8	-	+172.5
Current Changes:				
Economic	- 0.2	- 17.2	-	- 17.4
Quantity	-	- 44.1	-	- 44.1
Schedule	-	+ 7.2	-	+ 7.2
Engineering	+15.7	-	-	+ 15.7
Estimating	+ 0.1	+ 2.1	-	+ 2.2
Other	-	-	-	-
Support	-	- 13.8	-	- 13.8
Subtotal	+15.6	- 65.8	-	- 50.2
Total Changes	+15.3	+107.0	-	+122.3
Current Estimate	63.8	755.8	-	819.6

(FY 1976 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	37.3	306.4	N/A	343.7
Previous Changes:				
Quantity	-	+ 65.2	-	+ 65.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+ 0.4	- 2.1	-	- 1.7
Other	-	-	-	-
Support	- 0.7	+ 12.9	-	+ 12.2
Subtotal	-0.3	+ 76.0	-	+ 75.7
Current Changes:				
Quantity	-	- 18.6	-	- 18.6
Schedule	-	-	-	-
Engineering	+ 7.2	-	-	+ 7.2
Estimating	+ 0.1	+ 0.8	-	+ 0.9
Other	-	-	-	-
Support	-	- 6.3	-	- 6.3
Subtotal	+ 7.3	- 24.1	-	- 16.8
Total Changes	+ 7.0	+ 51.9	-	+ 58.9
Current Estimate	44.3	358.3	-	402.6

13. Cost Variance Analysis (Cont'd):
System: TRI-TAC (TROPO)

b. Previous Change Explanations --

RDT&E
Economic: revised economic escalation indices
Estimating: Far-Term ECCM requirements more than originally estimated
Support: Peculiar Support Equipment costs refined to reflect actual experience

Procurement
Economic: revised economic escalation indices
Quantity: addition of 104 TROPOs
Schedule: rephased schedule, 7 units delayed from FY86-FY88 to FY90
Estimating: refined estimate for other programmatic costs associated with TROPO production
Support: increased support costs associated with additional 104 units

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	- 0.2
Development of Electronic Counter Counter Measure (ECCM) Capability. (Engineering)	+ 7.2	+15.7
Adjustment for prior year economic escalation impact. (Estimating)	+ 0.1	+ 0.1
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-17.2
Decreased quantity of TROPOs from 454 to 422 with added production in FY 91	-24.6	-56.9
Flyaway costs associated with decrease of 32 units. (Quantity)	(-18.6)	(-44.1)
ECCM retrofit associated with the quantity decrease. (Estimating)	(-4.5)	(-10.2)
Support Costs associated with quantity decrease. (Support)	(-1.5)	(-2.6)

13. Cost Variance Analysis (Cont'd):
System: TRI-TAC (TROPO)

c. Current Change Explanations -- (Cont'd)

	(Dollars in Millions) Base-Year	Then-Year
(2) Procurement (Cont'd)		
Rephasing of the schedule due to delaying procurement of units from FY 1987 (5), FY 1988 (16), FY 1989 (45), FY 1990 (6) to FY 1991. (Schedule)	N/A	+ 7.2
Adjustment for Prior Year economic escalation impact. (Estimating)	+ 0.5	+ 1.1
Adjustment to refine the mix of previous support and estimating changes primarily related to the impact of escalation on current and prior years.	0.0	0.0
Amount to be taken from support to balance to proper mix. (Support)	(- 4.8)	(-11.2)
Amount to be added to estimating to balance to proper mix. (Estimating)	(+ 4.8)	(+11.2)

d. References -

Production Estimate: FY 1985 President's Budget, January 1984

13. Cost Variance Analysis:
System: TRI-TAC (Support/Systems Integration/Other)

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	116.5	1261.7	N/A	1378.2
Previous Changes:				
Economic	- 0.3	- 17.5	-	- 17.8
Quantity	-	- 80.6	-	- 80.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+ 0.9	-	+ 0.9
Other	-	-	-	-
Support	- 6.4	+ 30.3	-	+ 23.9
Subtotal	- 6.7	- 66.9	-	- 73.6
Current Changes:				
Economic	- 0.6	- 26.6	-	- 27.2
Quantity	-	- 41.8	-	- 41.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+ 0.4	+ 2.7	-	+ 3.1
Other	-	-	-	-
Support	+ 4.2	- 46.3	-	- 42.1
Subtotal	+ 4.0	-112.0	-	-108.0
Total Changes	- 2.7	-178.9	-	-181.6
Current Estimate	113.8	1082.8	-	1196.6

(FY 1976 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	80.7	589.8	N/A	670.5
Previous Changes:				
Quantity	-	- 54.8	-	- 54.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+ 0.5	-	+ 0.5
Other	-	-	-	-
Support	- 3.7	+ 9.7	-	+ 6.0
Subtotal	- 3.7	- 44.6	-	- 48.3
Current Changes:				
Quantity	-	- 20.5	-	- 20.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+ 0.2	+ 1.4	-	+ 1.6
Other	-	-	-	-
Support	+ 1.8	- 22.8	-	- 21.0
Subtotal	+ 2.0	- 41.9	-	- 39.9
Total Changes	- 1.7	- 86.5		- 88.2
Current Estimate	79.0	503.3	-	582.3

13. Cost Variance Analysis (Cont'd):
System: TRI-TAC (Support/Systems Integration/Other)

b. Previous Change Explanations --

RDT&E
Economic: revised economic escalation indices
Support: DoD transferred management responsibility of JTE to the Army; interface equipment development schedule extended

Procurement
Economic: revised economic escalation indices
Quantity: increased quantities of various TRI-TAC equipment
Estimating: adjustment to prior year funding since escalation rates lower than predicted

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	- 0.6
Adjustment for prior year escalation. (Estimating)	+ 0.2	+ 0.4
Refined estimate for AFOTEC support based on actual costs. (Support)	- 0.3	- 0.6
Integration planning and interface equipment development schedule extended through FY 1991. (Support)	+ 2.1	+ 4.8
(2) Procurement		
Revised economic escalation indices. (Economic)	N/A	-26.6
Decreased various items of TRI-TAC equipment produced by the other services. (Quantity)	-20.5	-41.8
Adjustment for prior year economic escalation impact. (Estimating)	+ 1.4	+ 2.7
Refined estimate for spares. (Support)	-22.8	-46.3

d. References --

Production Estimate: FY 1985 President's Budget, January 1984

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

Initial SAR/Production Estimate (PdE) to Current Estimate (CE) --

(1) CNCE

PAUC (Initial SAR/PdE)	CHANGES								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
37.425*	-0.106	-31.473	-	+0.058	-0.118	-	+0.461	-31.178	6.247

*Based on RDT&E Units Only

Initial SAR/Production Estimate (PdE) to Current Estimate (CE) --

(2) TROPO

PAUC (Initial SAR/PdE)	CHANGES								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.942	-0.066	-0.065	+0.023	+0.036	-0.003	-	+0.035	-0.040	1.902

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

a. RDT&E — No Active Contracts

b. Procurement

1. CNCE Production Phase II

Martin Marietta, Orlando, FL
F19628-83-C-0051, FFP
Award: August 31, 1984
Definitized: August 31, 1984

Initial Contract Price		
Target	Ceiling	Qty
345.3	N/A	58

Current Contract Price		
Target	Ceiling	Qty
371.6 1/(Ch-1)	N/A	58

Estimated Price at Completion	
Contractor	Program Manager
371.6 (Ch-1)	371.6 (Ch-1)

Variances: N/A

2. TROPO

Raytheon Corp, Marlboro, MA
F19628-82-C-0009, FFP
Award: April 9, 1982
Definitized: April 9, 1982

Initial Contract Price		
Target	Ceiling	Qty
193.0	N/A	110

Current Contract Price		
Target	Ceiling	Qty
251.1 2/(Ch-2)	N/A	161

Estimated Price at Completion	
Contractor	Program Manager
251.1 (Ch-2)	251.1 (Ch-2)

Variances: N/A

3. TROPO (FOLLOW-ON)

Raytheon Corp, Marlboro, MA
F19628-85-C-0070, FFP
Award: September 10, 1985
Definitized: September 10, 1985

Initial Contract Price		
Target	Ceiling	Qty
39.2	N/A	37

Current Contract Price		
Target	Ceiling	Qty
57.7 3/(Ch-3)	N/A	57

Estimated Price at Completion	
Contractor	Program Manager
57.7 (Ch-3)	57.7 (Ch-3)

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

4. DNVT

	Initial Contract Price		
	Target	Ceiling	Qty
General Atronics Corp, Phil, PA F19628-83-C-0023 FFP Award: December 30, 1982 Definitized: December 30, 1982	11.7	N/A	18350

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
12.2 4/	N/A	18350	12.2	12.2

Variances: N/A

5. TDF

	Initial Contract Price		
	Target	Ceiling	Qty
Litton Amecon, College Park, MD F19628-84-C-0151, FFP Award: September 12, 1984 Definitized: September 12, 1984	32.7	N/A	173

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
32.7 5/	N/A	173	32.7	32.7

Variances: N/A

(Ch-1) Increase is due to procurement of Investment Type and Expense Spares for CNCE PME.

(Ch-2) Decrease from 30 Sep 85 SAR results from an Economic Price Adjustment against expired year funds.

(Ch-3) Increase reflects the procurement of an additional 20 Army units.

15. Contract Information (Cont'd):

1/ Price includes $93.0M Army funds and $13.0M REDCOM funds.

2/ Price includes $69.0M Army funds.

3/ Price is entirely Army funds.

4/ Price includes $7.6M Army funds.

5/ Price includes $8.0M Navy funds, $12.5M Army funds, and $1.3M Marine Corps funds.

16. Program Funding Summary: (Current Estimate in Millions of Dollars)
System: Joint Tactical Communications (TRI-TAC) Program

a. Program Status —
(1) Percent Program Completed: 73.7% (14/19 yrs)

(2) Percent Program Cost Appropriated: 40.1% ($988.4M/$2,466.0M)

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

	Current & Prior Years	Budget Year	Balance to Complete FYDP	Beyond FYDP	Total
	(FY 73-86)	(FY 87)	(FY 88-91)		
RDT&E	289.3	11.4	30.2	-	330.9
Procurement	699.1	264.3	1,171.7	-	2,135.1
MILCON	-	-	-	-	-
Total	988.4	275.7	1,201.9	-	2,466.0

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

System: Joint Tactical Communications (TRI-TAC) Program

c. Annual Summary --

FISCAL YEAR	QTY	FY 76 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			Escl Rate (%)
		FLYAWAY			ADVANCE PROC			
		Nonrec	Rec	Total	Debit	Credit	Total	1/
Appropriation: RDT&E								
1973				2.3			1.8	4.4
1974				4.7			4.0	7.9
1975				9.9			9.3	10.8
1976				22.3			22.3	7.0
197T				5.8			6.0	3.2
1977				35.1			37.6	3.8
1978				28.2			32.0	6.2
1979				21.5			27.5	8.4
1980				18.6			26.4	9.3
1981				11.7			18.5	11.9
1982				15.0			25.3	9.2
1983				24.7			43.7	4.9
1984				11.1			20.3	3.8
1985				5.1			9.8	3.6
1986				2.5			4.8	3.2
1987				5.6			11.4	4.1
1988				6.3			13.3	3.9
1989				2.9			6.4	3.4
1990				2.5			5.7	2.9
1991				2.1			4.8	2.3
Subtotal				237.9			330.9	
Appropriation: Procurement								
1980				8.0			12.8	9.7
1981		9.7	8.9	23.0			39.3	11.9
1982		5.2	25.5	64.2	7.7		113.5	9.2
1983			50.4	71.3	8.5	3.8	131.9	4.9
1984			37.7	57.7		12.4	109.1	3.8
1985		1.1	35.2	59.8			118.2	3.6
1986		.3	38.5	85.1			174.3	3.2
1987		.3	62.4	124.6			264.3	4.1
1988			29.5	116.3			254.6	3.9
1989			53.8	149.1			334.9	3.4
1990			53.8	140.7			323.6	2.9
1991			51.3	109.9			258.6	2.3
Subtotal		16.6	447.0	1,009.7	16.2	16.2	2,135.1	
Total		16.6	447.0	1,247.6	16.2	16.2	2,466.0	

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

System: Joint Tactical Communications (TRI-TAC) Program

d. Obligations and Expenditures —

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	TOTAL	OBLIGATED 1/	EXPENDED 1/
Appropriation: RDT&E			
1973	1.8	1.8	1.8
1974	4.0	4.0	4.0
1975	9.3	9.3	9.3
1976	22.3	22.3	22.3
197T	6.0	6.0	6.0
1977	37.6	37.6	37.6
1978	32.0	32.0	32.0
1979	27.5	27.5	27.5
1980	26.4	26.4	26.4
1981	18.5	18.5	18.5
1982	25.3	25.3	25.3
1983	43.7	43.7	43.7
1984	20.3	20.3	14.8
1985	9.8	9.4	3.8
1986	4.8	2.2	.1
To Complete	41.6	-	-
Total	330.9	286.3	273.1
Appropriation: Procurement			
1980	12.8	12.8	12.8
1981	39.3	39.3	38.9
1982	113.5	113.5	88.6
1983	131.9	131.9	95.0
1984	109.1	97.2	62.1
1985	118.2	88.3	42.6
1986	174.3	81.0	.3
To Complete	1,436.0	-	-
Total	2,135.1	564.0	340.3

1/ Reflects Program Office records as of 31 December 1985.

16. Program Funding Summary: (Current Estimate in Millions of Dollars)
System: TRI-TAC (Communications Nodal Control Element)

a. Program Status --

(1) Percent Program Completed: 85.7% (12/14 yrs)
(2) Percent Program Cost Appropriated: 79.9% ($359.4M/$449.8M)

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

	Current & Prior Yrs	Budget Year	Balance to Complete FYDP	Beyond FYDP	Total
	(FY75-86)	(FY-87)	(FY88-91)		
RDT&E	147.2	3.2	2.9	-	153.3
Procurement	212.2	84.3	-	-	296.5
MILCON	-	-	-	-	-
Total	359.4	87.5	2.9	-	449.8

c. Annual Summary

FISCAL YEAR	QTY	FY 76 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			Escl Rate (%)
		FLYAWAY			ADVANCE PROC			
		Nonrec	Rec	Total	Debit	Credit	Total	1/
Appropriation: RDT&E								
1975				1.9			1.8	10.8
1976				18.4			18.4	7.0
197T				3.7			3.8	3.2
1977				20.4			21.9	3.8
1978				12.9			14.7	6.2
1979				11.6			14.8	8.4
1980				8.5			12.1	9.3
1981				5.9			9.3	11.9
1982				8.1			13.7	9.2
1983				10.7			18.9	4.9
1984				5.5			10.0	3.8
1985				2.6			5.0	3.6
1986				1.4			2.8	3.2
1987				1.6			3.2	4.1
1988				1.4			2.9	3.9
Subtotal	4			114.6			153.3	

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)
System: TRI-TAC (Communications Nodal Control Element)

c. Annual Summary (Cont'd) --

FISCAL YEAR	QTY	FY 76 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			Escl Rate (%)
		FLYAWAY			ADVANCE PROC			
		Nonrec	Rec	Total	Debit	Credit	Total	1/
Appropriation: Procurement								
1983	3		20.5	20.6			37.9	4.9
1984	3		13.1	15.9			30.3	3.8
1985	19	1.1	35.2	43.6			86.1	3.6
1986	17	0.3	25.4	28.3			57.9	3.2
1987	26	0.3	37.3	39.7			84.3	4.1
Subtotal	68	1.7	131.5	148.1			296.5	
TOTAL	72	1.7	131.5	262.7			449.8	

d. Obligations and Expenditures —

FISCAL YEAR	Then-Year Dollars (Current Estimate in Millions)		
	TOTAL	OBLIGATED 2/	EXPENDED 2/
Appropriation: RDT&E			
1975	1.8	1.8	1.8
1976	18.4	18.4	18.4
197T	3.8	3.8	3.8
1977	21.9	21.9	21.9
1978	14.7	14.7	14.7
1979	14.8	14.8	14.8
1980	12.1	12.1	12.1
1981	9.3	9.3	9.3
1982	13.7	13.7	13.7
1983	18.9	18.9	18.9
1984	10.0	10.0	8.3
1985	5.0	5.0	2.0
1986	2.8	1.4	0
To Complete	6.1	-	-
TOTAL	153.3	145.8	139.7

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)
System: TRI-TAC (Communications Nodal Control Element)

d. Obligations and Expenditures (Cont'd) —

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	TOTAL	OBLIGATED 2/	EXPENDED 2/
Appropriation: Procurement			
1983	37.9	37.9	37.9
1984	30.3	30.3	26.7
1985	86.1	69.1	37.9
1986	57.9	55.0	0.3
To Complete	84.3		
Total	296.5	192.3	102.8

1/ Since spend out rates are not shown, the escalation rates cannot be used to verify the composite index.

2/ Reflects Program Office records as of 31 December 1985.

16. Program Funding Summary: (Current Estimate in Millions of Dollars)
System: TRI-TAC (TROPO)

a. Program Status --

(1) Percent Program Completed: 70.5% (12/17 yrs)
(2) Percent Program Cost Appropriated: 34.3% ($281.5M/$819.6M)

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

	Current & Prior Yrs	Budget Year	Balance to Complete FYDP	Beyond FYDP	Total
	(FY 75-86)	(FY 87)	(FY 88-91)		
RDT&E	44.4	5.8	13.6		63.8
Procurement	237.1	58.5	460.2		755.8
MILCON	-	-	-		-
Total	281.5	64.3	473.8		819.6

c. Annual Summary

FISCAL YEAR	QTY	FY 76 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			Escl Rate (%)
		FLYAWAY			ADVANCE PROC			
		Nonrec	Rec	Total	Debit	Credit	Total	1/
Appropriation: RDT&E								
1975				0.1			0.1	10.8
1976				-			-	-
197T				1.0			1.0	3.2
1977				10.0			10.7	3.8
1978				9.1			10.3	6.2
1979				6.5			8.3	8.4
1980				3.6			5.1	9.3
1981				1.1			1.8	11.9
1982				0.4			0.7	9.2
1983				1.1			2.0	4.9
1984				1.5			2.7	3.8
1985				0.5			1.0	3.6
1986				0.4			0.7	3.2
1987				2.8			5.8	4.1
1988				3.7			7.9	3.9
1989				1.7			3.8	3.4
1990				0.8			1.9	2.9
Subtotal	9			44.3			63.8	

1/ Since spend out rates are not shown, the escalation rates cannot be used to verify the composite index.

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)
System: TRI-TAC (TROPO)

c. Annual Summary (Cont'd) —

FISCAL YEAR	QTY	FY 76 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			Escl Rate (%)
		FLYAWAY			ADVANCE PROC			
		Nonrec	Rec	Total	Debit	Credit	Total	1/
Appropriation: Procurement								
1981	3	9.7	8.9	21.8			37.2	11.9
1982	36	5.2	25.5	31.5	7.7		55.7	9.2
1983	34		29.9	34.9	8.5	3.8	64.2	4.9
1984	32		24.6	26.2		12.4	50.0	3.8
1985	-		-	-			-	-
1986	18		13.1	14.6			30.0	3.2
1987	37		25.1	27.6			58.5	4.1
1988	40		29.5	31.2			68.3	3.9
1989	75		53.8	60.2			135.2	3.4
1990	75		53.8	56.5			130.0	2.9
1991	72		51.3	53.8			126.7	2.3
Subtotal	422	14.9	315.5	358.3	16.2	16.2	755.8	
Total	431	14.9	315.5	402.6	16.2	16.2	819.6	

d. Obligations and Expenditures —

FISCAL YEAR	Then-Year Dollars (Current Estimate in Millions)		
	TOTAL	OBLIGATED 2/	EXPENDED 2/
Appropriation: RDT&E			
1975	0.1	0.1	0.1
1976	-	-	-
197T	1.0	1.0	1.0
1977	10.7	10.7	10.7
1978	10.3	10.3	10.3
1979	8.3	8.3	8.3
1980	5.1	5.1	5.1
1981	1.8	1.8	1.8
1982	0.7	0.7	0.7
1983	2.0	2.0	2.0
1984	2.7	2.7	1.1
1985	1.0	1.0	0.7
1986	0.7	0.5	0.1
To Complete	19.4	-	-
Total	63.8	44.2	41.9

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

System: TRI-TAC (TROPO)

d. Obligations and Expenditures (Cont'd) --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	TOTAL	OBLIGATED 2/	EXPENDED 2/
Appropriation: Procurement			
1981	37.2	37.2	36.8
1982	55.7	55.7	37.9
1983	64.2	64.2	35.1
1984	50.0	43.9	22.3
1985	-	-	-
1986	30.0	-	-
To Complete	518.7	-	-
Total	755.8	201.0	132.1

1/ Since spend out rates are not shown, the escalation rates cannot be used to verify the composite index.

2/ Reflects Program Office records as of 31 December 1985.

16. Program Funding Summary: (Current Estimate in Millions of Dollars)
System: TRI-TAC (Support/Systems Integration/Other)

a. Program Status --

(1) Percent Program Completed: 73.7% (14/19 yrs)
(2) Percent Program Cost Appropriated: 29.0% ($347.5M/$1,196.6M)

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

	Current & Prior Yrs (FY 73-86)	Budget Year (FY 87)	Balance to Complete FYDP (FY 88-91)	Beyond FYDP	Total
RDT&E	97.7	2.4	13.7	-	113.8
Procurement	249.8	121.5	711.5	-	1,082.8
MILCON	-	-	-	-	-
Total	347.5	123.9	725.2	-	1,196.6

c. Annual Summary

FISCAL YEAR	QTY	FY 76 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			Escl Rate (%)
		FLYAWAY			ADVANCE PROC			
		Nonrec	Rec	Total	Debit	Credit	Total	1/
Appropriation: RDT&E								
1973				2.3			1.8	4.4
1974				4.7			4.0	7.9
1975				7.9			7.4	10.8
1976				3.9			3.9	7.0
197T				1.1			1.2	3.2
1977				4.7			5.0	3.8
1978				6.2			7.0	6.2
1979				3.4			4.4	8.4
1980				6.5			9.2	9.3
1981				4.7			7.4	11.9
1982				6.5			10.9	9.2
1983				12.9			22.8	4.9
1984				4.1			7.6	3.8
1985				2.0			3.8	3.6
1986				0.7			1.3	3.2
1987				1.2			2.4	4.1
1988				1.2			2.5	3.9
1989				1.2			2.6	3.4
1990				1.7			3.8	2.9
1991				2.1			4.8	2.3
Subtotal				79.0			113.8	

1/ Since spend out rates are not shown, the escalation rates cannot be used to verify the composite index.

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars.
System: TRI-TAC (Support/Systems Integration/Other)

c. Annual Summary (Cont'd) —

FISCAL YEAR	QTY	FY 76 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			Escl Rate (%)
		FLYAWAY			ADVANCE PROC			
		Nonrec	Rec	Total	Debit	Credit	Total	1/
Appropriation: Procurement								
1980				8.0			12.8	9.3
1981				1.2			2.1	11.9
1982				32.7			57.8	9.2
1983				16.2			29.8	4.9
1984				15.2			28.8	3.8
1985				16.2			32.1	3.6
1986				42.2			86.4	3.2
1987				57.3			121.5	4.1
1988				85.1			186.3	3.9
1989				88.9			199.7	3.4
1990				84.2			193.6	2.9
1991				56.1			131.9	2.3
Subtotal				503.3			1,082.8	
Total				582.3			1,196.6	

d. Obligations and Expenditures —

FISCAL YEAR	Then-Year Dollars (Current Estimate in Millions)		
	TOTAL	OBLIGATED 2/	EXPENDED 2/
Appropriation: RDT&E			
1973	1.8	1.8	1.8
1974	4.0	4.0	4.0
1975	7.4	7.4	7.4
1976	3.9	3.9	3.9
197T	1.2	1.2	1.2
1977	5.0	5.0	5.0
1978	7.0	7.0	7.0
1979	4.4	4.4	4.4
1980	9.2	9.2	9.2
1981	7.4	7.4	7.4
1982	10.9	10.9	10.9
1983	22.8	22.8	22.8
1984	7.6	7.6	5.4
1985	3.8	3.4	1.1
1986	1.3	.3	
To Complete	16.1		
Total	113.8	96.3	91.5

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

System: TRI-TAC (Support/Systems Integration/Other)

d. Obligations and Expenditures (Cont'd) —

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	TOTAL	OBLIGATED 2/	EXPENDED 2/
Appropriation: Procurement			
1980	12.8	12.8	12.8
1981	2.1	2.1	2.1
1982	57.8	57.8	50.7
1983	29.8	29.8	22.0
1984	28.8	23.0	13.1
1985	32.1	19.2	4.7
1986	86.4	26.0	
To Complete	833.0		
Total	1,082.8	170.7	105.4

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

2/ Reflects Program Office records as of 31 December 1985. AFLC expenditures are based on AF/OSD goals for the end of FY 85.

17. Production Rate Data:

(1) CNCE

a. Annual Production Rates --

Fiscal Year	Production Rate (Quantity Year)			
	Development Estimate	Production Estimate	Current Estimate	1/ Maximum
1983/1984	11.0	11.0	11.0	11.0
1985	20.6	20.6	20.6	20.6
1986	30.0	30.0	30.0	30.0
1987	30.0	30.0	30.0	30.0

b. Cost Variance — Dollars in Millions (Note: Subject to limitations on production rates above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	262.7	-	262.7	-	262.7
(TY $)	449.8	-	449.8	-	449.8
PAUC (BY $)	3.649	-	3.649	-	3.649
(TY $)	6.247	-	6.247	-	6.247

c. Schedule Variance — (Note: Subject to limitations on production rates above.)

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs PdE)	Maximum
Start Date (Mo/Yr)	8/86	-	8/86	-	8/86
Duration (in Months)	23	-	23	-	23
End Date (Mo/Yr	6/88	-	6/88	-	6/88

d. Deliveries (Plan/Actual) —

	To Date
RDT&E	4/4
Procurement	0/0

1/ Maximum economic rate assumes AFLC spares will be procured on the same production line.

17. Production Rate Data (Cont'd):

(2) TROPO

a. Annual Production Rates-- (Note: Annual production rates differ from annual funded quantities because the funded delivery period varies per option with the average approximating 15 months.)

Fiscal Year	Production Rate (Quantity Year)			
	Development Estimate	Production Estimate	Current Estimate	1/ Maximum
1981/1982	21.2	21.2	21.2	21.2
1983	50.3	50.3	50.3	50.3
1984	54.0	54.0	54.0	54.0
1985				
1986	33.3	33.3	20.9	20.9
1987	55.7	55.7	33.6	33.6
1988	50.7	50.7	37.0	37.0
1989	57.1	57.1	50.9	50.9
1990			47.9	47.9
1991			53.3	53.3

b. Cost Variance -- Dollars in Millions (Note: Subject to limitations on production rates above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	343.7	58.9	402.6	-	402.6
(TY $)	697.3	122.3	819.6	-	819.6
PAUC (BY $)	0.957	-0.023	0.934	-	0.934
(TY $)	1.942	-0.040	1.902	-	1.902

c. Schedule Variance — (Note: Subject to limitations on production rates above.)

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	10/84	-	10/84	-	10/84
Duration (in Months)	102	+15 mos	117	-	117
End Date (Mo/Yr	4/93	+15 mos	7/94	-	7/94

d. Deliveries (Plan/Actual) --

		To Date
RDT&E		9/9
Procurement	V2	32/32
	V3	13/13

1/ Maximum economic rate assumes Army quantities will be procured on the same production line.

18. Operating and Support Costs: N/A

9

AF-38 WIS

SAR-85-089

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: WWMCCS INFORMATION SYSTEM (WIS)

AS OF DATE: DECEMBER 31, 1985

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CLEARED
FOR OPEN PUBLICATION

MAR 11 1986 18

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

1. Designation/Nomenclature (Popular Name): Worldwide Military Command and Control System (WWMCCS) Information System (WIS)

2. DoD Component: U.S. Air Force

3. Responsible Office and Telephone Number:

WWMCCS Information System (WIS)
Joint Program Management Office (JPMO)

JPM: Brig Gen Michael H. Alexander
Assigned: April 1, 1984
AUTOVON 356-5053
Area Code 703/285-5053

4. Program Elements/Procurement Line Items: 1/

RDT&E: 33152A/N/F/K, 33154F, 63735F
PROCUREMENT: 11310F, 12322F, 27414F, 27415F, 27416F, 33151F, 33152A/N/F/H/K
33154F, 41840F, 92498M
APPN 3080 ICN 834040 (Air Force)
APPN 2035 ICN BE4100 (Army)
APPN 1810 ICN 8210 (Navy and Marine Corps)
APPN 0300 ICN Unknown (DCA/DNA)
OPERATION AND MAINTENANCE: 11310F, 21131F, 27414F, 27415F, 27416F, 33151F
33152F/H

1/ Additions/deletions were directed by OASD/C3I, and USAF/SI to effect solidation and realignment of WIS related Program Element Codes.

5. Related Programs: None.

SAF/PAS

86-148

86-T-0580

6. Mission and Description: The Worldwide Military Command and Control System (WWMCCS) Information System (WIS) is the modernization program to provide a world-wide data collection and information processing system which allows rapid and reliable exchanges of information to support the management of forces. Its primary mission is to support the National Command Authorities and the Joint Chiefs of Staff by providing command and control capabilities for use in national security decision making, force preparation and planning, and execution of operations plans; its secondary mission is that of supporting command and control systems of the unified and specified commands, Services, and other DoD components. WIS will interface with the Nuclear Planning and Execution System, and the Tactical Warning/Attack Assessment Systems. This program will modernize and replace the existing standard WWMCCS ADP System.

7. Program Highlights:

a. Significant Historical Developments -- On 5 November 1982, the Deputy Secretary of Defense established the WIS Joint Program Manager (WIS JPM) for the WWMCCS ADP modernization program. The Chief of Staff, Air Force was designated as Executive Agent. The WIS Joint Mission Element Needs Statement, February 1982, provided the basis for the July 1982 Report to Congress which defined the WIS architecture and development program. The Joint Chiefs of Staff approved the WIS Operational and Information Requirements on 5 July 1985. On 16 May 1984, the Defense Acquisition Executive held a program review and directed the WIS to be developed and deployed in the three increments (Blocks). A Secretary of Defense Decision Memorandum, 11 September 1985, gave approval for Block A full scale engineering development and procurement and installation for a limited number of sites, capped the joint RDT&E program at $835.8M ($663.8M in base year FY82 dollars) and affirmed tri-Service funding.

b. Significant Developments Since Last Report -- Ada was selected as the implementing language for the Automated Message Handling system software. Ada development began on a set of prototype modules of a Software Development and Maintenance Environment (SDME) for fielding to the WIS community. The SDME, developed in Ada, will provide a portable, integrated Ada environment with several Ada compilers, a number of software development tools, and a software configuration management system.

In December 1985, IBM (WIS Common User Contractor) committed to implement the vast majority of AMH software in Ada.

Joint Mission Hardware (JMH) -- A Commerce Business Daily announcement, 19 December 1985, requested vendors interested in receiving the Request for Proposal (RFP) for the JMH to submit a statement of capabilities and experience.

Local Area Network (LAN) -- GTE submitted its Preliminary Design Review (PDR) results in December 1985. The PDR is being evaluated.

Block A Development -- Evaluation of GTE's proposed FY86 contract began in December 1985.

Security Transition Component (STC) -- The STC is now a standard subcomponent of the WIS LAN and allows WWMCCS Intercomputer Network (WIN) connectivity for sites without a LAN.

Off-the-shelf products purchased from the Common User Contractor were shown to meet A-Specifications during demonstrations prior to award of the contract in October 1984.

The WWMCCS Information System is expected to satisfy the mission requirements.

c. Changes Since December 31, 1985 -- None.

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated September 1985), or SDDM (dated September 11, 1985) Threshold Breaches.

9. Schedule:

a. Milestones --

	Block A	Development Estimate/ Approved Program	Current Estimate
	Integration Contract Award	Oct 83/Oct 83	Oct 83
	Common User Contract Award	Oct 84/Oct 84	Oct 84
	System Support Contract Award	Jul 85/Jul 85	Jul 85
	DSARC I/II	Jul 85/Jul 85	Jul 85
	Start DT&E	May 87/May 87	May 87
	Start OT&E	Oct 87/Oct 87	Oct 87
*	Deployment Approval	Nov 87/Nov 87	Nov 87
	Start Low Rate Deployment	Nov 87/Nov 87	Nov 87
	Initial Operational Capability	Nov 87/Nov 87	Nov 87

A program review by the DSARC principals will be the approval mechanism to proceed with full deployment of Block A capabilities. Until that approval is granted, the Block A implementation is restricted to a low rate of procurement and installation (not more than 15 sites).

	Blocks B and C	Planning Estimate/ Approved Program	Current Estimate
	Integration Contract Award	Oct 83/Oct 83	Oct 83
	Common User Contract Award	Jun 84/Oct 84	**Oct 84
	System Support Contract Award	Jul 84/Jul 85	Jul 85
	DSARC II (Block B)	N/A / N/A	May 87 (Ch-1)
	Joint Mission Hardware Contract Award	Jun 86/ N/A	Jun 87 (Ch-2)
	DSARC II (Block C)	N/A	***TBD
	Start OT&E	N/A	***TBD
**	Deployment Approval	N/A	***TBD
	Start Deployment	N/A	***TBD
	Initial Operational Capability	N/A	***TBD

*Program Review by DSARC principals in lieu of DSARC III.

**This data element is inappropriate (i.e., it has application only to Block A); its removal will take effect immediately upon approval by OASD (C).

***TBD Current Estimate for Blocks B and C will be established 180 days prior to their respective DSARC.

b. Previous Change Explanations --

Block A None.

Schedule (Cont'd)

Blocks B and C

Common User Contract Award slipped from Jun 84 to Oct 84 due to late receipt of user requirement comments for inclusion in the Request for Proposal (RFP), which caused a corresponding extension of the RFP period to allow adequate time for vendor preparation of their proposals.

Systems Support Contract Award slipped initially from Jul 84 to Jan 85 due to change in procurement strategy which redefined this effort as a Small Business Program Set-Aside (8-A); the second slip, from Jan 85 to Feb 85, was due to administrative contractual delays associated with 8A processing; the last slip, from Feb 85 to Jul 85, was due to funding constraints which resulted in descoping this effort and reaccomplishing its Statement of Work.

Joint Mission Hardware Contract Award was adjusted from Jun 86 to Dec 86; this six month slip was necessary to effect alignment with design schedule requirements of joint mission application and support software; the three month slip, from Dec 86 to Mar 87, was a function of FY85 deficit funding through the third fiscal quarter which delayed several activities.

DSARC I/II slipped from May 85 to July 85; this one month slip was due to scheduling difficulties involved in presenting numerous pre-briefs and working around the schedules of senior OSD, OJCS, and military department officials.

Current Change Explanations --

Block A None.

Blocks B and C

(Ch-1) Slip in DSARC II from Jan 87 to May 87 is due to reduction of RDT&E funding in the FY87 President's Budget for support of Block B development effort.

(Ch-2) Joint Mission Hardware Contract Award date (rescheduled from Mar 87 to Jun 87) is driven by the Block B DSARC II date, and is expected to be awarded within the same fiscal quarter.

d. References --

Block A

Development Estimate/Approved Program: SDDM, dated September 11, 1985, subject "Decision Memorandum on the World-Wide Military Command and Control System (WWMCCS) Information System (WIS), Block A."

Blocks B and C

Planning Estimate: FY85 RDT&E Descriptive Summary.

Approved Program: FY85 RDT&E Descriptive Summary; and FY87 RDT&E Descriptive Summary.

10. Technical/Operational Characteristics:

Technical -- Block A	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Availability 1/			
Routine Operational Availability	95%/95%	N/A	95%
Crisis Operational Availability	98%/98%	N/A	98%
MTBF (Workstation/Printer)	1500 Hrs/1500 Hrs	N/A	1500 Hrs
Diagnostics Automated Message Handling (AMH) Processor 2/	90% Fault Det/Rate/90%FDR	N/A	90% Fault Detection Rate
Response Time			
Simple (Priority)	8-10 Sec/8-10 Sec	N/A	8-10 Sec
Complex (Priority)	2-4 Min/2-4 Min	N/A	2-4 Min

1/ Availability is defined as the percentage of time WIS is ready for use. WIS reliability and redundancy requirements will be incorporated into its design so that critical command and control activities will be available as specified in JCS Pub 19 and the JOPES ROC.

2/ The probability of correctly determining the replacement unit on the first attempt is 90% for the AMH processor.

a. Technical-- Blocks B and C	Planning Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Availability 1/			
Routine Operational Availability	98%/98%	N/A	98%
Crisis Operational Availability	99.8%/99.8%	N/A	99.8%
MTBF (Workstation/Printer)	2000 Hrs/2000 Hrs	N/A	2000 Hrs
MTBF (WIS System)	160 Hrs/ 160 Hrs	N/A	160 Hrs
Diagnostics Automated Message Handling (AMH) Processor 2/	95% Fault Det/Rate 95%FDR	N/A	95% Fault Detection/Rate
Response Time			
Simple (Priority)	2-5 Sec/2-5 Sec	N/A	2-5 Sec
Complex (Priority)	1-3 Min/1-3 Min	N/A	1-3 Min

1/ Availability is defined as the percentage of time WIS is ready for use. WIS reliability and redundancy requirements will be incorporated into its design so that critical command and control activities will be available as specified in JCS Pub 19 and the JOPES ROC.

2/ The probability of correctly determining the replacement unit on the first attempt is 95% for the AMH processor.

Technical/Operational Characteristics (Cont'd):

b. Operational -- Block A	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Security 3/	System High/ System High	N/A	System High
Useability 4/	20 Hrs Training/ 20 Hrs Training	N/A	20 Hrs Training
Automated Message Handling (AMH) Peak Msg Rec/Day 5/	2000/2000	N/A	2000
Automated Message Handling (AMH) Peak Msg Rec/Hour	300/300	N/A	300
Automated Message Handling (AMH) Peak Msg Trans/Hour	100/100	N/A	100

3/ WIS will be secure from unauthorized access, data manipulation, or retrieval. The system hardware will be TEMPEST certified as required. For Block A, the system will operate in a ~~TOP SECRET~~ system high mode.

4/ Useability is defined as the time it will take to learn how to log-on through a WIS workstation to the system and access available WIS applications. For Block A threshold, 20 hours of training for an experienced workstation user, consisting of on-the-job-training (OJT), classroom, and computer-aided instructor courses, are anticipated to use basic automated message handling capabilities.

This goal is a measure of AMH capability in a priority operation; it is defined as the maximim number of messages processed for the time period. All AMH goals assume an average message length of 1500 characters and a maximum length of 30,000 characters.

b. Operational -- Blocks B and C	Planning Estimate/ Appr Program	Demonstrated Performance	Current Estimate
Security 3/	Controlled Mode/ Controlled Mode	N/A	Controlled Mode
Useability 4/	8 Hrs Training/ 8 Hrs Training	N/A	8 Hrs Training
Automated Message Handling (AMH) Peak Msg Rec/Day 5/	3500/3500	N/A	3500
Automated Message Handling (AMH) Peak Msg Rec/Hour	500/500	N/A	500
Automated Message Handling (AMH) Peak Msg Trans/Hour	150/150	N/A	150

3/ WIS will be secure from unauthorized access, data manipulation, or retrieval. The system hardware will be TEMPEST certified as required. For Blocks B and C the system will operate in a ~~TOP SECRET~~ controlled mode.

10. Technical/Operational Characteristics (Cont'd):

4/ Useability is defined as the time it will take to learn how to log-on through a WIS workstation to the system and access available WIS applications. For Blocks B and C, the usability goal will be 8 hours workstation OJT with the availability of a full help command function.

5/ This goal is a measure of AMH capability in a priority operation; it is defined as the maximim number of messages processed for the time period. All AMH goals assume an average message length of 1500 characters and a maximum length of 30,000 characters.

c. Previous Change Explanations --

Blocks A, B and C None.

Technical/Operational Program Data Elements were reported for the first time under the September 30, 1985 submission.

d. References --

Block A

Development Estimate/Approved Program: SDDM, dated September 11, 1985, subject "Decision Memorandum on the World-Wide Military Command and Control System (WWMCCS) Information System (WIS), Block A."

Blocks B and C

Planning Estimate/Approved Program: Decision Coordinating Paper for Block A of the WIS, dated September 20, 1985.

1. Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Planning/Dev *Estimate	Changes	Current Estimate
a. Cost --			
Development	$ 545.3	$+316.1	$ 861.4
**Procurement	642.3	- 40.2	602.1
MILCON	1.9	- 1.9	0
Operation and Maintenance (O&M)	237.5	-46.9	190.6
Total FY 82 Base-Year $	$1,427.0	$+227.1	$1,654.1
Escalation			
Development (RDT&E)	$ 132.3	$ +95.5	$ 227.8
Procurement	223.8	-10.9	212.9
MILCON	.5	- .5	0
Operation and Maintenace (O&M)	73.4	-15.7	57.7
Total Then - Year $	$1,857.0	$+295.5	$2,152.5
b. Quantities --			
Development (RDT&E)	1	-	1
Procurement	34	-	34
Total	35	-	35
c. Unit Cost --			
Procurement: N/A			
Program:			
FY 82 Base-Year $	$ 40.771	$ +6.489	$ 47.260
Then-Year $	$ 53.057	$ +8.443	$ 61.500

d. Approved Design to Cost Goal -- None

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

* Previous changes reflected in September 30, 1985 SAR for Block A have been incorporated into the PE/DE baseline since the program received a favorable Milestone II decision.

**Stratification of procurement dollars will be made in future SAR submissions.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	2,152.5	2,343.3	2,152.5
(2) Quantity	35	35	35
(3) Unit Cost 1/	61.500	66.951	61.500
b. Current Procurement -- 2/ N/A	(FY 1986)	(FY 1986)	(FY 1987)

1/ Identification of Level I host sites, as a unit of measure for Unit Cost Reporting carries with it the recognition that the total program costs divided by these sites will not yield a stable baseline since this program does not lend itself to the establishment of a true unit cost. Additionally, the number and the configuration of sites will vary with each Service and Agency acquisition strategy/funding policy.

2/ The WIS unit will be incrementally fielded over several years (consistent with Block schedule/capability approved through the DSARC process); however, the ultimate operational performance expected by the thirty-four Level I host sites will be the results of the aggregate capabilities achieved during development of all Blocks -- it is for this reason that quantity data is reported in total rather than incrementally phased by fiscal year. A Current Procurement Unit Cost (CPUC)is therefore determined not appropriate.

13. Cost Variance Analysis: WIS Total Program

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Planning/Dev Estimate	677.6	866.1	2.4	310.9	1857.0
Previous Changes:					
Economic	- 6.4	- 7.5	-	-6.2	-20.1
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+30.9	-	-	-	+30.9
Estimating	+350.1	+168.4	-	-40.6	+477.9
Other	-	-	-	-	-
Support	-	-	-2.4	-	-2.4
Subtotal	+374.6	+160.9	-2.4	-46.8	+486.3
Current Changes:					
Economic	-14.1	-28.7	-	-4.7	-47.5
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+51.1	-183.3	-	-11.1	-143.3
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+37.0	-212.0	0	-15.8	-190.8
Total Changes	+411.6	- 51.1	-2.4	-62.6	+295.5
Current Estimate	1089.2	815.0	0	248.3	2152.5

13. Cost Variance Analysis: WIS Total Program (Cont'd)
(FY 82 Constant (Base Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Planning/Dev Estimate	545.3	642.3	1.9	237.5	1427.0
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+25.7	-	-	-	+25.7
Estimating	+257.2	+101.5	-	-35.2	+323.5
Other	-	-	-	-	-
Support	-	-	-1.9	-	-1.9
Subtotal	+282.9	+101.5	-1.9	-35.2	+347.3
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+33.2	-141.7	-	-11.7	-120.2
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+33.2	-141.7	0	-11.7	-120.2
Total Changes	+316.1	- 40.2	-1.9	-46.9	+227.1
Current Estimate	861.4	602.1	0	190.6	1654.1

13. Cost Variance Analysis: WIS Total Program (Cont'd)

b. Previous Change Explanations --

RDT&E

Economic:	Revised OSD inflation indices
Engineering:	Support of Ada foundation effort, and product improvement into applications software
Estimating:	Reclassification/Transfer of funds from Operation and Maintenance, and Other Procurement; additional year of cost added to the 5-year FYDP period; increased programmed dollars for Joint Operations Planning and Execution System (JOPES), National Military Command System Information System (NIS), Automated Message Handling (AMH); Required Operational Capabilities (ROCs) due to finalization of requirements; reprogramming of additional dollars to support planning start up of AFWIS program office; initial identification of "Balance to Complete" funding requirement; and adjustment for difference between FY86 President's Budget and required funding

PROCUREMENT

Economic:	Revised OSD inflation indices
Estimating:	Appropriation transfer of funds to RDT&E; additional year of cost added to the 5 year FYDP period; initial identification of "Balance to Complete" fund requirement; and adjustment for difference between FY86 President's Budget and required funding

O & M

Economic:	Revised OSD inflation indices
Estimating:	Appropriation transfer of funds to RDT&E; additional year of cost added to the 5-year FYDP period; and adjustment for difference between FY86 President's Budget and required funding

MILCON

Support:	Funding deleted owing to reduced support requirements

3. Cost Variance Analysis: WIS Total Program (Cont'd)
c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-14.1
Pro rata shared Tri-Service RDT&E funding directed by SDDM dated September 11, 1985; plus additional funding in support of Service/Command Unique requirements. (Estimating)	+ 33.2	+51.1
(2) PROCUREMENT		
Revised economic escalation indices. (Economic)	N/A	-28.7
Reduction is attributable to a smaller complement of equipment at WIS sites in order to meet affordability constraints. (Estimating)	-141.7	-183.3
3. OPERATING and MAINTENANCE		
Revised economic escalation indices. (Economic)	N/A	- 4.7
Refinement and rephasing of estimate to align program with FY87 President's Budget. (Estimating)	- 11.7	- 11.1

d. References --

Planning/Dev Estimate: Fiscal Year 1985 President's Budget; and SDDM, dated September 11, 1985 subject "Decision Memorandum on the World-Wide Military Command and Control System (WWMCCS) Information System (WIS), Block A."

13. Cost Variance Analysis: Block A
a. Summary -- (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	309.2	457.4	0	0	766.6
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	0	0	0	0	0
Current Changes:					
Economic	-2.6	- 11.3	-	-	-13.9
Quantity	-	-	-	-	-
Schedule		-	-	-	-
Engineering	-	-	-	-	-
Estimating	+.1	-118.6		-	-118.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-2.5	-129.9	0	0	-132.4
Total Changes	- 2.5	-129.9	0	0	-132.4
Current Estimate:	306.7	327.5	0	0	634.2

13. Cost Variance Analysis: Block A (Cont'd)
(FY 82 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	254.3	334.7	0	0	589.0
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	0	0	0	0	0
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-87.5	-	-	-87.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	0	-87.5	0	0	-87.5
Total Changes	0	-87.5	0	0	-87.5
Current Estimate	254.3	247.2	0	0	501.5

13. Cost Variance Analysis: Block A (Cont'd)

b. Previous Change Explanations -- None

c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Revised economic escalation indices. (Economic)	N/A	-2.6
Program Related Inflationary change (PRC) resulting from rephasing of approved funding.(Estimating)	N/A	+ .1
(2) PROCUREMENT		
Revised economic escalation indices. (Economic)	N/A	-11.3
Adjustment of cost estimate based upon better requirement definition, and Program Element Code realignment.(Estimating)	-87.5	-118.6

14. References --

Development Estimate: SDDM, dated September 11, 1985, subject "Decision Memorandum on the World-Wide Military Command and Control System (WWMCCS) Information System (WIS), Block A."

13. Cost Variance Analysis: Blocks B and C (Cont'd)
(Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Planning Estimate	368.4	408.7	2.4	310.9	1090.4
Previous Changes:					
Economic	-6.4	-7.5	-	-6.2	-20.1
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+30.9	-	-	-	+30.9
Estimating	+350.1	+168.4	-	-40.6	+477.9
Other	-	-	-	-	-
Support	-	-	-2.4	-	-2.4
Subtotal	+374.6	+160.9	-2.4	-46.8	+486.3
Current Changes:					
Economic	-11.5	-17.4	-	-4.7	-33.6
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+51.0	-64.7		-11.1	-24.8
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+39.5	-82.1	0	-15.8	-58.4
Total Changes	+414.1	+78.8	-2.4	-62.6	+427.9
Current Estimate	782.5	487.5	0	248.3	1518.3

11. Cost Variance Analysis: Blocks B and C (Cont'd)
(FY 82 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Planning Estimate	291.0	307.6	1.9	237.5	838.0
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+25.7	-	-	-	+25.7
Estimating	+257.2	+101.5	-	-35.2	+323.5
Other	-	-	-	-	
Support	-	-	-1.9	-	-1.9
Subtotal	+282.9	+101.5	-1.9	-35.2	+347.3
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+33.2	-54.2	-	-11.7	-32.7
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+33.2	-54.2	0	-11.7	-32.7
Total Changes	+316.1	+47.3	-1.9	-46.9	+314.6
Current Estimate	607.1	354.9	0	190.6	1152.6

b. Previous Change Explanations --

RDT&E
Economic: Revised OSD inflation indices
Engineering: Support of Ada foundation effort, and product improvement into application software
Estimating: Reclassification/Transfer of funds from Operation and Maintenance, and Other Procurement; additional year of cost added to the 5-year FYDP period; increased programmed dollars for Joint Operations Planning and Execution System (JOPES), National Military Command System Information System (NIS), Automated Message Handling (AMH), Required Operational Capabilities (ROCs) due to finalization of requirements; reprogramming of additional dollars to support planning start up of AFWIS program office; initial identification of "Balance to Complete" funding requirement; and adjustment for difference between FY86 President's Budget and required funding.

13. Cost Variance Analysis: Blocks B and C (Cont'd)

b. Previous Change Explanations -- (Cont'd)

PROCUREMENT
Economic: Revised OSD inflation indices
Estimating: Appropriation transfer of funds to RDT&E; additional year of cost added to the 5-year FYDP period; initial identification of "Balance to Complete" fund requirement

O&M
Economic: Revised OSD inflation indices
Estimating: Appropriation transfer of funds to RDT&E; additional year of cost added to the 5-year FYDP period

MILCON
Support: Funding deleted owing to reduced support requirements

c. Current Change Explanations --

		(Dollars in Millions) Base Year $	Then Year $
(1)	RDT&E Revised economic escalation indices. (Economic)	N/A	-11.5
	Pro rata shared Tri-Service RDT&E funding directed by SDDM dated September 11, 1985; plus additional funding in support of Service/Command Unique requirements. (Estimating)	+33.2	+51.0
(2)	PROCUREMENT Revised economic escalation indices. (Economic)	N/A	-17.4
	Reduction is attributable to a smaller complement of equipment at WIS sites in order to meet affordability constraints. (Estimating)	-54.2	-64.7
(3)	O&M Revised economic escalation indices. (Economics)	N/A	- 4.7
	Refinement and rephasing of estimate to align program with FY87 President's Budget. (Estimating)	-11.7	-11.1

d. References --

Planning Estimate: Fiscal Year 1985 President's Budget; and SDDM, dated September 11, 1985 subject "Decision Memorandum on the World-Wide Military Command and Control System (WWMCCS) Information System (WIS), Block A."

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

a. Initial SAR/Planning Estimate (PE) to the Planning/Development Estimate

PAUC (Initial SAR/PE) 31 Dec 83	Changes (Then-Year Dollars in Millions)								PAUC (Plan/Dev Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
N/A 1/	--	--	--	--	--	--	--	--	53.057

b. Planning/Development Estimate (PE/DE) to the Current Estimate (CE)

PAUC (Plan/Dev Estimate)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
53.057	-1.931	--	--	+.883	+9.560	-.069	--	+8.443	61.500

1/ The appropriateness of defining a WIS unit was undetermined as of the 31 December 1983 SAR submission. The Program Acquisition Unit Cost (PAUC) baseline was established by the 31 Sep 85 SAR submission.

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

a. RDT&E --

System Integration	Initial Contract Price Target Price	Ceiling	Qty
General Telephone & Electronics Corp (GTE) Strategic Systems Division Billerica, MA F19628-84-C-0032, CPAF/FFPL0E Award: October 25, 1983 Definitized: October 25, 1983	$36.6	N/A	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$81.6	N/A	N/A	$87.1	$87.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances (08/30/85)	$-4.1	$-0.7
Cumulative Variances to Date (11/29/85)	$-3.3	$-0.7
Net Change	$+0.8	$ 0

Explanation of Change: The cumulative to date cost variance reflects an improvement of $.8M since the last SAR and is due to lagging billings from subcontractors, as well as the use of lower-grade staff than originally planned in Block A increment 3. No program impact as cumulative unfavorable variances are considered within the Current Estimate of RDT&E approved funding.

Common User Contractor:	Initial Contract Price Target Price	Ceiling	Qty
International Business Machines Corp (IBM) Federal Systems Division Gaithersburg, MD F1928-84-C-0159-FPIF Award: October 5, 1984 Definitized: October 5, 1984	$13.0	$14.9	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
$13.5	$15.5	N/A	$14.4	$15.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances (08/16/85)	$ 0	$-0.3
Cumulative Variances to Date (11/15/85)	$-0.3	$-0.5
Net Change	$-0.3	$-0.2

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

Explanation of Change: The cumulative to date cost variance is due to the additional cost for replacing the IBM 4993 Channel Attach Card and the costs for a WWMCCS Remote Line Printer at the Development Evaluation Facility (DEF); and the rework of the functional description. The cumulative to date schedule variance is due to a change in Critical Design Review to allow system architecture to accommodate centralized security authentication. No program impact as cumulative unfavorable variances are considered within the Current Estimate of RDT&E approved funding.

b. Procurement --

Common User Contractor:	Initial Contract Price		
	Target Price	Ceiling	Qty
International Business Machines Corp (IBM) Federal Systems Division Gaithersburg, MD F1928-84-C-0159-FFP Award: October 5, 1984 Definitized: October 5, 1984	N/A	N/A	1/

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
N/A	N/A	1/	N/A	N/A

WWMCCS ADP Contractor:	Initial Contract Price		
	Target Price	Ceiling	Qty
Honeywell Information System F19630-80-D-0001/FFP Award: November 26, 1979 Definitized: November 26, 1979	N/A	N/A	1/

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
N/A	N/A	1/	N/A	N/A

1/ This is a firm-fixed price contract with provision for indefinite quantity and delivery schedule - no cost/schedule performance reporting required.

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

a. Program Status --
(1) Percent Program Completed: 45.5% (5 yrs/11 years)

(2) Percent Program Cost Appropriated: 16.8% ($362.1/$2152.5)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY82-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Balance To Complete Beyond FYDP (FY92)	Total
RDT&E	267.3	170.9	644.6	6.4	1089.2
Procurement	72.7	92.3	613.9	36.1	815.0
O&M	22.1	30.3	195.9	-	248.3
Total	362.1	293.5	1454.4	42.5	2152.5

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

Annual Summary --

PROGRAM: WIS TOTAL PROGRAM

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	QTY	FY 82 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE 1/ (%)
		FLYAWAY			ADVANCE PROC			
		NONREC	REC	TOTAL	DEBIT	CREDIT	TOTAL	
APPROPRIATION: RDT&E								
1982	-	-	-	$ 13.7	-	-	$ 14.0	9.2
1983	-	-	-	16.6	-	-	17.8	4.9
1984	-	-	-	41.8	-	-	46.5	3.8
1985	-	-	-	66.3	-	-	76.2	3.6
1986	-	-	-	94.6	-	-	112.8	3.2
1987	-	-	-	137.9	-	-	170.9	4.1
1988	-	-	-	167.1	-	-	214.5	3.9
1989	-	-	-	148.2	-	-	196.1	3.4
1990	-	-	-	98.9	-	-	134.3	2.9
1991	-	-	-	71.8	-	-	99.7	2.3
1992	-	-	-	4.5	-	-	6.4	2.3
Subtotal	1	0	0	$861.4	0	0	$1089.2	-
APPROPRIATION: PROCUREMENT								
[redacted]	-	-	-	$ 4.1	-	-	$ 4.6	4.9
1984	-	-	-	4.4	-	-	5.1	3.8
1985	-	-	-	15.6	-	-	18.6	3.6
1986	-	-	-	35.9	-	-	44.4	3.2
1987	-	-	-	72.0	-	-	92.3	4.1
1988	-	-	-	85.8	-	-	113.4	3.9
1989	-	-	-	106.9	-	-	145.0	3.4
1990	-	-	-	116.8	-	-	162.4	2.9
1991	-	-	-	135.8	-	-	193.1	2.3
1992	-	-	-	24.8	-	-	36.1	2.3
Subtotal	34	0	0	$602.1	0	0	$ 815.0	-
APPROPRIATION: O&M								
1985	-	-	-	$ .2	-	-	$ .2	3.6
1986	-	-	-	18.5	-	-	21.9	3.2
1987	-	-	-	24.7	-	-	30.3	4.1
1988	-	-	-	35.6	-	-	45.3	3.9
1989	-	-	-	42.7	-	-	56.2	3.4
1990	-	-	-	24.3	-	-	32.8	2.9
1991	-	-	-	44.6	-	-	61.6	2.3
Subtotal	0	0	0	$190.6	0	0	$ 248.3	-
[redacted]otal	35	0	0	$1654.1	0	0	$2152.5	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

c. Annual Summary --

PROGRAM: WIS ARMY

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	QTY	FY 82 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE 1/ (%)
		FLYAWAY			ADVANCE PROC			
		NONREC	REC	TOTAL	DEBIT	CREDIT	TOTAL	
APPROPRIATION: RDT&E								
1984	-	-	-	$ 11.9	-	-	$ 13.2	3.8
1985	-	-	-	23.6	-	-	27.1	3.6
1986	-	-	-	25.9	-	-	30.9	3.2
1987	-	-	-	23.8	-	-	29.5	4.1
1988	-	-	-	58.2	-	-	74.7	3.9
1989	-	-	-	52.7	-	-	69.7	3.4
1990	-	-	-	44.5	-	-	60.5	2.9
1991	-	-	-	43.6	-	-	60.6	2.3
Subtotal	0	0	0	$284.2	0	0	$366.2	-
APPROPRIATION: PROCUREMENT								
1983	-	-	-	$ 4.1	-	-	$ 4.6	4.9
[illegible]	-	-	-	4.1	-	-	4.7	3.8
[illegible]5	-	-	-	11.9	-	-	14.2	3.6
1986	-	-	-	5.7	-	-	7.1	3.2
1987	-	-	-	28.3	-	-	36.2	4.1
1988	-	-	-	21.9	-	-	29.0	3.9
1989	-	-	-	21.2	-	-	28.8	3.4
1990	-	-	-	20.5	-	-	28.5	2.9
1991	-	-	-	51.8	-	-	73.6	2.3
Subtotal	8	0	0	$169.5	0	0	$226.7	-
Total	8	0	0	$453.7	0	0	$592.9	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

Program Funding Summary (Cont'd) :
(Current Estimate in Millions of Dollars)

c. Annual Summary --

PROGRAM: WIS NAVY 1/

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	QTY	FY 82 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE 2/
		FLYAWAY			ADVANCE PROC			
		NONREC	REC	TOTAL	DEBIT	CREDIT	TOTAL	(%)
APPROPRIATION: RDT&E								
1984	-	-	-	$ 7.4	-	-	$ 8.3	3.8
1985	-	-	-	12.2	-	-	14.0	3.6
1986	-	-	-	12.5	-	-	14.9	3.2
1987	-	-	-	17.3	-	-	21.5	4.1
1988	-	-	-	34.7	-	-	44.6	3.9
1989	-	-	-	30.7	-	-	40.7	3.4
1990	-	-	-	23.9	-	-	32.4	2.9
1991	-	-	-	13.3	-	-	18.4	2.3
1992	-	-	-	4.5	-	-	6.4	2.3
Subtotal	0	0	0	$156.5	0	0	$201.2	-
APPROPRIATION: PROCUREMENT								
1987	-	-	-	3.1	-	-	3.9	4.1
1988	-	-	-	11.5	-	-	15.2	3.9
1989	-	-	-	15.4	-	-	20.9	3.4
1990	-	-	-	9.0	-	-	12.5	2.9
1991	-	-	-	40.3	-	-	57.3	2.3
1992	-	-	-	19.2	-	-	27.9	2.3
Subtotal	8	0	0	$ 98.5	0	0	$137.7	-
Total	8	0	0	$255.0	0	0	$338.9	-

1/ The Navy has other programs to complete the cost of modernizing the functions currently on WWMCCS ADP; these costs are excluded.

2/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

Annual Summary --

PROGRAM: WIS AIR FORCE 1/

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	QTY	FY 82 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE 2/ (%)
		FLYAWAY			ADVANCE PROC			
		NONREC	REC	TOTAL	DEBIT	CREDIT	TOTAL	
APPROPRIATION: RDT&E								
1983	-	-	-	$ 4.7	-	-	$ 5.0	4.9
1984	-	-	-	22.5	-	-	25.0	3.8
1985	-	-	-	30.5	-	-	35.1	3.6
1986	-	-	-	56.2	-	-	67.0	3.2
1987	-	-	-	96.8	-	-	119.9	4.1
1988	-	-	-	74.2	-	-	95.2	3.9
1989	-	-	-	64.8	-	-	85.7	3.4
1990	-	-	-	30.5	-	-	41.4	2.9
1991	-	-	-	14.9	-	-	20.7	2.3
Subtotal	1	0	0	$395.1	0	0	$495.0	-
APPROPRIATION: PROCUREMENT								
1984	-	-	-	$ .3	-	-	$ .4	$3.8
1985	-	-	-	1.9	-	-	2.3	3.6
1986	-	-	-	21.5	-	-	26.6	3.2
1987	-	-	-	31.1	-	-	39.9	4.1
1988	-	-	-	38.9	-	-	51.4	3.9
1989	-	-	-	50.5	-	-	68.5	3.4
1990	-	-	-	65.8	-	-	91.5	2.9
1991	-	-	-	36.8	-	-	52.3	2.3
Subtotal	14	0	0	$246.8	0	0	$332.9	-
APPROPRIATION: O&M								
1985	-	-	-	$ .2	-	-	$ .2	3.6
1986	-	-	-	18.5	-	-	21.9	3.2
1987	-	-	-	24.2	-	-	29.7	4.1
1988	-	-	-	35.2	-	-	44.8	3.9
1989	-	-	-	41.9	-	-	55.1	3.4
1990	-	-	-	23.8	-	-	32.1	2.9
1991	-	-	-	44.0	-	-	60.8	2.3
Subtotal	0	0	0	$187.8	0	0	$244.6	-
Total	15	0	0	$829.7	0	0	$1072.5	-

1/ The Air Force has other programs to complete the cost of modernizing the functions currently on WWMCCS ADP; these costs are excluded. Some programmed dollars included in this SAR may not remain a part of future WIS SARs.

2/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

Annual Summary --

PROGRAM: WIS MARINE CORPS

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	QTY	FY 82 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE 1/ (%)
		FLYAWAY			ADVANCE PROC			
		NONREC	REC	TOTAL	DEBIT	CREDIT	TOTAL	
APPROPRIATION: PROCUREMENT								
1985	-	-	-	$ .4	-	-	$ .4	3.6
1986	-	-	-	1.1	-	-	1.4	3.2
1987	-	-	-	.2	-	-	.3	4.1
1988	-	-	-	.2	-	-	.3	3.9
1989	-	-	-	.2	-	-	.2	3.4
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
Total	0	0	0	$2.1	0	0	$2.6	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

Program Funding Summary (Cont'd) :
(Current Estimate in Millions of Dollars)

c. Annual Summary --

PROGRAM: WIS DCA

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	QTY	FY 82 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE 1/ (%)
		FLYAWAY			ADVANCE PROC			
		NONREC	REC	TOTAL	DEBIT	CREDIT	TOTAL	
APPROPRIATION: RDT&E								
1982	-	-	-	$13.7	-	-	$14.0	9.2
1983	-	-	-	11.9	-	-	12.8	4.9
1984	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-
Subtotal	0	0	0	$25.6	0	0	$26.8	-
APPROPRIATION: PROCUREMENT								
1985	-	-	-	$ 1.4	-	-	$ 1.7	3.6
1986	-	-	-	6.6	-	-	8.1	3.2
1987	-	-	-	9.1	-	-	11.7	4.1
1988	-	-	-	10.9	-	-	14.4	3.9
1989	-	-	-	19.5	-	-	26.4	3.4
1990	-	-	-	16.7	-	-	23.2	2.9
1991	-	-	-	4.9	-	-	7.0	2.3
Subtotal	3	0	0	$69.1	0	0	$92.5	-
Total	3	0	0	$94.7	0	0	$119.3	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

Annual Summary --

PROGRAM: WIS DNA

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	QTY	FY 82 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE 1/ (%)
		FLYAWAY			ADVANCE PROC			
		NONREC	REC	TOTAL	DEBIT	CREDIT	TOTAL	
APPROPRIATION: PROCUREMENT								
1986	-	-	-	$1.0	-	-	$1.2	3.2
1987	-	-	-	.2	-	-	.3	4.1
1988	-	-	-	2.4	-	-	3.1	3.9
1989	-	-	-	.1	-	-	.2	3.4
1990	-	-	-	4.8	-	-	6.7	2.9
1991	-	-	-	2.0	-	-	2.9	2.3
1992	-	-	-	5.6	-	-	8.2	2.3
Subtotal	1	0	0	$16.1	0	0	$22.6	-
APPROPRIATION: O&M								
1987	-	-	-	$ .5	-	-	$ .6	4.1
1988	-	-	-	.4	-	-	.5	3.9
[illegible]	-	-	-	.8	-	-	1.1	3.4
[illegible]	-	-		.5	-	-	.7	2.9
1991	-	-	-	.6	-	-	.8	2.3
Subtotal	0	0	0	$2.8	0	0	$3.7	-
Total	1	0	0	$18.9	0	0	$26.3	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

16 Program Funding Summary (Cont'd) :
(Current Estimate in Millions of Dollars)

c. Annual Summary --

BLOCK A

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	QTY	FY 82 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE 1/ (%)
		FLYAWAY			ADVANCE PROC			
		NONREC	REC	TOTAL	DEBIT	CREDIT	TOTAL	
APPROPRIATION: RDT&E								
1984	-	-	-	7.5	-	-	8.4	3.8
1985	-	-	-	54.9	-	-	63.1	3.6
1986	-	-	-	77.8	-	-	92.7	3.2
1987	-	-	-	90.3	-	-	111.9	4.1
1988	-	-	-	23.8	-	-	30.6	3.9
1989	-	-	-	-	-	-	-	3.4
1990	-	-	-	-	-	-	-	2.9
1991	-	-	-	-	-	-	-	2.3
1992	-	-	-	-	-	-	-	2.3
Subtotal	1	0	0	$254.3	0	0	$ 306.7	-
APPROPRIATION: PROCUREMENT								
[illegible]5	-	-	-	8.8	-	-	10.5	3.6
[illegible]6	-	-	-	19.4	-	-	24.0	3.2
1987	-	-	-	45.0	-	-	57.7	4.1
1988	-	-	-	83.0	-	-	109.8	3.9
1989	-	-	-	57.0	-	-	77.4	3.4
1990	-	-	-	9.9	-	-	13.8	2.9
1991	-	-	-	24.1	-	-	34.3	2.3
1992	-	-	-	-	-	-	-	2.3
Subtotal	34	0	0	$247.2	0	0	$ 327.5	-
Total	35	0	0	$501.5	0	0	$ 634.2	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

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

Annual Summary --

BLOCKS B and C

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	QTY	FY 82 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESCL RATE 1/ (%)
		FLYAWAY			ADVANCE PROC			
		NONREC	REC	TOTAL	DEBIT	CREDIT	TOTAL	
APPROPRIATION: RDT&E								
1982	-	-	-	$ 13.7	-	-	$ 14.0	9.2
1983	-	-	-	16.6	-	-	17.8	4.9
1984	-	-	-	34.3	-	-	38.1	3.8
1985	-	-	-	11.4	-	-	13.1	3.6
1986	-	-	-	16.8	-	-	20.1	3.2
1987	-	-	-	47.6	-	-	59.0	4.1
1988	-	-	-	143.3	-	-	183.9	3.9
1989	-	-	-	148.2	-	-	196.1	3.4
1990	-	-	-	98.9	-	-	134.3	2.9
1991	-	-	-	71.8	-	-	99.7	2.3
1992	-	-	-	4.5	-	-	6.4	2.3
Subtotal	1	0	0	$607.1	0	0	$ 782.5	-
APPROPRIATION: PROCUREMENT								
1983	-	-	-	$ 4.1	-	-	$ 4.6	4.9
1984	-	-	-	4.4	-	-	5.1	3.8
1985	-	-	-	6.8	-	-	8.1	3.6
1986	-	-	-	16.5	-	-	20.4	3.2
1987	-	-	-	27.0	-	-	34.6	4.1
1988	-	-	-	2.8	-	-	3.6	3.9
1989	-	-	-	49.9	-	-	67.6	3.4
1990	-	-	-	106.9	-	-	148.6	2.9
1991	-	-	-	111.7	-	-	158.8	2.3
1992	-	-	-	24.8	-	-	36.1	2.3
Subtotal	34	0	0	$354.9	0	0	$487.5	-
APPROPRIATION: O&M								
1985	-	-	-	$ .2	-	-	$ .2	3.6
1986	-	-	-	18.5	-	-	21.9	3.2
1987	-	-	-	24.7	-	-	30.3	4.1
1988	-	-	-	35.6	-	-	45.3	3.9
1989	-	-	-	42.7	-	-	56.2	3.4
1990	-	-	-	24.3	-	-	32.8	2.9
1991	-	-	-	44.6	-	-	61.6	2.3
Subtotal	0	0	0	$190.6	0	0	$ 248.3	-
Total	35	0	0	$1152.6	0	0	$1518.3	-

1/ Since spend-out rates are not shown, the escalation rates cannot be used to verify the composite index.

16. Program Funding Summary (Cont'd)
d. Obligations and Expenditures --

AS OF DATE: DECEMBER 31, 1985
BASE-YEAR: FY 1982

FISCAL YEAR	THEN-YEAR DOLLARS (CURRENT ESTIMATE IN MILLIONS)		
	TOTAL	OBLIGATED	EXPENDED
APPROPRIATION: RDT&E			
1982	14.0	14.0	14.0
1983	17.8	17.8	16.5
1984	46.5	45.9	41.1
1985	76.2	49.2	42.7
To Complete	934.7	N/A	N/A
Total	$1089.2	$126.9	$114.3
APPROPRIATION: PROCUREMENT			
1983	4.6	4.6	4.6
1984	5.1	5.1	5.1
1985	18.6	16.6	8.0
To Complete	786.7	N/A	N/A
Total	$ 815.0	$ 26.3	$ 17.7
APPROPRIATION: O&M			
1985	.2	.2	.2
To Complete	248.1	N/A	N/A
Total	$ 248.3	$ .2	$ .2

17. Production Rate Data: N/A

Procurement funding will be used for the purchase of commercial-off-the-shelf (COTS) equipment, not the production of a previously developed WIS prototype; COTS equipment requirements are uniquely determined for each site. The number and the configuration of sites will vary with each Service and Agency acquisition strategy/funding policy.

18. Operating and Support Costs: N/A

(U) AF-31-PLSS

~~SECRET~~

SAR-85-115

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: Precision Location Strike System (PLSS)

AS OF DATE: December 31, 1985

(U) INDEX

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CLEARED
FOR OPEN PUBLICATION
AS AMENDED
MAR 18 1986 18
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

1. (U) Designation and Nomenclature (Popular Name): Precision Location Strike System (PLSS).

2. (U) DOD Component: U.S. Air Force

3. (U) Responsible Office and Telephone Number:

PLSS Program Office
Aeronautical Systems Division
Wright-Patterson AFB OH

PM: Lt Col R.L. Fradenburg
Assigned: 6 January 1986
AV 785-5524
COMM 513-255-5524

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

RDT&E: PE 64742F (not shared)
PROCUREMENT: PE 27244F (not shared) APPN: 3010, ICN 000999
APPN: 3080, ICN 834310
MILCON: PE 27244F (not shared)

5. (U) Related Programs: TR-1, F-16, Adaptive Targeting Data Link (ATDL), Tactical Cryptological Program (TCP)

Classified by: [redacted] 1 May 85
Declassify on: OADR

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SAF/PAS
96-154 - T

82 0618

6. (U) Mission and Description: The PLSS will provide the tactical forces with a day/night, adverse weather defense suppression system capable of emitter detection, emitter location, standoff weapon guidance, and precision blind bombing against both emitting and non-emitting targets throughout the theater of operations. PLSS can operate in a dense emitter and jammer environment and is the only system capable of locating and attacking parametrically agile threats employing short on-time tactics with the certainty and rate of kill necessary to significantly reduce friendly aircraft losses. The system utilizes sensitive electromagnetic receivers on-board three TR-1 aircraft to collect and data link emitter information to a ground-based Central Processing Subsystem (CPS) for further processing. PLSS has the inherent flexibility to adapt to new threat characteristics and wartime frequency changes by the enemy. Appropriate ELINT but less timely information, will be forwarded to the tactical air control system elements which can then direct tactical aircraft into the target area. The CPS can also provide precise, near real time targeting information directly to F-16 aircraft using the Adaptive Targeting Data Link (ATDL) or to conventional standoff weapons via the Distance Measuring Equipment (DME) data link. The PLSS will allow cueing and battle management of other electronic combat assets (e.g., F-4 Wild Weasels and EF-111s). The system does not replace any existing weapon system.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- Full Scale Development began in September 1977. The system requirements review was completed in January 1978; System Design Review was completed in May 1978; Preliminary Design Review was held in October 1979; and Location Mission System Critical Design Review was held in March 1983. The TR-1 was selected as the Airborne Relay Vehicle in August 1979. In October 1980, program funding was reduced to a minimum in accordance with Congressional guidelines, and the PLSS program did not receive full FY81 funding until the supplemental budget approval in June 1981. These funding actions caused the contract schedule to be extended by 38 months and the cost to be renegotiated; the contract modification was completed in February 1982. The FY83 Congressional appropriations committees reduced PLSS funding by $20 million and issued direction to separate the strike mission developments from the emitter location mission developments and to transfer the PLSS program to the Tactical Cryptological Program (TCP) which is now a related program to PLSS. The original scheduled date for the completion of contractor integration was August 1984.

b. (U) Significant Developments Since Last Report -- PLSS first successful three aircraft mission was accomplished in late July 1985. The contractor (Lockheed Missiles Space Company - LMSC) continues to show technical progress in system development. In late November, a portion of one test mission was controlled by the Air Force test team to begin a series of missions to demonstrate system repeatability and readiness to enter Development Test and Evaluation. The mission was controlled out of the Central Processing Subsystem for three orbits achieving continuous operations and repeatable results.

In Oct 85, LMSC submitted a revision to their Apr 85 "CAP" proposal. Negotiations should be completed by Feb 86.

As part of the production effort, a Request for Proposal (RFP) was submitted in Oct 85 to revise and update the production Lot 1 Buy proposal. LMSC submitted their Lot 2 proposal in Dec 85. In late December, LMSC submitted a letter proposal for a firm fixed price production program.

AFSARC IIIA was rescheduled from Nov 85 and is currently planned for Apr 86.

The contractor integration phase is nearing completion. System performance is progressing toward AFSARC IIIA thresholds.

PLSS will satisfy its technical mission requirements, however time of coverage will be reduced due to fewer subsystem quantities.

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

8. (U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no threshold breaches of DCP-129, dated September 1977.

9. (U) Schedule

a. (U) Milestones	Development Estimate/ Approved Program	Current Estimate
(1) (U) Area Coordinating Paper No. 4	Mar 72/Mar 72	Mar 72
(2) (U) Two-Phase Program Direction	Apr 75/Apr 75	Apr 75
(3) (U) Full Scale Development Contract Award	Sep 77/Sep 77	Sep 77
(4) (U) Preliminary Design Review	Oct 79/Oct 79	Oct 79
(5) (U) Critical Design Review	Mar 83/Mar 83	Mar 83
(6) (U) Start Contractor DTE	Sep 83/Sep 83	May 86 Ch 1
(7) (U) Start Combined (Gov/Contr) DTE/IOTE	Jul 84/Jul 84	May 86 Ch 2
(8) (U) Completed Combined DTE/IOTE	Sep 85/Sep 85	Apr 87 Ch 2
(9) (U) Start FOTE	Oct 85/Oct 85	Apr 88 Ch 2
(10) (U) Early Release of Production Funds (AFSARC IIIA)	Sep 84/Sep 84	May 86 Ch 2
(11) (U) Production Contract Award	Oct 84/Oct 84	May 86 Ch 2
(12) (U) Production Decision (AFSARC IIIB)	Mar 85/Mar 85	Apr 87 Ch 2

(b)(1)

b. (U) Previous Change Explanations:

Aside from a two-month TR-1 stand down in FY84, all schedule changes since the 31 Dec 83 baseline SAR are the result of major delays in integration testing which continues to slip the start of combined DTE/IOTE testing. Succeeding milestones have slipped accordingly.

c. (U) Current Change Explanations:

Ch 1 (U) The contractor integration and test phase took much longer than planned which caused a delay in the start of government controlled DTE from Sep 83 to May 86. Government test team has participated in over the shoulder testing since Sep 83. The government controlled DTE portion of combined test is planned to begin in May 86.

(b)(1)

d. (U) References -- Development Estimate: PMD R-P2063(17)64742F/27244F, dated 31 Jan 83, subject Precision Location Strike System.

Approved Program: PMD R-P2063(17)64742F/27244F, dated 31 Jan 83, subject Precision Location Strike System.

10. (U) Technical/Operational Characteristics:

a.(U) Technical	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(U) Located Accuracy (Feet) Circular Error Probable (CEP)			
(b)(1)			
b.(U) Operational			
(b)(1)			
(U) Mission Reliability (%)	85/85		85

c.(U) Previous Change Explanations: None

d.(U) Current Change Explanations: None

e.(U) References -- Development Estimate: PMD R-P2063(17)64742F/27244F, dated 31 Jan 83, subject Precision Location Strike System.

Approved Program: PMD R-P2063(17)64742F/27244, dated 31 Jan 83, subject Precision Location Strike System.

11.(U) Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. (U) Cost --			
Development (RDTE)	$ 418.3	- 3.0	415.3
Procurement	208.6	- 6.8	201.8
Airborne Equip.	(76.4)	(+ 8.2)	(84.6)
Ground Equip.	(60.5)	(+ 2.1)	(62.6)
Total Flyaway	(136.9)	(+10.3)	(147.2)
Other Wpn Sys Costs	(17.8)	(- 1.1)	(16.8)
Initial Spares	(53.8)	(-16.0)	(37.8)
Construction (MILCON)	10.3	- 0.8	9.5
Total FY77 Base Year $	637.2	-10.6	626.6
Escalation	454.3	-17.8	436.5
Development (RDTE)	(226.4)	(- 9.0)	(217.4)
Procurement	(218.0)	(- 7.8)	(210.2)
Construction (MILCON)	(9.9)	(- 1.0)	(8.9)
Total Then-Year $	$1091.5	$-28.4	$1063.1*

* Note: The Air Force is restructuring the program due to funding limitations to reflect a revised operational capability.

b. (U) Quantities --			
Development	1	--	1
Procurement	1	--	1
Total	2		2
c. (U) Unit Cost --			
Procurement:			
FY77 Base-Year $	$208.600	- 6.800	201.800
Then-Year $	426.600	-14.600	412.000
Program:			
FY77 Base-Year $	$318.600	- 5.300	313.300
Then-Year $	545.750	-14.200	531.550*

* Note: The Air Force is restructuring the program due to funding limitations to reflect a revised operational capability.

d. (U) Approved Design to Cost Goal: N/A

e. (U) Foreign Military Sales: None

f. (U) Nuclear Costs: None

12. (U) Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.(U) Program Acquisition --			
(1) Cost	1063.1*	1098.2	1063.1*
(2) Quantity	2	2	2
(3) Unit Cost	531.550*	549.100	531.550*
b.(U) Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	90.100	151.000	115.900
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	90.100	151.000	115.900
(2) Quantity	1	1	N/A
(3) Unit Cost	90.100	151.000	N/A

* Note: The Air Force is restructuring the program due to funding limitations to reflect a revised operational capability.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	644.7	426.6	20.2	1091.5
Previous Changes				
Economic	-4.2	+2.7	-.2	-1.7
Quantity	-	-	-	-
Schedule	-3.1	+.3	-	-2.8
Engineering	-	-	-	-
Estimating	+6.0	+1.5	+1.9	+9.4
Other	-	-	-	-
Support	-	+1.8	-	+1.8
Subtotal	-1.3	+6.3	+1.7	+6.7
Current Changes				
Economic	- 1.6	-10.7	+ 0.1	-12.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+ 0.9	+20.8	-3.6	+18.1
Other	-	-	-	-
Support	-10.0	-31.0	-	-41.0
Subtotal	-10.7	-20.9	- 3.5	-35.1
Total Changes	-12.0	-14.6	- 1.8	-28.4
Current Estimate	632.7	412.0	18.4	1063.1 *

* Note: The Air Force is restructuring the program due to funding limitations to reflect a revised operational capability.

(FY 1977 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	418.3	208.6	10.3	637.2
Previous Changes				
Quantities	-	-	-	-
Schedule	-1.7	-1.6	-	-3.3
Engineering	-	-	-	-
Estimating	+3.3	+0.6	+1.0	+4.9
Other	-	-	-	-
Support	-	-0.6	-	-0.6
Subtotal	+1.6	-1.6	+1.0	+1.0
Current Changes				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+.5	+11.3	-1.8	+10.0
Other	-	-	-	-
Support	-5.1	-16.5	-	-21.6
Subtotal	- 4.6	- 5.2	- 1.8	-11.6
Total Changes	- 3.0	- 6.8	- 0.8	-10.6
Current Estimate	415.3	201.8	9.5	626.6

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

b. (U) Previous Change Explanations --

RDT&E
- Economic: Revised economic escalation indices
- Schedule: Rephasing of deferred software due to funding shortfalls in early FYs
- Estimating: Adjustment for prior year escalation; refinement of a prior current estimate; increased software development costs

Procurement
- Economic: Revised economic escalation indices
- Schedule: Rephasing of equipment due to funding shortfalls in early FYs
- Estimating: Adjustment for prior year escalation impact
- Support: Rephasing of spares due to FY85 funding cuts; adjustment for prior year escalation impact

MILCON
- Economic: Revised economic escalation indices
- Estimating: Refinement of current estimate and unaccompanied enlisted personnel housing added (UEPH)

c. (U) Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised economic escalation indices (Economic)	N/A	-1.6
Adjustment for prior year escalation (Estimating)	+0.5	+0.9
Delay in the development of the AMS I level test set and the development of test program sets (Support)	-5.1	-10.0
(2) Procurement		
Revised economic escalation indices (Economic)	N/A	-10.7
Adjustment for prior year escalation (Estimating)	+4.2	+8.2
Reduction of Airborne Mission Subsystems (AMS) due to funding constraints (Estimating)	-45.6	-88.0
Revised program office estimate based on latest information increased AMS unit cost (Estimating)	+56.7	+112.6

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

	(Dollars in Millions) Base-Year	Then-Year
Adjustments to refine the mix of previous support and estimating category changes primarily related to the impact of escalation on current and prior years	0	0
o Changes to estimating category (Estimating)	(-4.0)	(-12.0)
o Changes to support category (Support)	(+4.0)	(+12.0)
Deletion of spares due to Congressional cuts in FY85 and FY86 (Support)	-20.5	-43.0
(3) MILCON Revised economic escalation indices (Economic)	N/A	+0.1
Deletion of an above-ground PLSS European maintenance facility (Estimating)	-1.8	-3.6

d. (U) References:

Development Estimate: PMD R-P2063(17)64742F/27244F, dated 31 Jan 83, subject Precision Location Strike System.

Approved Program: PMD R-P2063(17)64742F/27244F, dated 31 Jan 83, subject Precision Location Strike System.

14. (U) Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

Initial SAR/Development Estimate (DE) to Current Estimate (CE)

PAUC (Initial SAR/DE)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
545.750	-6.950	0.000	-1.400	0.000	+13.750	0.000	-19.600	-14.200	531.550*

* Note: The Air Force is restructuring the program due to funding limitations to reflect a revised operational capability.

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

a. (U) RDT&E --

Lockheed Missiles and Space Co., Inc.
Austin, Texas
F33657-77-C-0330, CPIF
Award: September 1977
Definitized: September 1977

Initial Contract Price		
Target	Ceiling	QTY
$120.1	--	1

Current Contract Price		
Target	Ceiling	Qty
$378.3 (Ch-1)	--	1

Estimated Price at Completion	
Contractor	Program Manager
$541.3	$489.0 (Ch-2)

(Ch-1) Increase in target price from previous value of $377.1 is net effect of contract budget base increases to incorporate PLSS Generic Guided Weapon, Teletypewriter Procurement, SNS Lightning Protection and High Density Digital Recorder and decrease for Atlas Language Conversion, Container Retrieval, and F-16 Phase II.

(Ch-2) Increase in Program Manager's Price at Completion from previous value of $431.7 is due to cost growth to cover integration problems and extended flight test schedule through FY 86.

The contractor's estimated price at completion currently includes approximately $51M of effort contained in undistributed budget which has been on stop work. When contract modifications are definitized, these efforts will fall out and lower the contractor's EAC. Progam Manager's estimated price at completion for the existing contract is based on the current effort to cap the government's liability under this contract.

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

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$- 13.1	$ - 7.8
Cumulative Variances to Date (10/31/85)	$- 34.2	$ - 1.4
Net Change	$- 21.1	$ + 6.4

The additional cost variance incurred since the last report is attributed to continued contractor testing problems (including software integration and design changes) and heavy overtime usage to improve schedule and establish cost control requirements. Testing problems have now delayed the planned completion of the DTE phase of DTE/IOTE testing (the culmination of the baseline contract effort) 24 months. A revised Over-Target Baseline (OTB) was formally incorporated into the Oct 85 CPR to cover variances generated by the integration schedule extension. LMSC and the program office are negotiating a CAP to the FSD program.

PLSS

	Initial Contract Price		
	Target	Ceiling	Qty
Softech Inc., Fairborn, Ohio F33657-78-C-0037, CPFF Award: October 1977 Definitized: October 1977	$ 3.9	N/A	N/A

Current Contract Price			Estimated Price at Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$ 13.3	N/A	N/A	$ 15.5	$ 15.5 (Ch-1)

(Ch-1) Increase in Program Manager's Estimated Price at Completion from previous value of $14.0 covers incorporation of D/OPART and PPIDA as well as additional anticipated variance at completion.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ - .189	$ - .102
Cumulative Variances to Date (11/30/85)	$ - .186	$ - .026
Net Change	$ + .003	$ + .076

Cost and Schedule variances have improved slightly since the last report. Improvements in areas that had previously been significant cost drivers (D/OPART, Instrumentation Software Development, and Special Studies) are attributed to a learning curve effect of applying additional staffing. Training and support costs have been overcome and the personnel are able to accomplish more. The IVV contract is scheduled to be completed in July 1986. Variances are covered within the existing budget.

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

a.(U) Program Status --
(1) Percent Program Completed: 75% (15/20)
(2) Percent Program Cost Appropriated: 82.8% ($880.8/$1063.1*)

* Note: The Air Force is restructuring the program due to funding limitations to reflect a revised operational capability.

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

Appropriation	Current, Prior Yrs (FY72-86)	Budget Year (FY87)	Balance to Complete FYDP (FY88-91)	Beyond FYDP (FY92-93)	Total
RDTE	584.0	26.6	22.1	0	632.7
Procurement 3010	163.0	82.4	7.4	0	252.8
Procurement 3080	115.4	33.5	10.3	0	159.2
MILCON	18.4	0	0	0	18.4
Total	880.8	142.5	39.8	0	1063.1*

* Note: The Air Force is restructuring the program due to funding limitations to reflect a revised operational capability.

c. (U) Annual Summary --

Fiscal Year	Qty	FY77 Base-Year Dollars			Then-Year Dollars			Escl Rate(1)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		(%)
Appropriation: RDTE								
1972				0.6			0.4	
1973				1.0			0.8	
1974				4.5			3.7	
1975				3.3			3.0	
1976				6.5			6.3	
197T				0.9			0.9	
1977				12.8			13.6	
1978				27.7			30.5	7.3
1979				65.5			79.1	8.4
1980				9.2			12.3	9.4
1981				42.2			62.7	11.9
1982				50.9			80.9	9.2
1983				47.2			78.5	4.9
1984				42.1			72.9	3.8
1985				43.0			76.9	3.6
1986				33.2			61.5	3.2
1987				13.8			26.6	4.1
1988				5.6			11.1	3.9
1989				5.3			11.0	3.4
1990				--			--	2.9
Subtotal				415.3			632.7	

Fiscal Year	Qty	FY77 Base Year Dollars			Then-Year Dollars			Escl Rate (1)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		(%)
APPROPRIATION: PROCUREMENT (3010)								
1982				1.0			1.7	9.6
1983				1.0			1.8*	9.0
1984			4.5	4.5			8.8	8.0
1985		1.1	42.8	45.9			94.3	4.1
1986	1.0**		12.3	26.3			56.4	4.1
1987			23.9	36.8			82.4	4.1
1988				1.0			2.4	3.9
1989				0.7			1.6	3.4
1990				0.7			1.7	2.9
1991				0.7			1.7	2.3
Subtotal	1.0	1.1	83.5	118.6			252.8	

* In TR-1 PE 27215F

** The PLSS is a unique electronic combat system. The total buy of two systems includes assets purchased during FSD. Production funding buys additional complete subsystems.

Appropriation: Procurement (3080)								
1984			10.2	10.2			18.3*	3.8
1985		3.8	27.8	34.0			63.4	3.6
1986			8.0	17.4			33.7	3.2
1987			12.8	16.7			33.5	4.1
1988				2.3			4.7	3.9
1989				0.8			1.8	3.4
1990				0.9			1.9	2.9
1991				0.9			1.9	2.3
Subtotal		3.8	58.8	83.2			159.2	

Precision Location Strike System, December 31, 1985

Fiscal Year	Qty	FY77 Base-Year Dollars			Then-Year Dollars			Escl Rate (1)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		(%)
Appropriation: MILCON								
1985				7.9			15.2	3.6
1986				1.6			3.2	3.2
Subtotal				9.5			18.4	
Total		4.9	142.3	626.6			1063.1*	

* Note: The Air Force is restructuring the program due to funding limitations to reflect a revised operational capability.

(1) Since outlay rates are not shown, the escalation rates cannot be used to verify the composite index.

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

d. (U) Obligations and Expenditures --

Fiscal Year	Then-Year Dollars		
	Total	Obligated	Expended
Appropriation: RDTE (1)			
1972	0.4	0.4	0.4
1973	0.8	0.8	0.8
1974	3.7	3.7	3.7
1975	3.0	3.0	3.0
1976	6.3	6.3	6.3
1977	0.9	0.9	0.9
1977	13.6	13.6	13.6
1978	30.5	30.5	30.5
1979	79.1	79.1	79.1
1980	12.3	12.3	12.3
1981	62.7	62.7	62.7
1982	80.9	80.9	80.9
1983	78.5	78.5	77.8
1984	72.9	72.9	70.3
1985	76.9	75.8	62.6
1986	61.5	11.9	0.1
To Complete	48.7	N/A	N/A
Total	632.7	533.3	505.0

(1) Reflects program office records as of 15 Jan 86.

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: Procurement 3010 (1)			
1982	1.7	1.7	1.7
1983	1.8	1.8	1.6
1984	8.8	8.8	0
1985	94.3	30.0	0
1986	56.4	0	0
To Complete	89.8		
Total	252.8	42.3	3.3

(1) Reflects program office records as of 15 Jan 86.

Appropriation: Procurement 3080(1)			
1984	18.3	18.3	4.9
1985	63.4	2.4	0.6
1986	33.7	0	0
To Complete	43.8	N/A	N/A
Total	159.2	20.7	5.5

(1) Reflects program office records as of 15 Jan 86.

Appropriation: MILCON (1)			
1985	15.2		
1986	3.2		
Total	18.4		

(1) Reflects program office records as of 15 Jan 86.

17. (U) Production Rate Data: N/A

PLSS is not a typical unit production program. There is only one unit to be procured; therefore, production rate data is not applicable.

18. (U) Operating and Support Costs: Not Applicable. PLSS initial SAR was submitted 31 December 1983, prior to the first quarter FY 1985.

© N-26 PHALANX CIWS

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SAR-85-045

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

PROGRAM: PHALANX CIWS

AS OF DATE: December 31, 1985*

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1. Designation and Nomenclature (Popular Name): MK 15/Close-In Weapon System (PHALANX CIWS)

2. DoD Component: Department of the Navy

3. Responsible Office and Telephone Number:

PHALANX Close-In Weapon System
Program Office (PMS 413)
Naval Sea Systems Command

PM: CAPT Paul Sovey, USN
ASSIGNED: Feburary 14, 1984
AUTOVON: 222-7142

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DEPARTMENT OF DEFENSE

4. Program Elements/Procurement Line Items:

RDT&E:	PE 64358N				
WPN:	24229 Subhead 84E2		APPN 1507	ICN	2
SCN:	Ship Class:	BB	PE: 24220N	APPN 1611	
		LSD/LHD	24411N		
		FFG	24224N		
		CG's & DDG's	24292N		
		CVN/CV SLEP	24112N		

5. Related Programs: FFG-7, CG 47, LSD-41, LHD, DDG 51, CVN-70, and BB-61 Classes are SAR reportable related programs. CV-62, AE, AO, AO JUMBO, LPDX/LKDX, LPD SLEP, AOE-6, and 989 are related programs not included in other SARS.

AS AMENDED

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~~Declassify on: 31 December 1992~~

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OASD(PA) DPCISR 86-S-0880

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6. Mission and Description: CIWS is designed as a fast reaction terminal defense against low-flying high speed anti-ship missiles penetrating outer Fleet defenses. CIWS is an automatic self-contained unit consisting of search and track radars, digitalized fire control system and a 20 MM M61A1 gun all mounted in a single above deck structure requiring minimum interface with other ship systems. CIWS automatically detects, evaluates, tracks, and engages threats and then returns to search mode ready to another target. Its operations sequence is as follows: the search radar detects and evaluates a potential target by comparing measured target parameters (speed and angle of approach) with data stored in the fire control computer. After the target is declared a threat, it is handed over to the track radar. The system begins firing a stream of projectiles timed so that the projectiles arrive in the vicinity of the target when the target reaches an optimum engagement range. Thereafter, the fire control radar compares the incoming target position with the centroid of the stream of projectiles and makes any corrections required to bring it onto the target. This system does not replace an existing major weapon system, but provides a close range self defense capability that is otherwise unavailable to the fleet.

7. Program Highlights:

a. Significant Historical Developments -- Three Expanded PHALANX Introduction Commitment (EPIC) flag level review panels have convened to improve introduction of PHALANX to the fleet. SECNAV directed acceleration of PHALANX installation in deploying ships was successfully conducted and continues. Spares support was smoothly transitioned to SPCC and ACIM sparing is being implemented. Comprehensive successful testing against real world ASM threats was conducted and results incorporated into the design. Present Configuration (Block 0) was not designed to meet high speed diving threats, and introduction of Block I configuration is necessary to meet these threats. CTE of PHALANX Block I was conducted during the final quarter of 1984. NTE and a comprehensive DT/OT were accomplished in the spring and summer of 1985. ALP for Block I production under the FY 1986 Production contract has been requested. The FY 86 production buy will be Block I as directed by Congress.

b. Significant Developments Since Last Report -- Successful completion of a Sponsor Program Review to request Authorization for Limited Production (ALP).

Two month contract suspension of General Dynamics from 3 December 1985 to 2 February 1986.

Completion of CIWS second source study.

The Phalanx CIWS Program is meeting all mission requirements.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: None. DCP #88 Revision 1, approved 17 November 1977.

9. Schedule:

a. Milestones --

Milestones	Production Estimate/ Approved Program	Current Estimate
Start Engineering Dev	Dec 70/Dec 70	Dec 70
Complete At-Sea Test #1 Prototype	Mar 74/Mar 74	Mar 74
Complete At-Sea Operational Test and Evaluation	Jul 77/Jul 77	Jul 77
DSARC II	Sep 77/Sep 77	Sep 77
Production Contract Award	Dec 77/Dec 77	Dec 77
Initial Operational Capability on CV-66 First Production Run	Feb 80/Feb 80	Feb 80
Block I Testing Began	Jun 80/Jun 80	Jun 80

(b)(1) [redacted]

b. Previous Change Explanations --

c. Current Change Explanations -- None.

(b)(1) [redacted]

d. References --

Production Estimate: DCP #88, Rev 1, dated 17 November 1977.

Approved Program: Phalanx CIWS Acquisition Plan No. 31-85 Rev A dated 1 June 1985, approved 13 September 1985.

FY 1987 President's Budget.

10. Technical/Operational Characteristics:

a. Technical --	Prod Estimate/ Appr Program	Demonstrated Performance	Current Estimate
(b)(1)			

e. References --

Production Estimate: DCP #88, Rev 1, dated 17 November 1977.

Approved Program: Test and Evaluation Master Plan No. 142 Rev 2 (Block 0) dated 6 March 1980.
FY 1987 President's Budget

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost --	Production Estimate	Changes	Current Estimate
Development	$ 154.8	$ 96.1	$ 250.9
Procurement	2021.4	266.8	2288.2
M61A1 Gun/Barrel	(22.5)	(-0.9)	(21.6)
Weapons Group	(1518.0)	(-61.0)	(1457.0)
Other (Proc Support)	(212.8)	(312.5)	(525.3)
TOTAL SAILAWAY	(1753.3)	(250.6)	(2003.9)
Peculiar Support	(45.3)	(-0.7)	(44.6)
Initial Spares	(222.8)	(16.9)	(239.7)
Construction	-	-	-
Total: (Constant FY 84$)	$ 2176.2	$ 362.9	$ 2539.1
Escalation	305.5	(-348.5)	-43.0
Development	(3.2)	(-55.7)	(-52.5)
Procurement	(302.3)	(-292.8)	(9.5)
Construction	-	-	-
Total Then-Year $	$ 2481.7	$ 14.4	$ 2496.1
b. Quantities --			
Development (RDT&E)	3	0	3
Procurement	617	-2	615
Total	620	-2	618
c. Unit Cost --			
Procurement:			
FY 84 Base-Year $	3.276	0.445	3.721
Then-Year $	3.766	-0.030	3.736
Program:			
FY 84 Base-Year $	3.510	0.599	4.109
Then-Year $	4.003	0.036	4.039

d. Approved Design to Cost Goal -- No design-to-cost goals apply to the CIWS program, as this program was initiated in 1966, prior to design-to-cost implementation.

e. Foreign Military Sales --

Australia:	6
Israel:	14
Japan:	45
Pakistan:	7
Taiwan:	2
United Kingdom:	17

f. Nuclear Costs -- None.

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

		Current Year		Budget Year
		SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a.	Program Acquisition --			
	(1) Cost	2496.1	2579.3	2496.1
	(2) Quantity	618	619	618
	(3) Unit Cost	4.039	4.167	4.039
b.	Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost	217.5	212.1	161.6
	Less CY Adv Proc	-	-	-
	Plus PY Adv Proc	-	-	-
	Net Total	217.5	212.1	161.6
	(2) Quantity	56	52	39
	(3) Unit Cost	3.884	4.079	4.144

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	158.0	2323.7	-	2481.7
Previous Changes:				
Economic	-42.5	-153.0	-	-195.5
Quantity	-	-6.9	-	-6.9
Schedule	-	+12.2	-	+12.2
Engineering	-	146.6	-	+146.6
Estimating	+69.4	+36.8	-	+106.2
Other	-	-	-	-
Support	-	+35.0	-	+35.0
Subtotal	+26.9	+70.7	-	+97.6
Current Changes:				
Economic	-0.8	-103.5	-	-104.3
Quantity	-	-5.4	-	-5.4
Schedule	-	3.3	-	3.3
Engineering	-	39.8	-	39.8
Estimating	+14.3	-24.8	-	-10.5
Other	-	-	-	-
Support	-	-6.1	-	-6.1
Subtotal	+13.5	-96.7	-	-83.2
Total Changes	+40.4	-26.0	-	+14.4
Current Estimate	198.4	2297.7	-	2496.1

12 Cost Variance Analysis:

(FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate (PdE)	154.8	2021.4	-	2176.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-5.5	-	-5.5
Schedule	-	-	-	-
Engineering	-	+113.4	-	+113.4
Estimating	+84.9	+130.3	-	+215.2
Other	-	-	-	-
Support	-	+21.4	-	+21.4
Subtotal	+84.9	+259.6	-	+344.5
Current Changes:				
Economic	-	-	-	-
Quantity	-	-2.7	-	-2.7
Schedule	-	-	-	-
Engineering	-	+33.9	-	+33.9
Estimating	+11.2	-18.3	-	-7.1
Other	-	-	-	-
Support	-	-5.7	-	-5.7
Subtotal	+11.2	+7.2	-	+18.4
Total Changes	+96.1	+266.8	-	+362.9
Current Estimate	250.9	2288.2	-	2539.1

b. Previous Change Explanations --

RDT&E

Additional requirements to support OPEVAL, lethality enhancement, investigate advanced high velocity applications, improve ECM capability, and coordinate multi-mount and combat systems interfaces

PROCUREMENT

Economic: Revised 1/85 escalation rates

Quantity: Reduction of 2 units by NAVCOMPT FY 85 - FY 87

Schedule: Addition of program year and production stretch out

Estimating: Additional requirements in configuration management and quality assurance

Support: Increased requirements in logistic support products

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
Revised 1/86 escalation rates (Economic)	N/A	-0.8
Revised cost estimates to improve capability to counter lower altitude, high velocity targets with smaller cross sections (Estimating)	+11.2	+14.3
(2) PROCUREMENT		
Revised 1/86 escalation rates (Economic)	N/A	-103.5
Requirements for 8 additional WPN systems and reduce SCN units for net reduction of 1 unit (Quantity)	-2.7	-5.4
Move 5 WPN units to FY 88 due to Fleet Modernization Program (FMP) Scheduling of ship overhauls (Schedule)		
SCN program stretchout due to planned addition of program years (Schedule)	-	+3.3
Application of Block I upgrade, consisting primarily of high search elevation angle radar and increased magazine capacity, to fiscal year 1986 procurement. (Engineering)	+33.9	+39.8
Budget reductions require out-year hardware costs to be reduced (Estimating)	-18.3	-24.8
Reduced support costs as result of lower procurement quantity requirements (Support)	-5.7	-6.1

d. References --

Production Estimate: - DCP #88, Rev 7, dated 17 November 1977.

14. Program Acquisition Unit Cost (PAUC) History: (Millions of then-year dollars)

a. Initial SAR Estimate to Current Baseline Estimate -- N/A

b. Current Baseline Estimate to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
4.003	-0.485	-0.008	0.025	0.311	0.146	0.047	0.000	0.036	4.039

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

a. PROCUREMENT --

FY 83 Production
General Dynamics
Pomona, California
N00024-83-C-7040, FPI
Definitized: 30 September 1983

Initial Contract Price		
Target	Ceiling	Qty
$180.2	$194.7	77

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$192.3	$205.1	77	$197.2	$199.0
			Cost Variance	Schedule Variance
Previous Cumulative Variances: None.				
Cumulative Variances To Date:			-18.0	-0.900

Explanation of Change: Unfavorable variances due to increased emphasis in reliability and maintainability fixes of the system. The subsequent application review (SAR) is scheduled for 3/86. A detailed analysis of this contract will be performed at that time.

Reference: CPR dated December 1985.

FY 84 Production
General Dynamics
Pomona, California
N00024-84-C-7000, FPI
Definitized: 1 February 1985

Initial Contract Price		
Target	Ceiling	Qty
$178.6	$193.8	84

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$178.6	$193.8	84	$178.6	$178.6
			Cost Variance	Schedule Variance
Previous Cumulative Variances: None.				
Cumulative Variances To Date:			-	-

Explanation of Change: None.

Reference: CPR dated December 1985.

16. Program Funding Summary: (Current Estimate in Millions of Dollars)

a. Program Status --
(1) Percent Program Completed: 71.4% or 10 of 14 years

(2) Percent Program Cost Appropriated: 75.8% or $1888.7/$2491.6

b. Appropriation Summary --

Appropriation	(Then-Year Dollars in Millions) Current & Prior Yrs (FY77-86)	Budget Year (FY87)	Balance FYDP (FY88-92)	To Complete Beyond FYDP (FY93)	Total
RDT&E	143.9	7.5	47.0	-	198.4
WPN	1209.8	106.4	62.7	-	1378.9
SCN	535.0	55.2	328.6	-	918.8
Total	1888.7	169.1	438.3	-	2496.1

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars Sailaway Nonrec	Sailaway Rec	Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl Rate (%)
			Appropriation: RDT&E					
1978	3			183.9			123.4	6.8
1979				5.3			3.9	8.4
1980				2.6			2.1	10.6
1981				2.3			2.1	10.6
1982				1.5			1.4	7.6
1983				1.3			1.3	4.9
1984				1.2			1.2	3.8
1985				3.5			3.7	3.6
1986				4.4			4.8	3.2
1987				6.6			7.5	4.1
1988				9.9			11.7	3.9
1989				9.9			12.1	3.4
1990				10.7			13.3	2.9
1991				7.8			9.9	2.3
Subtotal	3			250.9			198.4	

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
				Appropriation: WPN				
7T			48.9	48.9			26.8	3.56
1977			43.0	43.0			25.0	3.78
1978	21		106.1	119.1			77.4	6.80
1979	19		70.6	88.6			63.4	8.72
1980	51		146.1	165.7			130.7	11.80
1981	52		155.2	177.3			156.0	11.60
1982	49		142.6	174.0			166.3	14.30
1983	37		104.4	120.3			122.1	9.00
1984	40		115.9	124.4			131.2	8.00
1985	49		148.7	153.3			170.9	4.10
1986	39		117.9	120.9			140.0	4.10
1987	27		86.6	88.8			106.4	4.10
1988	9		34.8	35.9			44.3	3.90
1989	4		13.7	14.4			18.2	3.40
1990			0.0	0.2			0.2	2.90
Subtotal	397		1334.5	1472.8			1378.9	

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

Fiscal Year	Qty	FY 84 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
				Appropriation: SCN				
1978	10		42.8	52.5			45.2	8.2
1979	8		26.4	32.4			28.6	9.6
1980	15		35.1	42.8			40.9	9.8
1981	15		41.0	50.1			49.8	9.6
1982	15		53.0	64.4			66.3	7.5
1983	22		72.2	87.3			92.0	3.8
1984	16		44.0	53.5			58.9	3.6
1985	15		54.6	66.6			75.8	2.1
1986	17		54.2	65.8			77.5	4.1
1987	12		37.2	45.5			55.2	4.1
1988	17		51.7	63.0			78.6	3.9
1989	21		62.3	76.0			97.2	3.4
1990	16		46.5	56.8			74.2	2.9
1991	17		48.0	58.7			78.6	2.3
Subtotal	218		669.4	815.4			918.8	
Total	618		2003.9	2539.1			2496.1	

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: RDT&E		
1978 and Prior	123.4	121.0	121.0
1979	3.9	3.9	3.9
1980	2.1	2.1	2.1
1981	2.1	2.1	2.1
1982	1.4	1.4	1.4
1983	1.3	1.3	1.3
1984	1.2	1.2	1.1
1985	3.7	3.7	3.5
1986	4.8	1.5	.03
To Complete	54.5		
Total	198.4	138.2	136.4
	Appropriation: WPN		
197T	26.8	26.8	26.8
1977	25.0	25.0	25.0
1978	77.4	77.4	75.7
1979	63.4	63.4	58.1
1980	130.7	130.7	118.8
1981	156.0	156.0	146.0
1982	166.3	166.3	158.9
1983	122.1	122.1	109.7
1984	131.2	124.6	85.0
1985	170.9	103.3	23.0
1986	140.0	.6	-
To Complete	169.1		
Total	1378.9		

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
	Appropriation: SCN		
1977		18.7	18.7
1978	45.2	53.5	52.9
1979	28.6	62.3	61.6
1980	40.9	34.7	31.2
1981	49.8	47.8	39.8
1982	66.3	37.4	39.1
1983	92.0	48.0	28.6
1984	58.9	40.2	15.8
1985	75.8	6.8	1.2
1986	77.5	-	-
To Complete	383.8	-	-
Total	918.8	349.4	288.9

17. Production Rate Data:

a. Annual Production Rates -- (Note: The attainment of the maximum production rate may be limited by expected participate of FMS customers.)

Fiscal Year	Production Rates (Quantity/Year)		
	Production Estimate	Current Estimate	Maximum
1978	22	34	
1979	64	27	
1980	72	66	84
1981	73	67	84
1982	90	64	84
1983	112	59	84
1984		56	84
1985		66	84
1986		56	84
1987		39	84
1988		26	84
1989		25	84
1990		16	84
1991		17	

b. Cost Variance -- N/A.

Item		Production Estimate	Variance (CE less PDE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	2176.2	+362.9	2539.1	+395.5	2143.6
	(TY $)	2481.7	+14.4	2496.1	+735.1	1761.0
PAUC	(BY $)	3.510	+0.599	4.109	+0.640	3.469
	(TY $)	4.003	+0.036	4.039	+1.189	2.850

17. Production Rate Data (Cont'd):

c. Schedule Variance -- N/A.

Item	Production Estimate	Variance (CE less PDE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	7/78	N/A	7/78	N/A	7/78
Duration (in Months)	86	-96	182	69	113
End Date (Mo/Yr)	9/85	N/A	9/93	N/A	11/87

d. Deliverables (Plan/Actual) --

	To Date
RDT&E	3/ 3
SCN	93/ 93
WPN	241/241

18. Operating and Support Costs: N/A

N-26 CIWS

1. PROGRAM FUNDING SUMMARY
SYSTEM: PHALANX CIWS

As of date: December 31, 1984
Base Year: FY 1984

CURRENT ESTIMATE
($ in Millions)

FISCAL YEAR	QTY	BASE-YEAR $ ADV PROC (NONADD)	BASE-YEAR $ NET SAILAWAY (NON-ADD) NONREC	BASE-YEAR $ NET SAILAWAY (NON-ADD) REC	BASE-YEAR $ TOTAL	THEN-YEAR $ TOTAL	THEN-YEAR $ OBLIGATED	THEN-YEAR $ EXPENDED	ESCALATION RATE ($)
APPROPRIATION: RDT&E									
1978 and prior	3	-	-		183.9	123.4	121.0	121.0	-
1979	-	-	-		5.3	3.9	3.9	3.9	-
1980	-	-	-		2.6	2.1	2.1	2.1	-
1981	-	-	-		2.3	2.1	2.1	2.1	-
1982	-	-	-		1.5	1.4	1.4	1.4	7.6
1983	-	-	-		1.3	1.3	1.3	1.3	4.9
1984	-	-	-		1.2	1.2	1.2	1.1	3.8
1985	-	-	-		2.6	2.8	2.8	0.0	3.7
1986	-	-	-		6.9	7.6	-	-	4.4
1987	-	-	-		8.3	9.6	-	-	4.2
1988	-	-	-		8.1	9.7	-	-	4.0
1989	-	-	-		7.9	9.8	-	-	3.7
1990	-	-	-		7.8	10.0	-	-	3.4
TOTAL	3	-	-		$ 239.7	$ 184.9	$ 135.8	$ 132.9	

85 1655

1. PROGRAM FUNDI [redacted]MMARY
SYSTEM: PHALANX CIWS

As of date: December 31, 1984
Base Year: FY 1984

CURRENT ESTIMATE
($ in Millions)

FISCAL YEAR	QTY	BASE-YEAR $ ADV PROC (NONADD)	BASE-YEAR $ NET SAILAWAY (NON-ADD) NONREC	BASE-YEAR $ NET SAILAWAY (NON-ADD) REC	BASE-YEAR $ TOTAL	THEN-YEAR $ TOTAL	THEN-YEAR $ OBLIGATED	THEN-YEAR $ EXPENDED	ESCALATION RATE ($)
APPROPRIATION: WPN									
197T	-	-	-	48.9	48.9	26.8	26.8	26.8	3.56
1977	-	-	-	43.0	43.0	25.0	25.0	25.0	3.78
1978	21	1.6	-	106.1	125.8	81.7	70.1	68.4	6.80
1979	19	-	-	70.6	81.2	58.1	51.4	49.9	8.72
1980	51	-	-	146.1	167.4	132.0	117.2	105.4	11.80
1981	52	-	-	148.1	170.3	149.8	138.7	128.9	11.60
1982	49	-	-	140.6	171.6	164.3	144.7	129.6	14.30
1983	37	-	-	105.1	121.4	124.1	107.9	93.7	9.00
1984	40	-	-	115.1	121.6	131.2	119.0	42.1	8.00
1985	49	-	-	145.7	150.2	170.9	117.5	14.2	4.80
1986	39	-	-	122.7	125.8	150.8	-	-	5.70
1987	32	-	-	103.8	106.1	133.5	-	-	5.50
1988	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-
TOTAL	389	1.6	-	1295.77	$1433.3	$1348.2	918.3	684.0	
APPROPRIATION: SCN									
1978	10	-	-	44.0	$ 54.2	45.0	$ 45.0	45.0	-
1979	8	-	-	26.0	32.0	28.6	28.6	28.6	-
1980	15	-	-	35.9	43.6	41.0	34.6	30.8	-
1981	15	-	-	41.0	50.4	50.0	50.0	41.7	-
1982	15	-	-	52.0	63.5	66.4	38.0	41.8	14.3
1983	22	-	-	69.7	84.3	92.1	52.8	20.5	9.0
1984	11	-	-	33.2	40.4	47.6	41.9	6.7	3.0
1985	19	-	-	57.1	69.6	86.2	8.4	0	4.8
1986	13	-	-	39.2	47.7	61.3	-	-	5.7
1987	21	-	-	63.1	76.9	103.7	-	-	5.5
1988	25	-	-	75.1	91.6	129.5	-	-	5.2
1989	27	-	-	81.2	98.9	146.5	-	-	4.8
1990	26	-	-	78.5	95.5	148.3	-	-	4.4
TOTAL	227	-	-	695.9	$ 848.6	$1046.2	$ 299.3	215.1	

SYSTEM: PHALANX CIWS

As of Date: December 31, 1984
Base Year: FY 84

2. Deliveries (planned and actual) and associated variance analysis:

Deliveries (Planned/Actual)

R&D	Date
R&D	3/3
Procurement	
WPN	221/221
SCN	81/81
Variance Analysis:	NONE

3. Program Acquisition Costs

(Dollars in Millions)

a. Program Aquisition Cost

	(1) Production Estimate (FY 7T - FY 89)	(2) Changes	(3) Current Estimate (FY 7T - FY 90)
Development	$ 154.8	$ +84.9	$ 239.7
Procurement	2,021.4	+259.6	2,281.0
M61A1 Gun/Barrel	(22.5)	(+0.4)	(22.9)
Weapons Group	(1,518.0)	(+102.1)	(1,620.1)
Other(Proc Support)	(212.8)	(+136.7)	(349.5)
TOTAL SAILAWAY	(1,753.3)	(+239.2)	(1,992.5)
Peculiar Support	(45.3)	(+0.3)	(45.6)
Initial Spares	(222.8)	(+20.1)	(242.9)
Construction	-	-	-
Total: (Constant FY84 $)	$ 2,176.2	$ 344.5	$ 2520.7
Escalation	305.5	-246.9	58.6
Development	(3.2)	(-58.0)	(-54.8)
Procurement	(302.3)	(-188.9)	(113.4)
Construction	-	-	-
Total Program Cost	$ 2481.7	$ +97.6	$ 2,579.3

b. Foreign Military Sales: Not Applicable

c. Nuclear Costs: None

SEP 9 0 1985

4. CONTRACTOR COST
SYSTEM: PHALANX CIWS

As of date: December 31, 1984

	Initial Contract Price			Current Contract Price			Price at Completion	
	Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor Estimate	Program Mgrs. EStimate
1. Development	NONE							
2. Procurement								
a. FY 82 Production								
General Dynamics Pomona, California N00024-82-C-7001 (FPI) November 1981	203.4	227.1	72	209.0	232.4	72	209.0	209.0
b. FY 83 Production								
General Dynamics Pomona, California N00024-83-C-7040 (FPI) September 1983	180.2	194.7	77	193.9	194.7	77	193.9	193.9
c. FY 84 Production 1/								
General Dynamics Pomona, California N00024-84-C-7000 (FPI) January 31, 1985	178.6	193.8	84	178.6	193.8	84	178.6	178.6
3. Construction	NONE							

1/ See attached note

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Target and ceiling figures differ from the original December 84 SAR in order to reflect the correct FY 84 Production Contract figures. This contract was reported in error on the original SAR.

N-25 P-3C

SAR-85-044

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)

PROGRAM: P-3C ORION

AS OF DATE: DECEMBER 31, 1985 *

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Designation/Nomenclature (Popular Name): P-3C Patrol Aircraft ASW (ORION)

2. DoD Component: U.S. Navy

3. Responsible Office and Telephone Number:
   P-3 PROGRAM OFFICE
   Naval Air Systems Command
   Washington, D.C. 20361
   CAPT. W.L. VINCENT
   Assigned: January 2, 1986
   AUTOVON 222-3354

4. Program Elements/Procurement Line Items:
   RDT&E: 25605N, 63254N, 64221N, 64201N
   PROCUREMENT: 24251N, 24262N ICN 0185,0188 appn: 1506
   MILCON: 24613N

5. Related Programs: Harpoon, Proteus

CLEARED
FOR OPEN PUBLICATION
APR 2 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

OASD(PA) DFOISR Jan 0900

6. Mission and Description: The P-3C is a patrol type ASW land-based aircraft with equipment to permit detection, identification, tracking, accurate location and destruction of all type of enemy submarines. P-3C's are being procured in time-phased versions which incorporate advances in capability, maintainability and reliability resulting from an ongoing Product Improvement Program. UPDATE I aircraft included increased data processing capacity, OMEGA, and additional tactical display and improved DIFAR. UPDATE II aircraft incorporated Infrared Detection System (IRDS), a Sonobuoy Reference System (SRS), HARPOON missile capability and an improved wide band acoustic tape recorder. UPDATE III production includes the Proteus Advance Signal Processor (ASP), the Advanced Sonobuoy Communications Link (ASCL), the Integrated Acoustic Communications System (IACS), and a new software program to fully exploit the increased acoustic sensor capability. UPDATE IV aircraft will incorporate the UYS-2 Enhanced Modular Signal Processor (EMSP), imaging radar, and improved communications, all connected through a Navy standard data bus to improved displays, controls and distributed data processing.

7. Program Highlights:

a. Significant Historical Developments -- The P-3C aircraft is a direct follow-on of the P-3A and P-3B aircraft. The P-3C has been continuously produced since 1969. It is currently in the third major configuration change since 1969 and a fourth configuration change is planned and is awaiting SECNAV approval for incorporation in FY 1990.

b. Significant Developments Since Last Report -- The fleet has reported a P-3C Mission Capability of 84.12% for operational squadrons for the period extending from Nov 84 thru Oct 85. This value exceeds the latest CNO standards.

Excluded in the Selected Acquisition Reports requirement are the 237 P-3C aircraft procured in FY83 and prior and $4,288.3M of FY83 and prior funding.

The P-3C aircraft has a demonstrated performance of successfully completing its current assigned missions.

8. Decision Coordinating Paper (DCP) Threshold Breaches:
Not Applicable since DCP thresholds were not established for this program.

Schedule

a. Milestones

	Production Estimate/ Approved Program	Current Estimate
Program Initiated	Sep 65	Sep 65
First Prod Contract	Sep 67	Sep 67
Navy Prelim. Eval.	NA	NA
First Prod Flight	Mar 69	Mar 69
Accept First Prod A/C	Feb 69	Feb 69
Begin BIS	Oct 69	Oct 69
End BIS	Jul 70	Jul 70
Fleet Introduction	Sep 69	Sep 69
Navy Support Date	Apr 70	Apr 70
Fleet operational	Jul 70	Jul 70
Update III-IOT&E	Jan 82	Jan 82
Update III Prov. ASU	Mar 82	Mar 82
Update III Fleet Oper.	May 84	May 84
Update IV Fleet Oper.	Aug 91	Aug 91

b. Previous Change Explanations: None

c. Current Change Explanations: None

d. References--

Production Estimate - Master Milestones List dated 23 April 1978
Approved Program - FY87 Congressional Data Sheet dtd Jan 1986

Technical/Operational Characteristics:

a. Technical	Production Estimate/ Approved Program	Demonstrated Performance	Current Estimate
Weight (lbs)			
(1) Empty	66,726	66,726	66,726
(2) Normal T.O.	135,000	135,000	135,000
(3) Max. T.O.	139.760	139,760	139,760
w/Ext. Stores	142,000	142,000	142,000
Dimensions			
(1)Lgth/Wing Span	116'10"/99'8"	116'10"/99'8"	116'10"/99'8"
(2)Ht/Ht folded	33'9"/No Fold	33'9"/No Fold	33'9"/No Fold
b. Operational			
Speed-Combat Wt.			
(1)Cruise(Max.Rnge)	324Kn TAS	324Kn TAS	324Kn TAS
(2)Maximum(Mil.Pwr)	392	392	392
Radius(NM)Full Fuel ASW loading			
(1)Max(no loiter)	2003NM/25000	2003NM/25000	2003NM/25000
(2)Norm(loiter 1/2 flt time 6hr loiter)	875	875	875
Ceil/Alt.			
(1)Serv.Ceil(Cmbt Wt)	30,000	30,000	30,000
(2)Cruise Alt.(low)	1,500	1,500	1,500
(high)	25,000	25,000	25,000
(3)loit Alt(low/high)	1,500	1,500	1,500
Reliability(probab. no fail 12hr mission that will reduce system effectiveness >90% of full effectiveness.)	90% goal	95.59%	90%
Maintainability			
(1)SDLM Cycle	60/50/40 mo	60/50/40 mo	60/50/40 mo
(2)MMH flt hr	16.0 hrs.	14.3 hrs	16.0 hrs

c. Previous Change Explanations: None

d. Current Change Explanations: None

e. References--

Production Estimate: No DCP planning document available
Approved Program - FY87 Congressional Data Sheet dtd Jan 1986

Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost	(1) Production Estimate (FY83-FY92)	(2) Changes	(3) Current Estimate (FY83-FY93)
Development	280.1	+146.9	427.0
Procurement	3453.2	-147.3	3305.9
Flyaway:			
Airframe & Changes	(1477.7)	(- 124.9)	(1352.8)
Engine & Accessories	(253.6)	(- 43.6)	(210.0)
Electronics & Comm	(881.6)	(- 158.2)	(723.4)
Armament & Other GFE	(20.9)	(- 3.5)	(17.4)
TOTAL FLYAWAY	(2633.8)	(- 330.2)	(2303.6)
Ground Support Equip.	(185.7)	(- 2.3)	(183.4)
Training Equip. & Other	(570.1)	(+ 62.2)	(632.3)
TOTAL SUPPORT	(755.8)	(+ 59.9)	(815.7)
Initial Spares	(63.6)	(+ 123.0)	(186.6)
MILCON	2.6	-0-	2.6
TOTAL FY84 Base-Year $	3735.9	- .4	3735.5
Escalation	1287.7	- 415.1	872.6
Development	(51.5)	(+ 29.0)	(80.5)
Procurement	(1236.0)	(- 444.1)	(791.9)
MILCON	(.2)	(-0-)	(.2)
TOTAL THEN-YEAR $	5023.6	- 415.5	4608.1
b. Quantities --			
Development	0	-	0
Production	80	-	80
TOTAL	80	-	80
c. Unit Cost --			
Procurement:			
FY84 Base-Year $	43.2	$ -1.9	$ 41.3
Then-Year $	58.6	$ -7.4	$ 51.2
Program			
FY84 Base-Year $	46.7	$ -0-	$ 46.7
Then-Year $	62.8	$ -5.2	$ 57.6

d. Approved Design to Cost Goal -- Not Applicable

e.. Foreign Military Sales: Sales to date total $701.4M. $195.3M for 10 P-3C,s for Australia; $366.2M for 13 P-3C's for Netherlands; and $139.9M for 3 P-3C's and 5 knock-down P-3C's for Japan. The direct buys will aid in leveling the growth in P-3C airframe contracts; however, no cost savings are predicted at this time.

f.. Nuclear Costs: None

Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

		Current Year SAR Current Estimate	Current Year UCR Baseline Estimate	Budget Year UCR Baseline Estimate
A.	Program Acquistion---			
(1)	Cost	4608.1	5097.4	4608.1
(2)	Quantity	80	80	80
(3)	Unit Cost	57.601	63.718	57.601
B.	Current Procurement---	(FY 1986)	(FY 1986)	(FY 1987)
(1)	Cost	418.5	496.5	414.2
	Less CY Adv Proc	-89.3	- 156.6	-93.2
	Plus PY Adv Proc	+89.0	+ 89.0	+89.3
	Net Total	418.2	428.9	410.3
(2)	Quantity	9	9	9
(3)	Unit Cost	46.467	47.656	45.589

13. Cost Variance Analysis:

A. Summary -- (Current (Then Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate	331.6	4689.2	2.8	5023.6
Previous Changes	-	-	-	-
Economic	- 4.2	- 3.8	-	- 8.0
Schedule	+101.2	+212.0	-	+313.2
Estimating	+31.3	-331.1	-	-299.8
Support	-	+68.4	-	+ 68.4
Subtotal	+128.3	- 54.5	-	+73.8
Current Changes:				
Economic	- 10.3	-319.5	-	-329.8
Estimating	+ 57.9	-355.8	-	-297.9
Support	-	+138.4	-	+138.4
Subtotal	+ 47.6	-536.9	-	-489.3
TOTAL CHANGES	+175.9	-591.4	-	-415.5
Current Estimate	507.5	4097.8	2.8	4608.1

Cost Variance Analysis (Cont'd):
(FY 1984 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Baseline Estimate	280.1	3453.2	2.6	3735.9
Previous Changes	-	-	-	-
Schedule	+ 79.0	+161.2		+240.2
Estimating	+ 27.1	-212.0		-184.9
Support		+ 62.7		+ 62.7
Subtotal	+106.1	+11.9	-	+118.0
Current Changes:				
Estimating	+ 40.8	-292.2		-251.4
Support	-	+133.0	-	+133.0
Subtotal	+ 40.8	-159.2	-	-118.4
Total Changes	+146.9	-147.3	-	- .4
Current Estimate	427.0	3305.9	2.6	3735.5

h. Previous Change Explanations

RDT&E

ECONOMIC -- Revised economic escalation indices
SCHEDULE -- Inclusion of FY90 funding
ESTIMATING Reprogramming of funds for Update IV program

PROCUREMENT

ECONOMIC -- Revised economic escalation indices
SCHEDULE -- Stretch-out of program by one year
ESTIMATING- Reprice of FY87-FY90 as Multi-year Program
SUPPORT -- Stretch-out of Support/Spares Requirements for one year

MILCON: None

Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base Year $	Then Year $
(1) RDT&E		
Revised Jan 86 economic escalation rates(ECON)	N/A	-10.3
TOTAL ESTIMATING	+40.8	+57.9
Inclusion of FY91 RDT&E funding (EST)	(+ 63.5)	(+ 81.1)
Congressional Reductions; Cancellation of Avionics Improvement Programs (EST)	(- 22.7)	(- 23.2)
(2) PROCUREMENT		
Revised Jan 86 economic escalation rates(ECON)	N/A	-319.5
Congressional Reductions; Cancellation of the Multi-Year Program; Straight-lining of Airframe/CFE costs FY86-FY93 (EST)	-292.2	-355.8
Increased support/Spares Requirements for Update IV (SUPT)	+133.0	+138.4
(3) MILCON		

d. References --

Production Estimate: FY 1986 Congressional Data Sheets dated Jan 1985
Current Estimate: FY 1987 Congressional Data Sheets dated Jan 1986.

Program Acquisition Unit Cost (PAUC) History:

A. Initial SAR Estimate to Current Baseline Estimate

PAUC (Initial SAR Est.)	Changes (Then Year Dollars in Millions)								PAUC (Baseline Estimate)
	ECON	QTY	SCH	ENG	EST	SPT	Other	Total	
62.795	-	-	-	-	-	-	-	-	62.795

B. Current Baseline Estimate to Current Estimate:

PAUC (Baseline Estimate)	Changes (Then Year Dollars in Millions)								PAUC (Current Estimate)
	ECON	QTY	SCH	ENG	EST	SPT	Other	Total	
62.795	-4.223	-	+4.929	-	-8.485	+2.585	-	-5.194	57.601

15. Contract Information: (Then Year Dollars in Millions)

	Initial Contract Price Target	Ceiling	Qty
A. RDT&E: None			
B. PROCUREMENT			
AIRFRAME			
Lockheed California Co.			
N0001983-C-0017 FFP,	86.1	N/A	5
AWARD: DEC 1983			
Definitized: Aug 1984			

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
86.1	N/A	5	86.1	86.1

. Variance Analysis: FFP Contract

15. Contract Information (Cont'd) (Then-Year Dollars in Millions)

PROCUREMENT (cont'd)

	Initial Contract Price Target	Ceiling	Qty
AIRFRAME			
Lockheed California Co. N0001984-C-0008 FFP, AWARD: DEC 1984 Definitized: FEB 1986	92.1	92.1	6

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
164.4	N/A	9	164.4	164.4

Variance Analysis: FFP Contract

ENGINE				
General Motors Corp. Allison Div. N0001984-C-2243 FFP, AWARD: MAR 1985 Definitized: FEB 1986	18.9	N/A	36	

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
18.9	N/A	36	18.9	18.9

2. Variance Analysis: FFP Contract

16. Program Funding Summary: (Current Estimate in Millions of Dollars)

a. Program Status --

(1) Percent Program Completed: 36.4% (4/11)

(2) Percent Program Cost Appropriated: 27.11% ($1249.4/4608.1)

b. Appropriation Summary --

Appropriation	Current & Prior Yrs. (FY83-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92-93)	Total
RDT&E	66.9	96.9	343.7	-	507.5
PROCUREMENT	1,179.7	414.2	1,836.9	667.0	4,097.8
MILCON	2.8	-	-	-	2.8
L	1,249.4	511.1	2,180.6	667.0	4,608.1

Program Funding Summary: (Current Estimate in Millions of Dollars)

Fiscal Year	Qty	FY84 Base-Year Dollars FLYAWAY Non-Rec	FLYAWAY Rec	Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl Rate %
Appropriation: RDT&E								
1984	-	-	-	8.7	-	-	8.9	4.3
1985	-	-	-	23.5	-	-	24.9	3.6
1986	-	-	-	30.2	-	-	33.1	3.2
1987	-	-		85.0	-	-	96.9	4.1
1988	-	-		69.8	-	-	82.4	3.9
1989	-	-		83.4	-	-	101.5	3.4
1990	-	-		63.0	-	-	78.7	2.9
1991	-	-		63.4	-	-	81.1	2.3
Total	-	-		427.0	-	-	507.5	

Program Funding Summary (Cont'd): (Current Estimate in Millions)

Fiscal Year	Qty	FY84 Base-Year Dollars FLYAWAY Non-Rec	FLYAWAY Rec	Total	Then-Year Dollars Advance Proc Debit	Advance Proc Credit	Total	Escl Rate %
			Appropriation: Procurement					
1983	-	-	-	45.6	48.7	-	48.7	4.6
1984	5	-	145.2	274.2	75.5	48.7	296.7	5.6
1985	9	-	258.6	370.3	89.0	75.5	415.8	4.1
1986	9	5.1	260.5	359.1	89.3	89.0	418.5	4.1
1987	9	15.3	255.3	343.6	93.2	89.3	414.2	4.1
1988	9	1.0	251.0	260.1	22.1	93.2	321.6	3.9
1989	9	71.1	247.3	395.8	29.4	22.1	502.0	3.4
1990	9	-	236.1	273.2	25.6	29.4	354.8	2.9
1991	9	-	241.0	496.0	26.8	25.6	658.5	2.3
1992	9	-	237.9	333.7	8.0	26.8	452.9	2.3
1993	3	-	78.3	154.3	-	8.0	214.1	2.3
Subtotal	80	92.5	2211.2	3305.9	507.6	507.6	4097.8	
			Appropriation: Milcon					
1984	-	-		1.3	-	-	1.4	4.3
1985	-	-		1.3	-	-	1.4	3.6
Subtotal	-	-		2.6	-	-	2.8	
Total	80			3735.5	-	-	4608.1	

16. Program Funding Summary (Cont'd)

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions) Total	Obligated	Expended
	Appropriation: RDT&E		
1984	8.9	8.9	8.1
1985	24.9	24.9	12.3
1986	33.1	15.1	.5
To Complete	440.6	N/A	N/A
Total	507.5	48.9	20.9
	Appropriation: Procurement		
1983	48.7	48.7	48.4
1984	296.7	278.4	202.0
1985	415.8	291.8	116.5
	418.5	-	-
To Complete	2,918.1	N/A	N/A
Total	4,097.8	618.9	366.9
	Appropriation: MILCON		
1984	1.4	1.4	1.4
1985	1.4	1.4	1.4
Total	2.8	2.8	2.8

17. Production Rate Data:

FISCAL YEAR	DEVELOPMENT ESTIMATE	PRODUCTION ESTIMATE	CURRENT ESTIMATE	MAXIMUM
1984	-	5	5	24
1985	-	9	9	24
1986	-	9	9	24
1987	-	9	9	24
1988	-	8	9	24
1989	-	8	9	24
1990	-	8	9	24
1991	-	9	9	24
1992	-	9	9	24
1993	-	6	3	24

b. Cost Variance -- Dollars in Millions

ITEM		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max.)	Maximum
Prog Acq Cost	(BY$)	3735.9	- .4	3735.5	- 644.7	3090.8
	(TY$)	5023.6	- 415.5	4608.1	-1,332.9	3275.2
PAUC	(BY$)	46.7	-	46.7	- 8.1	38.6
	(TY$)	62.8	- 5.2	57.6	- 16.7	40.9

c. Schedule Variance --

	Production Estimate	Variance (CE less PdE	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	10/82	-	10/82	-	10/82
Duration (in Months)	144	-	144	-	60
End Date (Mo/Yr)	9/94	-	9/94	-	9/88

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	0/0
PROCUREMENT	4/4

Operating & Support Costs: N/A

N-25 P-3C

SEP 06 1985

DIRECTOR OF FOREIGN INFORMATION AND SECURITY REVIEW (FOIA) DEPARTMENT OF DEFENSE

Program Funding Summary
SYSTEM: P-3C

AS OF DATE: December 31, 1984
BASE YEAR: FY 1984

CURRENT ESTIMATE
($ in millions)

FISCAL YEAR	QTY	BASE-YEAR DOLLARS ADV PROC (NON-ADD)	FLYAWAY (NON-ADD) NON-REC	FLYAWAY (NON-ADD) REC	TOTAL	THEN YEAR DOLLARS TOTAL	OBLIGATED	EXPENDED	ESCALATION RATE (%)
APPROPRIATION: RDT&E									
1984	-	-	-		8.8	9.0	8.9	6.8	4.3
1985	-	-	-	-	28.1	29.8	21.9	7.4	3.7
1986	-	-	-	-	44.0	48.7	-	-	4.4
1987	-	-	-	-	63.5	73.1		-	4.2
1988	-	-	-	-	83.7	100.1	-	-	4.0
1989	-	-	-	-	79.1	98.0	-	-	3.8
1990	-	-	-	-	79.0	101.2	-	-	3.4
TOTAL	-	-	-	-	386.2	459.9	30.8	14.1	
APPROPRIATION: PROCUREMENT									
1983	-	46.7		-	46.7	50.3	50.0	47.5	4.6
1984	5	74.3	-	144.7	278.3	303.9	260.6	166.3	5.6
1985	9	74.4	-	269.6	360.0	413.1	250.3	42.4	4.8
1986	9	124.7	1.9	272.5	409.0	496.5	-	-	5.7
1987	9	108.6	14.6	261.1	383.8	488.3	-	-	5.5
1988	8	97.3	1.0	239.2	345.0	459.1	-	-	5.2
1989	8	89.3	5.9	241.7	311.0	432.0	-	-	4.8
1990	8	91.6	40.7	240.8	350.0	505.8	-	-	4.4
1991	9	44.8	-	303.9	346.0	515.8	-	-	4.4
1992	9	45.0	-	309.0	379.8	578.8	-	-	4.4
1993	6	-	-	235.0	255.5	391.1	-	-	4.4
TOTAL	80	796.9	67.1	2517.5	3465.1	4634.7	560.9	256.2	
APPROPRIATION: CONSTRUCTION									
1984	-	-	-	-	1.3	1.4	1.4	1.4	4.3
1985	-	-	-	-	1.3	1.4	1.4	.9	3.7
TOTAL	-	-	-	-	2.6	2.8	2.8	2.3	

85 1654

PROGRAM SUMMARY
SYSTEM: P-3C

PLANNED DELIVERIES
(Planned and Actual)

	TO DATE
R & D	0/0
Procurement	0/0

Program Acquisition Costs
SYSTEM: P-3C

AS OF DATE: December 31, 1984
BASE YEAR: FY 1984

(Dollars in Millions)

a. Program Acquisition Cost	(1) Production Estimate (FY83-FY02)	(2) Changes	(3) Current Estimate (FY83-FY02)
1. Cost			
Development	280.1	+106.1	386.2
Procurement	3453.6	+ 11.5	3465.1
Flyaway:			
Airframe & Changes	(1477.7	(- 43.5	(1434.2
Engine & Accessories	(253.6)	(- 41.0)	(212.6
Electronics & Comm	(881.6	(+ 41.5)	(923.1
Armament & Other GFE	(20.9)	(- 2.6)	(18.3
TOTAL FLYAWAY	(2633.8)	(- 45.6)	2588.2
Ground Support Equip.	(185.7)	(- 30.2)	155.5
Training Equip. & Other	(570.1)	(+ 85.4)	(655.5
TOTAL SUPPORT	(755.8	(+ 55.2)	(811.0
Initial Spares	(64.0)	(+ 1.9)	(65.9
MILCON	(2.6)	(-)	(2.6)
TOTAL: Constant FY84$	3736.3	+ 117.6	3853.9
Escalation	1287.7	- 44.2	1243.5
Development	(81.6	(+ 22.1	(73.7
Procurement	(1205.9	(- 66.3)	1169.6
MILCON	.2	(-	.2
TOTAL PROGRAM COST	5024.0	+ 73.4	5097.4

b. Foreign Military Sales: Sales to date total 701.4M. $195.3M for 10 P-3C for Australia; $365.2M for 13 P-3C's for Netherlands; and $139.9M for 3 P-3C's and 5 knock-down P-3C's for Japan. The direct buys will aid in leveling the growth in P-3C airframe contracts; however, no cost savings are predicted at this time.

c. Nuclear Costs: None

PROGRAM CONTRACT COSTS
SYSTEM: P-3C

CONTRACTOR COSTS	Initial Contract Price			Current Contract Price			Price at Completion Contractor Estimate
	Target	Ceiling	Qty	Target	Ceiling	Qty	
1. DEVELOPMENT	-		-	-	-	-	-
2. PROCUREMENT							
LOCKHEED CALIFORNIA CO. N0001983-C-0017 FFP (FY 84) dtd JUN 83	86.1	86.1	5	86.1	86.1	5	86.1
LOCKHEED CALIFORNIA CO. N0001984-C-0008 (Adv. Acquisition) FFP (FY 85) dtd APR 84	12.1	12.1	9	12.1	12.1	9	12.1
3. CONSTRUCTION	-	-	-	-	-	-	-

AF-20 I-S/A AMPE

(5)

SAR-85-109

Selected Acquisition Report (RCS: DD-COMP(Q&A)823)
Program: I-S/A AMPE

As of Date: 31 December 1985

I N D E X

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1. **Designation/Nomenclature (Popular Name):**

I-S/A AMPE/Inter-Service/Agency Automated Message Processing Exchange (I-S/A AMPE)

2. **DOD Component:** U. S. Air Force

3. **Responsible Office and Telephone Number:**

Automated Systems Program Office
Standard Information Systems Center
Air Force Communications Command
(AFCC) Gunter AFS AL 36114-6340

PM: Lt Col John J. Ritenour, Jr.
Assigned Jul 85
AUTOVON: 446-4337
Comm:(205)279-4337

4. **Program Element/Procurement Line Items:**

RDT&E: PE 33128F (No shared funding)

O&M: PE 33128F (No shared funding)
PE 33111A (Shared funding)
PE 33128N (No shared funding)
PE 35123F (Shared funding)

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OASD(PA) DFOISR 86-T-0586

Procurement: PE 33401F (No shared funding)
PE 33401A (No shared funding)
PE 33401N (No shared funding)
PE 33401G (No shared funding)
PE 33401L (No shared funding)

MILCON: PE 33128F (No shared funding)
PE 33111A (Shared funding)
PE 33128N (No shared funding)

5. Related Programs: None

6. Mission and Description: Inter-Service/Agency Automated Message Processing Exchange (I-S/A AMPE) Program will provide a standard, telecommunication system to replace the existing Services and Agencies systems, and meet new requirements as directed by Congress and the DOD. It will also provide a replacement for the AUTODIN Switching Centers (ASCs). The Defense Communications Agency manages the 15 operational ASCs, all of which will be replaced by I-S/A AMPE. In addition, the I-S/A AMPE will provide an interface for AUTODIN terminals to the Defense Communications Systems (DCS) packet switching network, and will provide a consolidation of the DSSCS and GENSER services.

7. Program Highlights:

a. Significant Historical Developments -- The Defense Communications Agency (DCA) developed an approach called the Integrated AUTODIN Systems Architecture (IASA) that provides increased message processing standardization of the Defense Communications System (DCS) and the Services' and Agencies' AMPE systems. The I-S/A AMPE Program is an element of the IASA designed to replace the Services' and Agencies' AMPEs, functionally replace the AUTODIN Switching Centers (ASCs) and provide connection to the Defense Data Network (DDN). The I-S/A AMPE Program is a joint Service and Agency program with the Air Force as the Lead Military Department (LMD). The other Services and Agencies involved are Army, Navy, National Security Agency (NSA), Defense Intelligence Agency (DIA), Defense Communications Agency (DCA), and Defense Logistics Agency (DLA). The Air Force is responsible for funding the design of the system as well as Air Force production units. Army, Navy, NSA and DLA are responsible for funding their respective systems. DCA is responsible for the overall AUTODIN system architecture of which I-S/A AMPE is a part. NSA and DIA provide security and policy guidance and certify and accredit the I-S/A AMPE system. USAF Program Management Directive (PMD) 3056(1) was signed on 10 Mar 83 directing the Air Force to implement the I-S/A AMPE Program. A Draft Request for Proposal (RFP) package was completed and released to industry for comment in Dec 83. The Program Office has considered industry comments for inclusion, as appropriate, in the RFP. A contract was awarded in Sep 84 to conduct Independent Verification and Validation (IV&V) of specified tasks in the areas of I-S/A AMPE contractor proposal evaluation, system design,

specification development, testing, and implementation. Source selection for the I-S/A AMPE began in Oct 84. Contractor proposals were received and the initial evaluation was completed. The Best and Final Offers (BAFOs) for the I-S/A AMPE contract were received from the offerors in May 85. The Source Selection Advisory Council (SSAC) was briefed on 8-10 Jul 85. The Design Period contract was awarded in Jul 85. The DSARC met on 20 Jun 85 and Milestone II approval was granted. The Source Selection Advisory Council was briefed on 9-11 Jul 85, and the Source Selection Authority was briefed on 18 Jul 85. The Secretary of Defense Decision Memorandum (SDDM) approving Milestone II was signed on 24 Jul 85. On 13 Aug 85, the I-S/A AMPE Design Period contract was awarded to TRW. The Source Selection Authority elected to award a single contract in lieu of using two prime contractors as originally planned. Briefings to the two unsuccessful offerors on the program were completed on 12 Sep 85.

b. Significant Developments Since Last Report -- The Systems Requirements Review (SRR) was accomplished 7-11 Oct 85. The first modification to the contract was released 4 Nov 85. The System Specification was delivered in Nov and Dec 85. The Government rejected the initial submissions. This will delay the System Design Review (SDR), but should not have an adverse effect on the overall schedule.

The I-S/A AMPE system is expected to satisfy the mission requirements.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP (dated 13 Jun 85) threshold breaches.

9. Schedule:

a. Milestones --	Development Estimate/ Approved Program	Current Estimate
Justification for Major System New Start	Mar 83/Mar 83	Mar 83
Milestone I Decision (AFSARC)	Jan 84/Jan 84	Jan 84
Milestone II Decision	Jun 85/Jun 85	Jul 85
Contract Award (Design Phase)	Jul 85/Jul 85	Aug 85
System Design Phase Start	Aug 85/Aug 85	Aug 85
Subsystem Design Phase Start	May 87/May 87	Aug 85
Prototype & Test Phase Start	Apr 88/Apr 88	Apr 88
Qualification Operational Test and Evaluation Start	Oct 88/Oct 88	Oct 88
Milestone III Decision	Apr 89/Apr 89	Apr 89
Production Buy Decision	Apr 89/Apr 89	Apr 89 (CH-1)
Initial Operational Capability IOC 1/	Sep 89/Sep 89	Oct 89 (CH-2)

1/ The system will achieve IOC when I-S/A AMPE has been evaluated, accepted, certified, accredited, and a minimum of two operational facilities, including necessary trained personnel and logistics support, has been certified to interface with the Defense Data Network (Integrated AUTODIN System (IAS)) and cutover to mission traffic.

b. Previous Change Explanation --

The Secretary of Defense Decision Memorandum (SDDM) for the Milestone II Decision, was received in Jul 85 instead of Jun 85. The Source Selection Authority was not available for the briefing on the scheduled date, resulting in a delay in the contract award of one month. Because funds were available, the Subsystem Design Phase was ordered ahead of schedule (Aug 85 in lieu of May 87). Due to the delay in Contract Award, the Production Buy Decision will be delayed one month (from Apr to May 89).

c. Current Change Explanations --

(1) (CH-1) - Program Manager's assessment of contractor's present scheduling. The previous SAR's (30 Sep 85) date of May 89 has returned to its originally schedule date of Apr 89.

(2) (CH-2) - Program Manager's assessment that IOC cannot be achieved as quickly after Production Buy Decision (PBD) as originally anticipated. Duration between IOC and PBD is now six months. The previous SAR's date of Sep 89 was in error, and should have reflected Oct 89.

d. References --

Development Estimate: Decision Coordinating Paper (DCP) dated June 13, 1985.

Approved Program: FY 1987 President's Budget.

10. Technical/Operational Characteristics:

	Dev Estimate/ Appr Program	Demonstrated Performance	Current Estimate
a. Technical --			
Performance Throughput	40-120 Line Blocks per second	N/A	40-120 Line Blocks per second
Readiness/Supportability (Hardware & Software Systems)			
(1) Reliablity, Availability, and Maintainability (RAM) (%)	99.95	N/A	99.95
(2) Logistics Support Base	CLS	N/A	CLS
(3) Certification and Accreditation	A1	N/A	A1

b. Operational --			
Operational Availability (%)	99.95	N/A	99.95
Manning			
(1) Operational Systems	3690	N/A	3690
(2) System Support Facility	73	N/A	73

c. Change Explanations -- None

d. Current Change Explanations - None

e. References --

Development Estimate: Decision Coordinating Paper (DCP) dated June 13, 1985.

Approved Program: FY 1987 President's Budget.

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Development Estimate	Changes	Current Estimate
a. Cost --			
O&M	285.7	-217.3	68.4
Development (RDT&E)	0	+91.7	91.7
Procurement	291.1	-20.2	270.9
Prime Mission Equip	(182.0)	(-13.1)	(168.9)
Govt Furnished Equip	(7.1)	(-0.6)	(6.5)
System/Project Mgt	(27.3)	(-1.8)	(25.5)
System T&E	(17.7)	(-1.2)	(16.5)
Total Flyaway	(234.1)	(-16.7)	(217.4)
Other System Cost	(57.0)	(-3.5)	(53.5)
Construction (MILCON)	114.4	-32.3	82.1
Total FY85 Base-Year $	691.2	-178.1	513.1
Escalation	138.3	-39.8	98.5
O&M	(25.0)	(-19.2)	(5.8)
Development (RDT&E)	(0)	(+8.4)	(8.4)
Procurement	(85.3)	(-19.8)	(65.5)
Construction (MILCON)	(28.0)	(-9.2)	(18.8)
Total Then-Year $	829.5	-217.9	611.6

	Development Estimate	Changes	Current Estimate
b. Quantities --			
Development (RDT&E)	0	0	0
Procurement	94	0	94
Total	94	0	94
c. Unit Cost --			
Procurement:			
FY85 Base-Year $	3.097	-0.215	2.882
Then-Year $	4.004	-0.425	3.579
Program:			
FY85 Base-Year $	7.353	-1.894	5.459
Then-Year $	8.824	-2.318	6.506

d. Approved Design to Cost Goal -- Not applicable; waived.

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate (Dec 84 SAR)	UCR Baseline Estimate (Dec 85 SAR)
a. Program Acquisition --			
(1) Cost	611.6	1001.3	611.6
(2) Quantity	94	94	94
(3) Unit Cost	6.506	10.652	6.506

b. Current Procurement -- Not applicable, no procurement quantities in current or budget year.

13. Cost Variance Analysis:

a. Summary - (Current (Then Year) Dollars in Millions)

	O&M	RDT&E	PROC	MILCON	TOTAL
Development Estimate	310.7	0	376.4	142.4	829.5
Previous Changes:					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	+1.2	--	+5.8	--	+7.0
Engineering	--	--	--	--	--
Estimating	-158.2	--	-68.5	-28.6	-255.3
Other	--	--	--	--	--
Support	+0.6	--	--	--	+0.6
Subtotal	-156.4	0	-62.7	-28.6	-247.7
Current Changes:					
Economic	-1.3	0.7	-11.6	-3.2	-15.4
Quantity	--	--	--	--	--
Schedule	--	--	-1.3	--	-1.3
Engineering	--	--	--	--	--
Estimating	-78.8	+99.4	+40.0	-9.7	+50.9
Other	--	--	--	--	--
Support	--	--	-4.4	--	-4.4
Subtotal	-80.1	+100.1	+22.7	-12.9	+29.8
Total Changes	-236.5	+100.1	-40.0	-41.5	-217.9
Current Estimate	74.2	100.1	336.4	100.9	611.6

(FY 1985 Constant (Base-Year) Dollars in Millions)

	O&M	RDT&E	PROC	MILCON	TOTAL
Development Estimate	285.7	0	291.1	114.4	691.2
Previous Changes:					
Quantity	--	--	--	--	--
Schedule	+0.8	--	--	--	+0.8
Engineering	--	--	--	--	--
Estimating	-143.1	--	-47.2	-24.4	-214.7
Other	--	--	--	--	--
Support	+0.5	--	--	--	+0.5
Subtotal	-141.8	0	-47.2	-24.4	-213.4
Current Changes:					
Quantity	--	--	--	--	--
Schedule	--	--	--	--	--
Engineering	--	--	--	--	--
Estimating	-75.5	+91.7	+30.5	-7.9	+38.8
Other	--	--	--	--	--
Support	--	--	-3.5	--	-3.5
Subtotal	-75.5	+91.7	+27.0	-7.9	+35.3
Total Changes	-217.3	+91.7	-20.2	-32.3	-178.1
Current Estimate	68.4	91.7	270.9	82.1	513.1

b. Previous Change Explanations --

O&M

Schedule: Increase due to change from 32 to 44 month Design Period associated with Independent Validation and Verification contractor.

Estimating: Decrease due to Source Selection Authority's decision to award a single contract in lieu of two contracts for the Design Period.

Support: Refinement of facility modification costs based on site surveys.

Procurement

Schedule: Increase due to revised schedule slipping procurement approximately one year.

Estimating: Overall reduction due to actual Design Phase Contract Award experience.

MILCON

Estimating: Decrease due to revised estimate of construction costs based on site surveys.

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) O&M		
Revised Economic Escalation Indices (Economic)	0.0	-1.3
Congressionally Directed (FY86 Defense Appropriations Act) shifting of funds and corresponding requirements between appropriations from O&M to RDT&E (Estimating)	-91.7	-100.1
Refinement of costs for the Production Phase based on better information (Estimating)	+16.2	+21.3

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(2) RDT&E

Escalation increase due to shift from O&M to RDT&E (Economic)	0.0	+0.7
Congressionally directed (FY86 Defense Appropriations Act) shifting of funds and corresponding requirements between appropriations from O&M to RDT&E (Estimating)	+91.7	+99.4

(3) Procurement

Revised economic escalation indices (Economic)	0.0	-11.6
Rephasing of schedule based on Required Operational Dates (RODs) in lieu of Installation Dates (Schedule)	0.0	-1.3
Revised evaluation of costs based upon actual contractor experience (Estimating)	+30.5	+40.0
Revised evaluation of costs based upon actual contractor experience (Support)	-3.5	-4.4

(4) MILCON

Revised economic escalation indices (Economic)	0.0	-3.2
Revised estimate based upon review of site surveys (Estimating)	-7.9	-9.7

d. References —

Development Estimate: Decision Coordinating Paper (DCP) dated June 13, 1985.

14. Program Acquisition Unit Cost (PAUC) History: (Millions of Then-Year Dollars)

a. Initial SAR/Planning Estimate to Current Baseline Estimate --

PAUC (Initial SAR/PE Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
10.738	-0.220	-0.190	-0.156	--	+1.583	--	-2.931	-1.914	8.824

b. Current Baseline Estimate to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
8.824	-0.164	--	+0.061	--	-2.175	--	-0.040	-2.318	6.506

15. Contract Information: (Then-Year Dollars in Millions)

a. O&M and RDT&E --

Software Design Effort:	Initial Contract Price Target	Ceiling	Qty
TRW, Inc., Torrance, CA F01630-85-D-0003, FPIF/FPP Award: August 13, 1985 Definitized: August 13, 1985	$83.2	$104.2	0

Current Contract Price Target	Ceiling	Qty	Estimate Price At Completion Contractor	Program Manager
$83.2(CH-1)	$104.2	0	$83.2	$104.2(CH-2)

Explanation of Change:

(CH-1) The 30 Sep 85 SAR erroneously reflects $0.7M of FFP effort which should not be reported in this section of the SAR. The $83.2M figure is the FPIF portion only.

(CH-2) The Program Manager's assessment that the contract will reach the Ceiling Price.

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances to Date (11/29/85)	-0-	-0.3
Net Change	-0-	-0.3

The schedule variance is primarily in the application software area and reflects basic work being delayed in order to support system design activity required to meet Contract Data Requirements List (CDRL) delivery schedules. Additional staffing will be brought on board to complete the effort in time to meet program SDR and CDR scheduled dates.

16. Program Funding Summary: (Current Estimate in Millions of Dollars)

a. Program Status --

(1) Percent Program Completed: 36.4% (4/11)

(2) Percent Program Cost Appropriated: 12.3% ($75.5/611.6)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs FY83-86	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Beyond FYDP (FY92-93)	Total
O&M	43.7	0	27.0	3.5	74.2
RDT&E	30.6	54.6	14.9	0	100.1
Procurement	1.2	0	313.8	21.4	336.4
MILCON	0	0	100.9	0	100.9
Total	75.5	54.6	456.6	24.9	611.6

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16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary -- Total Program

Fiscal Year	Qty	FY85 Base-Year Dollars			Then-Year Dollars			Escl Rate1/ (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: O&M								
1983				0.4			0.4	4.9
1984				1.6			1.6	3.8
1985				41.2			41.7	3.6
1986				0.0			0.0	N/A
1987				0.0			0.0	N/A
1988				0.1			0.1	3.9
1989				3.6			4.3	3.4
1990				11.9			14.4	2.9
1991				6.8			8.2	2.3
1992				2.1			2.6	2.3
1993				0.7			0.9	2.3
Subtotal				68.4			74.2	
Appropriation: RDT&E								
1983				0.0			0.0	N/A
1984				0.0			0.0	N/A
1985				0.0			0.0	N/A
1986				29.0			30.6	3.2
1987				49.7			54.6	4.1
1988				8.2			9.3	3.9
1989				4.8			5.6	3.4
Subtotal				91.7			100.1	
Appropriation: Procurement								
1986		1.1		1.1			1.2	3.2
1987				0.0			0.0	N/A
1988				0.0			0.0	N/A
1989	14	6.8	29.4	45.2			54.4	3.4
1990	29	13.5	58.4	89.7			110.4	2.9
1991	36	17.7	77.0	118.3			149.0	2.3
1992	15	2.6	10.9	16.6			21.4	2.3
Subtotal	94	41.7	175.7	270.9			336.4	
Appropriation: MILCON								
1988				4.2			5.0	3.9
1989				29.2			35.3	3.4
1990				38.2			47.3	2.9
1991				10.5			13.3	2.3
Subtotal				82.1			100.9	
Total				513.1			611.6	

1/ Since Spend Out Rates are not shown, the Escalation Rate cannot be used to verify the Composite Index.

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary -- Air Force

Fiscal Year	Qty	FY85 Base-Year Dollars			Then-Year Dollars			Escl Rate1/ (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: O&M								
1983				0.4			0.4	4.9
1984				1.6			1.6	3.8
1985				41.2			41.7	3.6
1986				0.0			0.0	N/A
1987				0.0			0.0	N/A
1988				0.0			0.0	3.9
1989				1.9			2.2	3.4
1990				10.6			12.7	2.9
1991				3.6			4.4	2.3
1992				0.3			0.4	2.3
1993				0.2			0.3	2.3
Subtotal				59.8			63.7	
Appropriation: RDT&E								
1983				0.0			0.0	N/A
1984				0.0			0.0	N/A
1985				0.0			0.0	N/A
1986				29.0			30.6	3.2
1987				49.7			54.6	4.1
1988				8.2			9.3	3.9
1989				4.8			5.6	3.4
Subtotal				91.7			100.1	
Appropriation: Procurement								
1986		1.1		1.1			1.2	3.2
1987				0.0			0.0	N/A
1988				0.0			0.0	N/A
1989	14	4.2	18.0	27.7			33.3	3.4
1990	9	3.3	14.1	21.7			26.7	2.9
1991	11	6.6	28.4	43.7			55.1	2.3
1992	0	1.1	4.6	7.0			9.0	2.3
Subtotal	34	16.3	65.1	101.2			125.3	
Appropriation: MILCON								
1988				3.7			4.4	3.9
1989				7.9			9.5	3.4
1990				3.9			4.8	2.9
1991				0.0			0.0	2.3
Subtotal				15.5			18.7	
Total				268.2			307.8	

1/ Since Spend Out Rates are not shown, the Escalation Rate cannot be used to verify the Composite Index.

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary -- Army

Fiscal Year	Qty	FY85 Base-Year Dollars			Then-Year Dollars			Escl Rate1/ (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: O&M								
1983				0.0			0.0	4.9
1984				0.0			0.0	3.8
1985				0.0			0.0	3.6
1986				0.0			0.0	N/A
1987				0.0			0.0	N/A
1988				*			*	3.9
1989				0.9			1.1	3.4
1990				0.5			0.6	2.9
1991				2.1			2.6	2.3
1992				0.3			0.3	2.3
1993				0.2			0.3	2.3
Subtotal				4.0			4.9	
Appropriation: Procurement								
1986				0.0			0.0	3.2
1987				0.0			0.0	N/A
1988				0.0			0.0	N/A
1989		0.9	4.0	6.1			7.4	3.4
1990	6	3.7	15.9	24.4			30.1	2.9
1991	10	5.4	23.5	36.1			45.4	2.3
1992	9	0.4	1.6	2.4			3.1	2.3
Subtotal	25	10.4	45.0	69.0			86.0	
Appropriation: MILCON								
1988				0.0			0.0	3.9
1989				2.3			2.8	3.4
1990				9.3			11.5	2.9
1991				5.0			6.3	2.3
Subtotal				16.6			20.6	
Total				89.6			111.5	

* Less Than $50K

1/ Since Spend Out Rates are not shown, the Escalation Rate cannot be used to verify the Composite Index.

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary -- Navy

Fiscal Year	Qty	FY85 Base-Year Dollars			Then-Year Dollars			Escl Rate1/ (%)
		Flyaway		Total	Advance Proc.		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: O&M								
1983				0.0			0.0	4.9
1984				0.0			0.0	3.8
1985				0.0			0.0	3.6
1986				0.0			0.0	N/A
1987				0.0			0.0	N/A
1988				*			*	3.9
1989				0.5			0.6	3.4
1990				0.7			0.9	2.9
1991				0.3			0.3	2.3
1992				0.2			0.3	2.3
1993				0.2			0.2	2.3
Subtotal				1.9			2.3	
Appropriation: Procurement								
1986				0.0			0.0	3.2
1987				0.0			0.0	N/A
1988				0.0			0.0	N/A
1989		0.9	3.8	5.8			6.9	3.4
1990	6	3.2	14.0	21.5			26.4	2.9
1991	11	4.5	19.7	30.3			38.2	2.3
1992	5	0.3	1.2	1.8			2.3	2.3
Subtotal	22	8.9	38.7	59.4			73.8	
Appropriation: MILCON								
1988				0.0			0.0	3.9
1989				17.4			21.0	3.4
1990				24.2			30.0	2.9
1991				4.7			6.0	2.3
Subtotal				46.3			57.0	
Total				107.6			133.1	

* Less Than $50K

1/ Since Spend Out Rates are not shown, the Escalation Rate cannot be used to verify the Composite Index.

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary -- NSA 1/

Fiscal Year	Qty	FY85 Base-Year Dollars			Then-Year Dollars			Escl Rate2/ (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: O&M								
1983				0.0			0.0	4.9
1984				0.0			0.0	3.8
1985				0.0			0.0	3.6
1986				0.0			0.0	N/A
1987				0.0			0.0	N/A
1988				*			*	3.9
1989				0.2			0.2	3.4
1990				0.1			0.2	2.9
1991				0.1			0.1	2.3
1992				0.1			0.1	2.3
1993				0.1			0.1	2.3
Subtotal				0.6			0.7	
Appropriation: Procurement								
1986				0.0			0.0	3.2
1987				0.0			0.0	N/A
1988				0.0			0.0	N/A
1989		0.8	3.6	5.6			6.8	3.4
1990	7	2.6	11.3	17.4			21.4	2.9
1991	3	0.5	2.3	3.5			4.4	2.3
1992	0	0.1	0.4	0.6			0.8	2.3
Subtotal	10	4.0	17.6	27.1			33.4	
Appropriation: MILCON								
1988				0.5			0.6	3.9
1989				0.8			1.0	3.4
1990				0.0			0.0	2.9
1991				0.0			0.0	2.3
Subtotal				1.3			1.6	
Total				29.0			35.7	

*Less Than $50K.

1/ Due to the classified nature of NSA's portion of the President's Budget, the Program Manager has determined to represent the above values in this 31 Dec 85 SAR. They are based upon requirements.

2/ Since Spend Out Rates are not shown, the Escalation Rate cannot be used to verify the Composite Index.

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary -- DLA

Fiscal Year	Qty	FY85 Base-Year Dollars			Then-Year Dollars			Escl Rate1/ (%)
		Flyaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: O&M								
1983				0.0			0.0	4.9
1984				0.0			0.0	3.8
1985				0.0			0.0	3.6
1986				0.0			0.0	N/A
1987				0.0			0.0	N/A
1988				0.1			0.1	3.9
1989				0.1			0.2	3.4
1990				0.0			0.0	2.9
1991				0.7			0.8	2.3
1992				1.2			1.5	2.3
1993				0.0			0.0	2.3
Subtotal				2.1			2.6	
Appropriation: Procurement								
1986				0.0			0.0	3.2
1987				0.0			0.0	N/A
1988				0.0			0.0	N/A
1989				0.0			0.0	3.4
1990	1	0.7	3.1	4.7			5.8	2.9
1991	1	0.7	3.1	4.7			5.9	2.3
1992	1	0.7	3.1	4.8			6.2	2.3
Subtotal	3	2.1	9.3	14.2			17.9	
Appropriation: MILCON								
1988				0.0			0.0	3.9
1989				0.8			1.0	3.4
1990				0.8			1.0	2.9
1991				0.8			1.0	2.3
Subtotal				2.4			3.0	
Total				18.7			23.5	

1/ Since Spend Out Rates are not shown, the Escalation Rate cannot be used to verify the Composite Index.

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated1/	Expended1/
Appropriation: O&M			
1983	0.4	0.4	0.4
1984	1.6	1.6	1.6
1985	41.7	41.7	41.7
To Complete	30.5	N/A	N/A
Total	74.2	43.7	43.7

17. Production Rate Data:

a. Annual Production Rates -- (NOTE: Program is designed to employ off-the-shelf components.)

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1986	0	N/A	0	N/A
1987	0	N/A	0	N/A
1988	0	N/A	0	N/A
1989	14	N/A	14	N/A
1990	36	N/A	29	N/A
1991	36	N/A	36	N/A
1992	8	N/A	15	N/A

1/ Reflects Program Office records as of 31 Dec 85.

17. Production Rate Data (Cont'd):

b. Cost Variance -- Dollars in Millions

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost (BY $)	N/A	N/A	513.1	N/A	N/A
(TY $)	N/A	N/A	611.6	N/A	N/A
PAUC (BY $)	N/A	N/A	5.459	N/A	N/A
(TY $)	N/A	N/A	6.506	N/A	N/A

c. Schedule Variance --

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	N/A	N/A	4/89	N/A	N/A
Duration (in Months)	N/A	N/A	37	N/A	N/A
End Date (Mo/Yr)	N/A	N/A	4/92	N/A	N/A

d. Deliveries (Plan/Actual) -- Not Applicable

18. Operating and Support Costs: Not Applicable

(S)
N-10 E-2C

SAR-85-006

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SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)
PROGRAM: E-2C

AS OF DATE: December 31, 1985*

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1 (U) Designation/Nomenclature (Popular Name): E-2C/Carrier Based All Weather Airborne Early Warning Command and Control System (Hawkeye)

2 (U) DOD Component: Department of the Navy.

3 (U) Responsible Office and Telephone Number:

E-2/C-2 and ATDS Program Office
Naval Air Systems Command
Washington, DC 20361

PM: CAPT H.E. Seligson
Assigned: June 15, 1984
AUTOVON 222-3251, (202)692-3251

4 (U) Program Elements:

RDT&E: PE 24152N
PROCUREMENT: APPN 1506 ICN 0195 PE 24152N, 24156N
MILCON: PE 24611N

AS AMENDED
CLEARED
FOR OPEN PUBLICATION
APR 1 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA) DEPARTMENT OF DEFENSE

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OASD(PA) DPCISR 86-S-0558

5.(U) Related Programs: C-2A Greyhound
Improved Engine (PE 64252N)

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 to the attack. Carrying a crew of five the E-2C also provides area surveillance, search and rescue, communication relay, and strike and traffic control. Principal subsystems include APS-125/138 radar and ALR-73 Passive Detection Systems which allow E-2C to detect targets during periods of radar silence. E-2C replaces E-1B and E-2B Airborne Early Warning (AEW) aircraft.

7.(U) Program Highlights:

a. Significant Historical Developments -- The E-2C was introduced to the fleet in 1974. The automatic overland radar target tracking and Electronic Counter Counter-Measures (ECCM) features were introduced to the fleet in 1977 with the new AN/APS-125 Advanced Radar Processing System (ARPS). The designation of the AN/APS-125 radar was changed to the AN/APS-138 in FY 1983 with the production incorporation and delivery of the Total Radiation Aperture Control Antenna (TRAC-A) and other radar changes. THE E-2C satisfies the mission needs.

b. Significant Developments Since Last Report -- The E-2C Update Development Program (UDP) Group I received DNSARC approval for limited production commencing with the last FY-86 aircraft. Elements of the RDT&E program to be completed are:

1. Radar modifications - ECCM improvements, elimination of blind speeds and radar range extension
2. New tactical programs incorporating the UDP Group I and Group II capabilities.

The last of the eight aircraft purchased by Japan were delivered in-country. One aircraft each for Egypt and Singapore was accepted and will be used for training at the contractor facility during 1986.

c. Changes Since "As Of" Date -- None

8.(U) Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no DCP threshold breaches.

9.(U) Schedule:

a. Milestone:

	Production Estimate/ Approved Program	Current Estimate
Project Initiated (Letter Contract)	Jun 1968/Jun 1968	Jun 1968
Definitized Contract Executed (R&D)	May 1969/May 1969	Sep 1970
Production Contract Award	Oct 1970/Oct 1971	Sep 1971
Navy Preliminary Evaluation I (Commenced)	Jan 1972/Jan 1972	
First Flight of Production Airplane	May 1972/May 1972	Sep 1972

9. (U) Schedule (Cont'd):

Navy Preliminary Evaluation II (Commenced)	Oct 1972/Oct 1972	Oct 1972
First Production Airplane Accepted	Oct 1972/Oct 1972	Jan 1973
Board of Inspection and Survey (Commenced)	Feb 1973/Feb 1973	Apr 1973
Fleet Introduction	Apr 1973/Apr 1973	May 1973
Board of Inspection and Survey (Completed)	Mar 1973/Mar 1973	Nov 1973
Initial Operational Capability	Nov 1973/Nov 1973	Feb 1974
Navy Support Date	Nov 1974/Nov 1974	Dec 1975
First Production AN/APS-125 ARPS	Dec 1976/Dec 1976	Nov 1976
AN/APS-125 Fleet Operational	May 1978/May 1978	May 1978
New Radar Antenna (Prod. Delivery)	Dec 1982/Dec 1982	Jun 1983
HSP (Prod. Delivery)	Jun 1987/Jun 1987	Jun 1987
Radar (Prod. Delivery)	Feb 1988/Feb 1988	Feb 1988

b. Previous Change Explanations -- None

c. Current Change Explanations -- None

d. (U) References --

Production Estimate: DCP No. 26 Rev 1 dated 24 June 1971, subject "Development Concept Paper Carrier Based, Airborne Early Warning/Command and Control System (E-2C)" NDCP WO463 dated 28 September 1984, subject "Navy Decision Coordinating Paper for Carrier Based Early Warning Command and Control System (E-2C)"

Approved Program: FY 1987 President's Budget

10. (U) Technical/Operational Characteristics:

a. (U) Technical	Production Estimate/ Approved Program	Demonstrated Performance	Current Estimate
Take off weight	51,535/51,535	51,878	51,878
Length/Span	56'4"-80'7"/56'4"-80'7"	57'6"-80'7"	57'6"-80'7"
Engine Number/Type	2-T56-A-8A/2-T56-A-8A	2-T56-A-425	2-T56-A-425
Crew	5/5	5	5
b. (U) Operational			
(U) Speed (KIAS)			
(1) Max Speed @ 13,500' (KIAS)	315/315	N.A.	315

10. (U) Technical/Operational Characteristics (Cont'd):

	(2) Cruise Speed @ 24,450'	270/270	N.A.	270
(U)	Time on Station @ 200 NM (Hrs)	4.0/4.0	3.5	3.5
(U)	Service Ceiling (Ft)	28,100/28,100	N.A.	30,800
(U)	Radar Detection Range (AN/APS-120)			
(b)(1)	[redacted]			
(U)	Passive Detection System			
(b)(1)	[redacted]			
(U)	(2) azimuth	360 deg/360 deg	360 deg	360 deg
(U)	Radar detection range (AN/APS-138 with TRAC-A antenna)			
(b)(1)	[redacted]			
(U)	Systems Accuracy (CEP to Target at 200 NM range) (NM)	1.5/1.5	1.5	1.5

Note: All detection parameters based on 50% probability of detection point.

c. Previous Changes Explanations — None

d. Current Changes Explanations -- None

10. (U) Technical/Operational Characteristics (Cont'd):

e. References --

Production Estimate: DCP No. 26 Rev 1 dated 24 June 1971, subject Development Concept Paper Carrier Based, Airborne Early Warning/Command and Control System (E-2C)" NDCP WO463 dated 28 September 1984, subject "Navy Decision Coordinating Paper for Carrier Based Early Warning Command and Control System (E-2C)"

Approved Program: FY 1987 President's Budget

11. (U) Program Acquisition Cost (Current Estimate in Millions of Dollars)

	Production Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	$ 655.7	$ + 49.8	$ 705.5
Procurement	4739.2	+153.1	4892.3
Airframe & Changes	(2967.3)	(+196.9)	(3164.2)
Engine & Accessories	(142.0)	(+ 11.1)	(153.1)
Electronics	(110.0)	(+ 37.4)	(147.4)
Armament & Other GFE	(13.7)	(+ 1.0)	(14.7)
Total Flyaway	(3233.0)	(+246.4)	(3479.4)
Other Wpn Sys Cost	(1183.4)	(- 46.8)	(1136.6)
Initial Spares	(322.8)	(- 46.5)	(276.3)
Construction (MILCON)	3.1	+0.1	3.2
Total FY 85 Base-Year $	5398.0	+203.0	5601.0
Escalation	523.5	- 74.3	449.2
Development (RDT&E)	(50.3)	(3.3)	(53.6)
Procurement	(473.1)	(- 77.6)	(395.5)
Construction (MILCON)	(0.1)	(-)	(0.1)
Total Then-Year $	$ 5921.5	$ +128.7	$ 6050.2
b. Quantities --			
Development (RDT&E)	2	-	2
Procurement	125	+ 6	131
Total	127	+ 6	133
c. Unit Cost --			
Prnt:			
FY 85 Base-Year $	$ 37.9	$ - 0.6	$ 37.3
Then-Year $	41.7	- 1.1	40.4
Program:			
FY 85 Base-Year $	42.5	- 0.4	42.1
Then-Year $	$ 46.6	$ - 1.1	$ 45.5

11.4 Program Acquisition Cost (Cont'd) (Current Estimated in Millions of Dollars)

d. Approved Design to Cost Goal -- Not applicable

e. Foreign Military Sales -- Sales to date are 4 for Israel for a total of $157.8M; 8 for Japan for a total of $380.9M; 5 for Egypt for a total of $570.3M; and 4 for Singapore for a total of $364.5M.

f. Nuclear Costs -- None

12.N Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	6050.2	5921.5	6050.2
(2) Quantity	133	127	133
(3) Unit Cost	45.5	46.6	45.5
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	359.7	390.3	335.3
Less CY Adv Proc	30.0	31.3	24.1
Plus PY Adv Proc	29.6	29.6	30.0
Net Total	359.3	388.6	341.2
(2) Quantity	6	6	6
(3) Unit Cost	59.883	64.767	56.867

13. (U) Cost Variance Analysis:

a. Summary -- (Current (Then Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	706.0	5212.3	3.2	5921.5
Previous Changes:				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	--	--	--
Other	--	--	--	--
Support	--	--	--	--
Subtotal	--	--	--	--
Current Changes:				
Economic	+ 3.3	- 77.6	--	- 74.3
Quantity	--	+ 232.2	--	+232.2
Schedule	--	--	--	--
Engineering	+ 24.6	--	--	+ 24.6
Estimating	--	+ 67.2	--	+ 67.2
Other	--	--	--	--
Support	--	- 121.0	--	-121.0
Subtotal	+ 27.9	+ 100.8	--	+128.7
Total Changes	+ 27.9	+ 100.8	--	+128.7
Current Estimate	733.9	5313.1	3.2	6050.2

13.u Cost Variance Analysis(Cont'd):
(FY 1985 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	655.7	4739.2	3.1	5398.0
Previous Changes:				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	--	--	--
Other	--	--	--	--
Support	--	--	--	--
Subtotal	--	--	--	--
Current Changes:				
Economic	--	--	--	--
Quantity	--	+182.4	--	+ 182.4
Schedule	--	--	--	--
Engineering	+ 49.8	--	--	+ 49.8
Estimating	--	+ 64.0	--	+ 64.0
Other	--	--	--	--
Support	--	- 93.3	+ 0.1	- 93.2
Subtotal	+ 49.8	+ 153.1	--	+ 203.0
Total Changes	+ 49.8	+ 153.1	+ 0.1	+ 203.0
Current Estimate	705.5	4892.3	3.2	5601.0

b. Previous Change Explanations — None

c. Current Change Explanations —

	(Dollars in Millions) Base Year	Then Year
1. RDT&E		
Revised escalation (Economic)	N/A	+ 3.3
Update of the Radar (Engineering)	+49.8	+24.6

13. (U) Cost Variance Analysis (Cont'd):
(FY 1985 Constant Dollars (Base Year) in Millions)

	(Dollars in Millions) Base Year	Then Year
2. Procurement		
Revised escalation (Economic)	N/A	-77.6
Addition of 6 aircraft (Quantity)	+ 182.4	+ 232.2
Revised estimate of support costs (Support)	- 93.3	- 121.0
Repricing of A/C and GFE requirements (Estimating)	+ 64.0	+ 67.2
3. MILCON		
Repair of training facility at Norfolk (Support)	+0.1	-0-

d. References --
Production Estimate: DCP No. 26 Rev 1 dated 24 June 1971, subject "Development Concept Paper Carrier Based, Airborne Early Warning/Command and Control System (E-2C)" NDCP W0463 dated 28 September 1984, subject "Navy Decision Coordinating Paper for Carrier Based Early Warning Command and Control System (E-2C)"

Approved Program: FY 1987 President's Budget

14. (U) Program Acquisition Unit Cost (PAUC) History:

a. Initial SAR Estimate to Current Baseline Estimate

(1) Same as Current Baseline Estimate

b. Current Baseline Estimate to Current Estimate --

PAUC (PdE)	Changes (Then Year Dollars in Millions)								PAUC (CE)
	ECON	QTY	SCH	ENG	EST	SUP	OTHER	TOTAL	
46.626	-.558	-.358	--	+.185	+.505	-.910	--	-1.136	45.490

15. (U) Contract Information: (Then-Year Dollars in Millions)

a. RDT&E —

Radar
Grumman Aerospace Corporation
N00019-83-C-0304 FPI
29 June 1984

Initial Contract Price		
Target	Ceiling	Qty
$91.3	101.4	--

Current Contract Price		
Target	Ceiling	Qty
$95.5	101.4	--

Estimate Price At Completion	
Contractor	Program Manager
$ 95.5	$ 95.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ 2.0	$ 1.1
Cumulative Variances to Date	$ - 0.2	$ -3.4
Net Change	$ + 1.8	$ -2.3

Explanation of Change: This contract is considered on schedule at cost. The schedule of the UDP was slipped 9 months to maintain concurrency with the JTIDS program, resulting in a cost impact to be negotiated. Now, due to SECNAV direction to drop Navy JTIDS and incorporate Air Force JTIDS the schedule of JTIDS will slip several more years. Therefore concurrency with the UDP can no longer be maintained. There will be a delta cost to the UDP due to this loss of concurrency.

b. Procurement —

Airframe
Grumman Aerospace Corporation
N00019-84-C-0046 FFP
13 March 1984

Initial Contract Price		
Target	Ceiling	Qty
$256.0	N/A	6

Current Contract Price		
Target	Ceiling	Qty
$265.2	N/A	6

Estimate Price At Completion	
Contractor	Program Manager
$265.2	$265.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-0-	-0-
Cumulative Variances to Date	-0-	-0-
Net Change	-0-	-0-

Airframe
Grumman Aerospace Corporation
N00019-83-C-0007 FFP
18 March 1983

Initial Contract Price		
Target	Ceiling	Qty
$218.4	N/A	6

15. (U) Contract Information (Cont'd): (Dollars in Millions)

Current Contract Price			Estimate Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$219.4	N/A	6	$219.4	$219.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	-0-	-0-
Cumulative Variances to Date	-0-	-0-
Net Change	-0-	-0-

Airframe
Grumman Aerospace Corporation
N00019-82-C-0047 FFP
26 March 1982

Initial Contract Price		
Target	Ceiling	Qty
$245.5	N/A	6

Current Contract Price			Estimate Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
$248.9	N/A	6	$248.9	$248.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	$ -0-	$ -0-
Cumulative Variances to Date	$ -0-	$ -0-
Net Change	$ -0-	$ -0-

Explanation of Changes: Not reported on FFP contracts.

16. (U) Program Funding Summary: (Current Estimate in Millions of Dollars)

a. Program Status --
(1) Percent Program Completed: 79.2% (19 yrs/24 yrs)

(2) Percent Program Cost Appropriated: 64.7% ($3914.8/$6050.2)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY82-86)	Budget Year (FY87)	Balance FYDP (FY88-91)	To Complete Beyond FYDP (FY92)	Total
RDT&E	397.9	34.5	301.5	-	733.9
Procurement	3514.5	335.3	1463.3	-	5313.1
MILCON	2.4	0.8	-	-	3.2
Total	3914.8	370.6	1764.8	-	6050.2

16. (4) Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty	FY 85 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
Prior	2	--	--	339.9	--	--	339.9	--
1985	--	--	--	36.2	--	--	34.4	3.6
1986	--	--	--	24.0	--	--	23.6	3.2
1987	--	--	--	33.7	--	--	34.5	4.1
1988	--	--	--	59.8	--	--	63.4	3.9
1989	--	--	--	57.2	--	--	62.5	3.4
1990	--	--	--	77.1	--	--	86.5	2.9
1991	--	--	--	77.6	--	--	89.1	2.3
TOTAL	2	--	--	705.5	--	--	733.9	
Appropriation: Procurement								
Prior	89	33.2	1944.9	2811.8	250.2	224.6	2820.7	-
1985	6	29.6	214.1	311.5	29.6	25.6	334.1	4.1
1986	6	29.6	209.8	323.0	30.0	29.6	359.7	4.1
1987	6	26.4	236.8	291.4	24.1	30.0	335.3	4.1
1988	6	20.5	218.9	317.9	26.0	24.1	377.6	3.9
1989	6	--	216.6	284.1	32.2	26.0	346.0	3.4
1990	6	--	216.2	294.0	41.0	32.2	366.5	2.9
1991	6	6.8	222.1	258.6	42.4	41.0	373.2	2.3
TOTAL	131	146.1	3479.4	4892.3	475.5	433.1	5313.1	
Appropriation: MILCON								
Prior	--	--	--	2.4	--	--	2.4	--
1985	--	--	--	--	--	--	--	3.6
1986	--	--	--	--	--	--	--	3.2
1987	--	--	--	0.8	--	--	0.8	4.1
1988	--	--	--	--	--	--	--	3.9
1989	--	--	--	--	--	--	--	3.4
1990	--	--	--	--	--	--	--	2.9
1991	--	--	--	--	--	--	--	2.3
TOTAL				3.2			3.2	

16(a) Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
		Appropriation: RDT&E	
1981 & Prior	241.1	241.1	241.1
1982	17.7	17.7	17.5
1983	40.5	40.5	38.6
1984	40.6	40.6	35.2
1985	34.4	33.7	23.1
1986	23.6	16.0	0.1
To Complete	336.0	N/A	N/A
TOTAL	733.9	389.6	355.6
		Appropriation: Procurement	
1981 & Prior	1947.7	1947.7	1947.7
1982	254.8	241.7	239.0
1983	293.5	283.0	271.3
1984	324.7	295.4	234.5
1985	334.1	300.5	111.2
1986	359.7	56.1	-0-
To Complete	1798.6	N/A	N/A
TOTAL	5313.1	3124.4	2803.7
		Appropriation: MILCON	
1981 & Prior	2.4	2.4	2.4
1982	--	--	--
1983	--	--	--
1984	--	--	--
1985	--	--	--
1986	--	--	--
To Complete	0.8	N/A	N/A
TOTAL	3.2	2.4	2.4

17. (U) Production Rate Data:

a. Annual Production Rates -- Note: Since the E-2C has been in production for several years, the development estimate was not a factor considered for production rates in this SAR. Tooling presently at Grumman allows for production of six E-2C's, eight C-2A's, and four FMS customers.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1986	N/A	6	6	18
1987	N/A	6	6	18
1988	N/A	6	6	18
1988	N/A	6	6	18
1989	N/A	6	6	18
1990	N/A	6	6	18
1991	N/A	6	6	18

b. Cost Variance -- Dollars in Millions (Note: Subject to limitations on production rates above.)

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	5398.0	+ 203.0	5601.0	--	5601.0
	(TY $)	5921.5	+ 128.7	6050.2	--	6050.2
PAUC	(BY $)	42.5	- 0.4	42.1	--	42.1
	(TY $)	46.6	- 1.1	45.5	--	45.5

c. Schedule Variance -- (Note: Subject to the limitations on production rates above.)

	Production Estimate	Variance (CE vs PdE)	Current Estimate	Variance (CE vs Max)	Maximum
Start Date (Mo/Yr)	3/84	N/A	3/84	N/A	3/84
Duration (in Months)	35	N/A	35	N/A	35
End Date (Mo/Yr)	2/87	N/A	2/87	N/A	2/87

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	2/2
Procurement	88/88

18. (U) Operating and Support Costs:

a. Assumption and Ground Rules -- N/A

b. Costs -- N/A

N-5 BATTLESHIP REACTIVATION

SAR-85-098

UNCLASSIFIED

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: BATTLESHIP REACTIVATION

AS OF DATE: December 31, 1985*

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1. Designation and Nomenclature (Popular Name): IOWA-Class Battleship Reactivation/Modernization (NEW JERSEY, IOWA, MISSOURI, WISCONSIN)

2. DoD Component: U.S. Navy

3. Responsible Office and Telephone Number:

Battleship Reactivation Program (SEA-913B1)
Naval Sea Systems Command
Washington, DC 20362

PM: CAPT Dennis Doyle
Assigned: Oct 15, 1985
(202)692-0554 AV: 222-0554

4. Program Elements/Procurement Line Items:

RDT&E: PE 64567N
PE 63564N

PROCUREMENT: PE 22420N, APPN 1611, ICN 2053

5. Related Programs:

TOMAHAWK
CIWS

CLASSIFIED
APR 01 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

OASD(PA) DPCISR 86-F-0902

6. Mission and Description: To conduct prompt and sustained combat operations at sea, worldwide, in support of national interests. The battleship will operate as an element of a carrier battle group or amphibious group. In areas of lesser threat, the battleship will be capable of surface action group operations with appropriate ASW- and AAW-capable escorts. The battleship will not replace any existing DoD system.

7. Program Highlights:

a. Significant Historical Developments -- The USS NEW JERSEY was delivered on schedule and subsequently recommissioned on 28 December 1982. Due to operational requirements in Central America and Lebanon, she did not complete her Post Shakedown Availability until November 1984. Delivery of the USS IOWA was successfully accelerated in December 1983 to enable recommissioning on 28 April 1984. She completed her Post Shakedown Availability in July 1985. Production on the MISSOURI continues on schedule at Long Beach Naval Shipyard. The award for production on the WISCONSIN has been accelerated from January 1987 to August 1986.

b. Significant Developments Since Last Report -- Delivery of the MISSOURI remains on schedule.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: N/A

9. Schedule:

a. Milestones --	Production Estimate/ Approved Program	Current Estimate
Delivery of NEW JERSEY (BB-62)	Dec 82/Dec 82	Dec 82
Delivery of IOWA (BB-61)	Jan 85(Ch-1)/Apr 84	Apr 84
Delivery of MISSOURI (BB-63)	Jul 86(Ch-1)/Apr 86	Apr 86
Delivery of WISCONSIN (BB-64)	Jan 88/Oct 88	Oct 88

b. Previous Change Explanations -- Reflects accelerated IOWA delivery; revised MISSOURI schedule; and revised WISCONSIN schedule.

c. Current Change Explanations -- (Ch-1) Corrected Production Estimate dates to reflect original schedule provided in Baseline Dec 82 SAR.

d. References --

Production Estimate: CNM Memo Ser 00/0547 of 8 Jun 1981 COMNAVSEASYSCOM, "Reactivation of NEW JERSEY (BB62)"; COMNAVSEASYSCOM ltr Ser 1035 of 16 Jul 1981, "Reactivation of NEW JERSEY (BB62)"; COMNAVSEASYSCOM ltr Ser 209 of 31 Dec 1981, "Reactivation and Modernization of IOWA (BB61)"; CNO Memo Ser 00/C30022 of 13 Jan 1982 to SECNAV, "IOWA (BB61) Reactivation/Modernization"

Approved Program: FY 1987 President's Budget

10. Technical/Operational Characteristics:

a. Technical	Prod Estimate/ Appr Program*	Demonstrated Performance	Current Estimate
Overall Length, ft.	887	887	887
Beam. ft.	108	108	108
Navigational Draft, ft.	38	38	38
Full Load Displacement, tons	58,000	58,000	58,000
Propulsion			
Type	600# stm turb	600# stm turb	600# stm turb
HP (4 shafts)	212,000	212,000	212,000
Accommodations			
BB-62 Officers	62	128	128
Enlisted	1,500	1,655	1,655
BB-61 Officers	131	131	131
Enlisted	1,588	1,588	1,588
BB-63 Officers	78	78	78
Enlisted	1,676	1,676	1,676
BB-64 Officers	78	78	78
Enlisted	1,676	1,676	1,676
b. Operational			
Sustained Speed (@ 80%), kts.	30	30	30
Endurance (@ 20 kts.), nm.	14,800	14,800	14,800
Armament			
Anti-Air Warfare			
PHALANX (CIWS)	MK-15 MOD-4	MK-15 MOD-4	MK-15 MOD-4
Electronic Warfare System	AN/SLQ-32(V)3	AN/SLQ-32(V)3	AN/SLQ-32(V)3
5"/38 Gun Mounts	6 MK-28	6 MK-28	6 MK-28
SRBOC Launch System	MK-37 MOD-7	MK-37 MOD-7	MK-37 MOD-7
2D Air Search Radar	AN/SPS-49(V)1	AN/SPS-49(V)1	AN/SPS-49(V)1
Anti-Surface Warfare			
Surface Search Radar**	AN/SPS-10B	AN/SPS-10B	AN/SPS-10B
Surface Search Radar***	AN/SPS-67(V)	AN/SPS-67(V)	AN/SPS-67(V)
TOMAHAWK Weapon System	EX-32 MOD-5	EX-32 MOD-5	EX-32 MOD-5
HARPOON Weapon System	AN/SWG-1(V)21	AN/SWG-1(V)21	AN/SWG-1(V)21
16"/50 Triple Gun Turrets	3	3	3

* Unless dual entries are provided, Approved Program values are the same as Production Estimate values.

** BB-62

*** BB-61, BB-63, and BB-64

c. Previous Change Explanations -- Revised accommodation estimates.

d. Current Change Explanations -- None

10. Technical/Operational Characteristics (Cont'd):

e. References --

Production Estimate: OPNAV INSTRUCTION C9010., Ser 03C/502 of 13 Jan 1982, "IOWA-Class (BB-61) Top Level Requirements (TLR): Promulgation of,"

Approved Program: FY 1987 President's Budget

11. Program Acquisition Cost: (In Millions of Dollars)

	Production Estimate (FY81-88)	Changes	Current Estimate (FY81-90)
a. Cost --			
Development	19.4	+2.1	21.5
Procurement	1,457.3	+66.3	1,523.6
Basic Ship	(696.4)	(+140.5)	(836.9)
GFE	(532.2)	(+15.4)	(547.6)
Other	(148.4)	(-117.7)	(30.7)
Subtotal Procurement	(1,377.0)	(+38.2)	(1,415.2)
Outfitting/Post Delivery	(80.3)	(+28.1)	(108.4)
Construction	--	--	--
Total FY82 Base-Year $	1,476.7	+68.4	1,545.1
Escalation	399.9	-129.4	270.5
Development	(1.9)	(-.2)	(1.7)
Procurement	(398.0)	(-129.2)	(268.8)
Construction	--	--	--
Total Then-Year $	1,876.6	-61.0	1,815.6
b. Quantities --			
Development	-	-	-
Procurement	4	-	4
Total	4	-	4
c. Unit Cost --			
Procurement:			
FY82 Base-Year $	364.325	+16.575	380.900
Then-Year $	463.825	-15.725	448.100
Program:			
FY82 Base-Year $	369.175	+17.100	386.275
Then-Year $	469.150	-15.250	453.900

d. Approved Design to Cost Goal -- N/A

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary:
(Current (Then-Year) Dollars in Millions)

			Current Year		Budget Year
			SAR Current Estimate	UCR Baseline (Dec 84 SAR)	UCR Baseline Estimate
a.	Program Acquisition				
	(1) Cost		1,815.6	1,819.2	1,815.6
	(2) Quantity		4	4	4
	(3) Unit Cost		453.900	454.800	453.900
b.	Current Procurement		(FY 1986)	(FY 1986)	(FY 1987)
	(1) Cost		491.1	75.2	12.0
	Less CY Adv Proc	-	-	53.5	-
	Plus PY Adv Proc	+	-	-	-
	Less OF/PD	-	22.1	21.7	12.0
	Net Total		469.0	0	0
	(2) Quantity		1	0	0
	(3) Unit Cost		469.0	N/A	N/A

13. Cost Variance Analysis:
a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	21.3	1,855.3	-	1,876.6
Previous Changes:				
Economic	-0.5	-26.3	-	-26.8
Quantity	-	-	-	-
Schedule	+2.0	+127.9	-	+129.9
Engineering	-	-	-	-
Estimating	-1.9	-158.6	-	-160.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.4	-57.0	-	-57.4
Current Changes:				
Economic	-	-109.7	-	-109.7
Quantity	-	-	-	-
Schedule	+2.3	-	-	+2.3
Engineering	-	-	-	-
Estimating	-	+103.8	-	+103.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2.3	-5.9	-	-3.6
Total Changes	+1.9	-62.9	-	-61.0
Current Estimate	23.2	1,792.4	-	1,815.6

13. Cost Variance Analysis (Cont'd):

(FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	19.4	1,457.3	-	1,476.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	+1.5	+84.2	-	+85.7
Engineering	-	-	-	-
Estimating	-1.4	-109.2	-	-110.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.1	-25.0	-	-24.9
Current Changes:				
Quantity	-	-	-	-
Schedule	+2.0	+13.5	-	+15.5
Engineering	-	-	-	-
Estimating	-	+77.8	-	+77.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2.0	+91.3	-	+93.3
Total Changes	+2.1	+66.3	-	+68.4
Current Estimate	21.5	1,523.6	-	1,545.1

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices
Schedule: Accelerated IOWA delivery; shifted WISCONSIN from FY86 to FY87
Estimating: Updated program funding profile to reflect IOWA actuals and MISSOURI acceleration; unspecified DRB reduction in WISCONSIN end cost estimate; updated program funding profile

Procurement

Economic: Revised escalation indices
Schedule: Accelerated IOWA delivery; shifted WISCONSIN from FY86 to FY87; transferred $73.4 million FY85 FF to FY84 AP to facilitate advanced MISSOURI delivery
Estimating: Updated program funding profile to reflect IOWA actuals and MISSOURI acceleration; unspecified DRB reduction in WISCONSIN end cost estimate; updated program funding profile

13. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions) Base-Year $	Then-Year $
(1) RDT&E		
Schedule: WISCONSIN accelerated from FY87 to FY86	+2.0	+2.3
(2) Procurement		
Economic: Revised escalation indices	-	-109.7
Schedule: WISCONSIN accelerated from FY87 to FY86	+13.5	-
Estimating: Update of program funding profile	+77.8	+103.8

d. References --
Production Estimate: CNM Memo Ser 00/0547 of 8 Jun 1981, COMNAVSEASYSCOM, "Reactivation of NEW JERSEY (BB62)"

14. Program Acquisition Unit Cost (PAUC) History:

a. Initial SAR Estimate is the same as Current Baseline Estimate (PdE).

b. Current Baseline Estimate to Current Estimate --

PAUC Baseline Estimte (PdE)	Changes (Then-Year Dollars in Millions)								PAUC Current Estimte
	Econ	Qty	Sched	Eng	Est	Support	Other	Total	
469.150	-34.125	-	+33.050	-	-14.175	-	-	-15.250	453.900

15. Contract Information: (Then-Year Dollars in Millions)

a. RDT&E -- N/A

b. Procurement --
MISSOURI:
John J. McMullen Assoc., Inc., New York, NY, N00024-84-C-2226, CPFF, Award: Sep 1984

Initial Contract Price Target	Ceiling	Qty
9.6	9.6	-

Current Contract Price Target	Ceiling	Qty
16.6	16.6	-

Estimated Price At Completion Contractor	Program Mgr
16.6	16.6

	Cost Var	Schedule Var
Previous Cumulative Variances	-	-
Cumulative Variances To Date	-	-
Net Change	-	-

Explanation of Change: N/A

15. Contract Information (Cont'd): (Then-Year Dollars in Millions)

	Initial Contract Price		
Systems Engineering Assoc. Corp., Phila., PA, N00024-84-C-2153, CPFF, Award: Jul 1984	Target	Ceiling	Qty
	2.2	2.2	-

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Mgr
2.2	2.2	-	2.2	2.2

	Cost Var	Schedule Var
Previous Cumulative Variances	-	-
Cumulative Variances To Date	-	-
Net Change	-	-

Explanation of Change: N/A

CPRs or C/SSRs are not provided for the above contracts.

16. Program Funding Summary: (Current Estimate In Millions of Dollars)

a. Program Status --

(1) Percent Program Completed: 60% (6 of 10 years)
(Years Funds Appropriated/Total Program Years)

(2) Percent Program Cost Appropriated: 97.9% ($1,778.2/$1815.6)
(Funds Appropriated To Date in Millions/Total Program Funding in Millions)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY81-86)	Budget Year (FY87)	Balance To Complete FYDP (FY88-91)	Balance To Complete Beyond FYDP (FY92)	Total
RDT&E	23.2	-	-	-	23.2
Procurement	1,755.0	12.0	25.4	-	1,792.4
Total	1,778.2	12.0	25.4	-	1,815.6

16. Program Funding Summary (Cont'd): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty	FY 82 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Sailaway		Total	Advance Proc		Total	
		Nonrec	Rec		Debit	Credit		
Appropriation: RDT&E								
1981				3.2			3.1	10.61
1982				3.8			3.9	7.60
1983				5.3			5.7	4.90
1984				2.9			3.2	3.80
1985				4.3			4.9	3.60
1986				2.0			2.4	3.20
Subtotal				21.5			23.2	
Appropriation: Procurement-SCN								
1981			83.3	83.3	89.0		89.0	9.60
1982	1		293.5	301.0	96.3	89.0	333.3	7.50
1983	1		273.4	309.2	40.5	88.0	350.2	3.80
1984	1		394.7	402.8	9.6		476.9	3.60
1985				11.8	14.5		14.5	2.10
1986	1		370.3	387.7	22.1		491.1	4.10
1987				9.2	12.0		12.0	4.10
1988				4.8	6.4		6.4	3.90
1989				13.2	18.1		18.1	3.40
1990				.6	.9		.9	2.90
Subtotal	4		1,415.2	1,523.6	309.4	177.0	1,792.4	

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1981	3.1	3.1	3.0
1982	3.9	3.7	3.5
1983	5.7	5.6	5.4
1984	3.2	3.2	3.1
1985	4.9	4.9	3.1
1986	2.4	2.1	-
To Complete	-	N/A	N/A
Total	23.2	22.6	18.1

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	Then-Year Dollars (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: Procurement-SCN			
1981	89.0	88.1	84.7
1982	333.3	321.1	304.9
1983	350.2	302.6	279.8
1984	476.9	409.0	314.1
1985	14.5	-	-
1986	491.1	.5	-
To Complete	37.4	N/A	N/A
Total	1,792.4	1,121.3	983.5

17. Production Rate Data:

a. Annual Production Rates -- (NOTE: Per NAVCOMPT Memo of 30 Dec 1985, Subj: Selected Acquisition Reports, the implicit annualized production rate is not applicable for shipbuilding programs.)

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1982	N/A	1	1	N/A
1983	N/A	1	1	N/A
1984	N/A	-	1	N/A
1985	N/A	1	-	N/A
1986	N/A	1	1	N/A

b. Cost Variance -- Dollars in Millions (NOTE: Subject to limitations on production rates above.)

Item		Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Prog Acq Cost	(BY $)	1,476.7	+68.4	1,545.1	N/A	N/A
	(TY $)	1,876.6	-61.0	1,815.6	N/A	N/A
PAUC	(BY $)	369.2	+17.1	386.3	N/A	N/A
	(TY $)	469.2	-15.3	453.9	N/A	N/A

17. Production Rate Data (Cont'd):

c. Schedule Variance -- (NOTE: Subject to limitations on production rates above.)

Item	Production Estimate	Variance (CE less PdE)	Current Estimate	Variance (CE less Max)	Maximum
Start Date (Mo/Yr)	10/81	N/A	10/81	N/A	N/A
Duration (in Months)	75	9	84	N/A	N/A
End Date (Mo/Yr)	1/88	N/A	10/88	N/A	N/A

d. Deliveries (Plan/Actual) --

	To Date
RDT&E	N/A
Procurement	2/2

18. Operating and Support Costs: N/A

[redacted]

N-13 . F-14A/D

SAR-85-099

[redacted]

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: F-14A/D

AS OF DATE: December 31, 1985 *

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1. Designation/Nomenclature (Popular Name): F-14A/D

2. DoD Component: U.S. Navy

3. Responsible Office and Telephone Number:
Naval Air Systems Command
PMA-241
Washington, D.C.

PM: CAPT W. C. Bowes
Assigned : December 16, 1983
(202) 692-8284
AUTOVON 222-8284

4. Program Elements/Procurement Line Items:
RDT&E: PE 25667N
PROCUREMENT: PE 24144N APPN 1506 ICN 0140
ICN 0141

MILCON: PE 24144N

5. Related Programs: A-6E, EA-6B, E-2C, C-2 (All Grumman Aero Corp produced aircraft) and AIM-54 A/C PHOENIX Missile.

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~~DECLASSIFY BY: 10 January 1996~~

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APR 1 1986 11 AS AMENDED

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

OASD(PA) DFOISR 86-T-0879

[redacted]

6. MISSION AND DESCRIPTION: The F-14A is an all-weather, carrier-based, airborne weapon system capable of performing fleet air defense and air-to-ground missions. Air-to-ground capability is secondary and has never been fully developed. The F-14A is a twin-engine, two-place, tandem seat, variable-sweep-wing, supersonic fighter capable of engaging multiple targets simultaneously at altitudes from sea level to over 80,000 feet. The major sub-systems of the F-14A aircraft are the TF30-P-414 engine and the AN/AWG-9 Weapons Control System. The F-14A is powered by two TF30-P-414 engines which are mounted in podded nacelles on either side and below the centerline of the fuselage. Each engine is rated (at sea level, static conditions) at 12,350 pounds thrust (military) and 20,900 pounds thrust (maximum afterburner). The engines also provide power to operate aircraft electrical, hydraulic and environmental control systems. The AN/AWG-9 is a pulse doppler radar which can detect fighter targets at over 115 nautical miles across a 150 nautical mile front. The AN/AWG-9 can simultaneously track 24 targets and attack six individual targets with PHOENIX missiles while continuing to scan the airspace. The AN/AWG-9 includes many features not presently available in any other aircraft. The F-14D is a block upgrade of the F-14A weapon system in three major areas: new engine, new digitized avionics and a new digital radar. In the engine area, existing TF30 engines will be replaced by a marinized version of the USAF F110 engine for improved reliability and operability throughout the entire operating envelope. In the area of avionics, the F-14D program will utilize a modern digital multiplex bus architecture and incorporate highly reliable, state-of-the-art avionics equipment. The upgraded AWG-9 radar, designated the APG-71, will retain the high peak power output of the current AWG-9 radar and provide significant improvements in ECCM capability, reliability and maintainability.

7. Program Highlights:

a. On December 9, 1982, the Navy Defense Resource Board (DRB) determined an upgrade to the F-14A, to be designated the F-14D, to be the most cost effective solution for the Navy's anti-air warfare operational requirement. The decision was confirmed by a SECNAV memorandum of July 6, 1983, which delineated required capabilities for the upgraded F-14. A not-to-exceed fixed price letter contract for full scale development was negotiated with Grumman Aerospace Corporation and signed on 31 July 1984. This contract calls for production to commence on a F110 engine F-14A configuration (designated the F-14A(PLUS)) in late FY86, and for production to commence on the F-14D in late FY88. A requirement for the early F-14A(PLUS) configuration was necessitated by the safety and operability problems associated with the present TF30 engine.

b. Significant Developments Since Last Report -- The G.E. F110-400 engine will be installed in all FY-86 aircraft per Congressional direction.

The F-14A has met all mission requirements spelled out in the Decision coordinating Paper. The F-14D is expected to satisfy the mission requirement.

c. Changes Since "As Of" Date -- None

8. Decision Coordinating Paper (DCP) Threshold Breaches: There are currently no (DCP) threshold breaches. Breach of thresholds in cost, schedule and technical performance as contained in current effective DCP 60, revision A, of 20 July 1970, was reported to DEPSECDEF in March 1971 during DSARC III.

9. Schedule

a. Milestones --

(1) F-14A	Development Estimate/ Approved Program	Current Estimate
a. Release of RFP	Jun 68/Jun 68	Jun 68
b. Project Initiated	Jul 68/Jul 68	Jul 68
c. Award of Contract Definition Contracts	Jul 68/Jul 68	Jul 68
d. Award of Engineering Develop. Contract	Feb 69/Feb 69	Feb 69
e. Airframe Mockup	May 69/May 69	May 69
f. Completion of MQT for Eng w/new nozzle	Jan 71/Feb 71	Mar 71
g. Delivery of 1st Prod Engine	Jan 71/Feb 71	Mar 71
h. First Flight (RDT&E Model)	Jan 71/Dec 70	Dec 70
i. Navy Preliminary Evaluation		
Begin First	Apr 71/Apr 71	Nov 71
Begin Second	Oct 71/Oct 71	Jul 72
j. Delivery 1st Prod. Aircraft (No. 13)	Jan 72/Jan 72	May 72
k. Begin BIS trial	Jun 72/Jun 72	Nov 72
l. Complete Static Tests	Oct 72/Oct 72	Nov 73
m. Activate Readiness Trng Sqd (RTS) (Fleet Introduction)	Nov 72/Nov 72	Oct 72
n. Fleet Operational (1st Sqdrn) 1/	Apr 73/Apr 73	Dec 73
o. Navy Support Date	Jan 74/Jan 74	Jan 74
(2) F-14D		
FSD Contract Award	Jul 84/Jul 84	Jul 84
DNSARC Review milestone II	Mar 85/Mar 85	Mar 85
Critical Design Review (HDWR)	Jun 85/Jun 85	Jun 85
Critical Design Review (SFTWR)	Aug 85/Aug 85	Aug 85
First F110 Test Flight	Aug 86/Aug 86	Aug 86
F-14D Long Lead Funding Required	Dec 86/Dec 86	Dec 86
First Avionics/RADAR Flight	Mar 87/Mar 87	Mar 87
DNSARC III A (Pilot Production Approval)	Feb 88/Feb 88	Feb 88
Deliver First Production F-14A(PLUS)	Mar 88/Mar 88	Nov 87 Ch 1
DNSARC III B (Limited Production Approval)	Mar 89/Mar 89	Sep 88 Ch 2
DNSARC III C (Limited Approval)	Mar 90/Mar 90	Sep 89 Ch 2
DNSARC III D (Full Production Approval)	N/A	Oct 90 Ch 2
Deliver first production F-14D	Mar 90/Mar 90	Mar 90
Initial Operating Capability (1st Sqdrn)	Mar 92/Mar 92	Mar 92

b. Previous Change Explanations --

Milestone (f&g)- Completion of MQT for engine with new nozzle - slip caused by delay in signing the contract for development of engine nozzle. Milestone (h)- First F-14A flight (RDT&E model) - accomplished one month ahead of schedule. Milestone (i) - Navy preliminary evaluation seven months late due to loss of No. 1 F14A on 30 Dec 1970 and delays in flight test program. Milestone (j)- Delivery of first production aircraft (No. 13) - slip contributed to by flight test program delays and production delays. Milestone (k)- Begin BIS trial - slip by seven months contributed to by loss of No. 1 F-14A on 30 Dec 1970 and delays in flight test program. Accomplished by initiation of Initial Trial Phase of BIS in Nov 1972. Milestone (l)- Complete static test - slip 13 months caused by test reruns and test transferred from static article No. 1, i.e. vertical fin failure test, inlet duct retest, structural and pylon test. Milestone (m)- Activate Readiness Training Sqd (RTS) (Fleet introduction) - accomplished a month ahead of schedule. Milestone (n)- Fleet operational (1st sqdron) - slip 8 months caused by delays in flight test program and delivery of production aircraft.

(Ch-1) Congress mandated F110 install in all FY-86 aircraft. Earliest delivery date based on delivery of production F110 engines.

(Ch-2) Grumman has indicated an approximate six month extension to the FSD schedule due primarily to Hughes Aircraft APG-71 CFE hardware delivery delays, but also because of the Navy's delay in providing AYK-14 mission computer assets. Because of the extension to the test schedule, it is no longer possible to support a full production decision at Milestone III C. An additional production decision point, Milestone III D, has therefore been added and dates for Milestone III B and III C have been realigned. Delivery of the first F-14D, scheduled for March 1990, is not affected by the FSD schedule adjustment.

d. References - -F-14A: DCP #60 dates January 13, 1969

Development Estimate: F-14D: NDCP (approved by OPNAV awaiting signature by ASN (RE&S)).

Approved Program: FY 1987 President's Budget.

10. (U) Technical/Operational Characteristics:

F-14A - (Configuration with 4 SPARROW missiles unless otherwise indicated)

F-14D - (Fighter escort configuration with 0 PHOENIX, 4 SPARROW and 4 SIDEWINDER missiles unless otherwise indicated)

(U) a. Technical	Dev Estimate/ Appr/Program	Demonstrated Performance	Current Estimate A/
(1) F-14A			
(U) Weight			
Empty no stores (lb)	35,979/35,514	40,422	40,422
Normal Take off (lb)	53,500/53,500	60,033(C/)	60,033 (C/)
Max T/O (6 PHX) (lb)	65,421/65,421	70,891	70,891
(U) Length/Height/Span (Ft.)	62/16/62.8/ 62/16/64.1	62/16/64.1	62/16/64.1
(U) Spotting Factor (A4C=1.0**	1.67/1.74	1.74	1.74
(U) Maintenance Manhours per Flight Hour	19.8/19.8	21.5	21.5 (E/)
(U) SDLM Cycle (mo.)	18/36	44	44
(2) F-14D			
(U) Weight			
Empty no stores (lb)	41,210/ 42,210	N/A	41,210
Max T/O	72,467/72,467	N/A	72,467(A/)
(U) Length/Height/Span (ft)	62/16/64.1/ 62/16/64.1	N/A	62/16/64.1
(U) Spotting Factor (A7=1.0)	1.55/1.55	N/A	1.55
(U) Direct Maintenance Manhours per flight hours (unscheduled)	6.4/NA	N/A	6.4 (Ch-1)
(U) SDLM Cycle (mo.)	44/NA	N/A	44

10. Technical/Operational Characteristics: (con't)

b. Operational	Dev Estimate/ Appr/Program	Demonstrated Performance	Current Estimate
(1) F-14A			
(U) Speed			
(U) At S/L Combat wt. (M)	1.15/1.15	1.20	1.20
(b)(1) [redacted]			
(U) VPA* @ Max Ldg wt. (6 PHX) (Kts) (51800 Lb)	120/120	133	133
(U) Acceleration .8-1.8M (min)	2.04/2.04	2.19(C/)	2.19(C/)
(U) Rate of Climb at S/L single engine PA* configuration, max Ldg wt. (6 PHX) (Ft/Min)	575/575	480(D/)	480(D/)
(U) Min. Wind Over Deck Requirements (Kts)			
Catapult	-10/-10	+9(C/)	+ 9(C/)
Catapult, Max (6 PHX)	+13/+13	+30	+30
Landing Max (6 PHX)	+10/+10	+26	+26
(U) CAP Combat Time at 150 Miles Range (6 PHX) (hrs.)	2.0/2.0	1.58	1.58
(U) Combat Radius, Escort Miss.(NM)	500/500	478(C/)	478(C/)
(U) Combat Radius (4 SPARROW & 4 SIDEWINDER)	N/A/NA	387	387
(U) Ceiling			
Supersonic (Ft.)	58,100/58,100	55,900(C/)	55,900(C/)
Cruise (6 PHX) (Ft.)	38,000/38,000	37,000	37,000
(U) Sustained Load Factor	2.27/2.27	2.18(C/)	2.18 (C/)
(2) F-14D			
(b)(1) [redacted]			
(U) Rate of Climb, Single Engine Take-off wt (ft/min)	350/NA	N/A	350 (F/)
(b)(1) [redacted]			

*VPA=Velocity, Power Approach; PA = Power Approach
**Spotting Factor (A7=1.0 is estimated to be 1.52

NOTES:

A/ (U) Today's performance is based on the operational F-14A which has undergone several changes since the completion of development.

(b)(1) [redacted]

C/ (U) Utilizing full internal fuel. (16,200) lbs)

D/ (U) 89 degree Tropical Day

E/ (U) Unscheduled maintenance actions.

F/ (U) Sea level, 89.8 F, minimum catapult speed + 15 kts, IRT, takeoff weight less 600 lbs. of initial useable fuel, takeoff configuration.

G/ (U) Fleet Air Defense Configuration (4 Phoenix, 2 Sparrows, 2 Sidewinders, 2 Tanks).

H/ (U) Combat weight, defined as takeoff weight less 40% initial useable fuel.

[redacted]

c. Previous Change Explanations - -
F-14A current estimate updated to reflect current demonstrated performances.

Combat Radius added to provide direct comparison to F-14D radius with same store configuration (4 SIDEWINDERS in addition to 4 SPARROWS).

Since F-14D Full Scale Development Contract was signed on July 31, 1984, F-14D technical and operational data has been added.

d. Current Change Explanations --
(Ch-1) To correct data in 1984 SAR.

e. References --F-14A: DCP #60 dated January 13, 1969

Development Estimate: F-14D: NDCP (approved by OPNAV awaiting signature by ASN(RE&S)).
Approved Program: FY 1987 President's Budget.

11. Program Acquisition Cost (Current Estimate in Millions of Dollars)

a. Cost --	Development Estimate	Changes	Current Estimate
Development (RDT&E)	899.5	+986.0	1885.5
Procurement	4491.9	+6413.0	10904.9
Airframe	1773.1	+3733.6	5506.7
Engine	572.9	+995.6	1568.5
Avionics	941.5	+216.2	1157.7
Other Hardware	35.9	+395.9	431.8
Total Flyaway	3323.4	+5341.3	8664.7
Other Wpn Sys Cost	471.1	+1081.2	1552.3
Initial Spares	697.4	-9.5	687.9
Construction (MILCON)	-	+9.3	9.3
Total FY 69 Base-Year $	5391.4	+7408.3	12799.7
Escalation	774.6	+21185.4	21960.0
Development (RDT&E)	74.5	+1251.7	1326.2
Procurement	700.1	+19919.8	20619.9
Construction (MILCON)	-	+13.9	13.9
Total Then-Year $	6166.0	+28593.7	34759.7
b. Quantities --			
Development (RDT&E)	6	+6	12
Procurement	463	+424	887
Total	469	+430	899
c. Unit Cost --			
Procurement:			
FY 69 Base-Year $	9.702	+2.592	12.294
Then-Year $	11.214	+24.327	35.541
Program:			
FY 69 Base-Year $	11.496	+2.742	14.238
Then-Year $	13.147	+25.518	38.665

d. Approved Design to Cost Goal -- N/A

11. Program Acqusition Cost (Cont'd)

e. Foreign Military Sales -- Iranian sales have been cancelled. The Iranian Government originally contracted for 80 F-14 aircraft, of which 79 were delivered, a total cost of $1919.2M.

f. Nuclear Costs -- None

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then Year) Dollars in Millions)

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	34759.7 1/	37870.5	34759.7
(2) Quantity	899	899	899
(3) Unit Cost	38.7	42.1	38.7
b. Current Procurement --	(FY 1986)	(FY 1986)	(FY 1987)
(1) Cost	784.6	812.4	695.8
Less CY Adv Proc	119.2	148.2	127.7
Plus PY Adv Proc	194.9	185.0	119.2
Net Total	860.3	849.2	687.3
(2) Quantity	18	18	15
(3) Unit Cost	47.8	47.2	45.8

13. Cost Variance Analysis:

a. Summary -- (Current (Then Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Developement Estimate	974.0	5192.0	-	6166.0
Previous Changes:				
Economic	+232.5	+1716.4	+2.5	+1951.4
Quantity	+296.9	+21441.1	-	+21738.0
Schedule	+109.4	+2178.2	-	+2287.6
Engineering	+1485.1	+3401.9	+23.3	+4910.3
Estimating	-183.7	-5331.4	-1.8	-5516.9
Support	-	+6245.3	+9.1	+6254.4
Other	+79.7	-	-	+79.7
Subtotal	+2019.9	+29651.5	+33.1	+31704.5
Current Changes:				
Economic	-13.2	-3347.4	-1.0	-3361.6
Quantity	-	-	-	-
Schedule	-	+40.5	-	+40.5
Engineering	+194.0	+321.0	-	+515.0
Estimating	+37.0	+660.1	-8.9	+688.2
Support	-	-992.9	-	-992.9
Other	-	-	-	-
Subtotal	+217.8	-3318.7	-9.9	-3110.8
Total Changes	+2237.7	+26332.8	+23.2	+28593.7
Current Estimate	3211.7	31524.8	23.2	34759.7

1/ Includes $368.2 million for the F-14B follow-on engine R&D funding budgeted through 1974.

13. Cost Variance Analysis (Cont'd):
(FY 1969 Constant Dollars (Base Year) in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	899.5	4491.9	-	5391.4
Previous Changes:				
Quantity	+287.5	+5204.8	-	+5492.3
Schedule	+97.2	+180.6	-	+277.8
Engineering	+537.1	+775.0	+5.7	+1317.8
Estimating	-76.9	-1349.4	-1.1	-1427.4
Support	-	+1639.8	+7.0	+1646.8
Other	+73.8	-	-	+73.8
Subtotal	+918.7	+6450.8	+11.6	+7381.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+0.3	-	+0.3
Engineering	+56.4	+79.6	-	+136.0
Estimating	+10.9	+146.0	-2.3	+154.6
Support	-	-263.7	-	-263.7
Other	-	-	-	-
Subtotal	+67.3	-37.8	-2.3	+27.2
Total Changes	+986.0	+6413.0	+9.3	+7408.3
Current Estimate	1885.5	10904.9	9.3	12799.7

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation rates.

Quantity: Change by Congress from PAMN to R&D funding for Lot II A/C; additional F-401 engines.

Schedule: Delays in F-14A and F14B R&D schedules.

Engineering: Advance Engine development; engine component improvement, Programable Signal Processor/Target Identification System program, Radar/Avionics Upgrade with new F110 engine (F-14D).

Estimating: Revisions due to better definition of the development program changes and recoupments, reprogrammings, roundings and refinement in pricing.

Other: Funding Grumman to ceiling; cost overrun on F-401/F-14B program.

PROCUREMENT

Economic: Revised escalation rates.

Quantity: Increase from 307 to 899 aircraft.

Schedule: Fluctuation in production rates and extension of program.

Engineering: Various program and configuration changes.

Estimating: Revisions due to negotiation savings and refinements in pricing.

Support: Repricing, realignments, and spare adjustments; additional squadron and carrier outfitting and additional sites due to extension of program.

13. Cost Variance Analysis (Cont'd)

MILCON

Economic:	Revised Escalation Indices.
Quantity:	N/A
Schedule:	N/A
Estimating:	Rounding adjustment. Adjustment to actual obligation.
Engineering:	F-14D Operations Training Bldg. and Applied Instructional requirement.
Support:	F-14A Operational Training NAS Oceana not included in development estimate.

c. Current Change Explanation --

	(Dollars in Millions) Base-Year	Then Year
(1) RDT&E		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-13.2
Outyear emerging engineering changes for new weapons/systems. (Engineering)	+56.4	+194.0
Restructuring of the F-14 upgrade program. (Estimating)	+10.9	+37.0
(2) Procurement		
Revised Jan 86 economic escalation rates. (Economic)	N/A	-3,347.4
Deferral of three aircraft from FY-87 to FY-98 and six aircraft from FY-89 to FY-91 (Schedule)	+0.3	+40.5
Reflects approved configuration changes including Infrared Search and Track Program, ASW 27C, ARN-118, OBOGS, and acceleration of seventeen F-14A (plus F110 engine) into FY 86 and six F-14D's in FY 88. (Engineering)	+79.6	+321.0
Revised estimate based on refined price estimate for the F-14D. (Estimating)	+146.0	+ 660.1
Revised estimates for support and spares. (Support)	-263.7	-992.9
(3) MILCON		
Revised Jan 86 economic escalation rates (Economic)	N/A	-1.0
Reflects funding available for Maintenance Operational Training Bldg. (Estimating)	-2.3	-8.9

d. References -- F-14A: DCP #60 dated January 13, 1969
Development Estimate: F-14D NDCP (approved by OPNAV awaiting signature by ASN(RE&S)).
Approved Program: FY 1987 President's Budget.

14. Program Acquisition Unit Cost (PAUC) History:

a. Initial SAR Estimate to Current Baseline Estimate
Same as current baseline estimate.

b. Current Baseline Estimate to Current Estimate

PAUC Dev Estimate	CHANGES (Then Year Dollars in Millions								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
+13.1	-1.6	+18.0	+2.6	+6.0	-5.4	+5.9	+0.1	+25.6	+38.7

15. Contract Information: (Then-Year Dollars in Millions)

a. Procurement

FY-84 Production AWG-9	Initial Contract Price Target	Ceiling	Qty
Hughes Aircraft Co. Los Angeles, CA N00019-83-C-0002, FFP* Award: December 29, 1982 Definitized: December 31 1983	105.5	105.5	36

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
N/A	105.5	36	105.5	105.5

	Cost Variance	Schedule Variance
Previous Cumlative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

FY-84 Production Airframe	Initial Contract Price Target	Ceiling	Qty
Grumman Aerospace Corp Bethpage, NY N00019-83-C-0008, FFP* Award: December 27, 1982 Definitize: December 31, 1983	521.2	521.2	24

Current Contract Price Target	Ceiling	Qty	Estimated Price At Completion Contractor	Program Manager
N/A	521.2	24	521.2	521.2

Cost Variance	Schedule Variance
Previous Cumlative Variances	N/A N/A
Cumulative Variances to Date	N/A N/A
Net Change	N/A N/A

15. Contract Information: (Cont'd) (Then-Year Dollars in Millions) Initial Contract Price

FY-85 Production Airframe Grumman Aerospace Corp Bethpage, NY N00019-84-C-0001, FFP* Award: November 26, 1983 Definitized: January 17, 1986	Target	Ceiling	Qty
	543.0	543.0	24

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
N/A	543.0	24	543.0	543.0

	Cost Variance	Schedule Variance
Previous Cumlative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

FY-85 Production AWG-9 Hughes Aircraft Co. Los Angeles, CA N00019-84-C-0231/FFP* Award: December 16,1983 Definitized: December 31 1984	Initial Contract Price Target	Ceiling	Qty
	86.9	86.9	28

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
N/A	86.9	28	86.9	86.9

	Cost Variance	Schedule Variance
Previous Cumlative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

FY-86 Production Airframe Grumman Aerospace Corp Bethpage, NY N00019-85-C-0004, AAC# Award: December 21, 1984 Definitized: not definitized	Initial Contract Price Target	Ceiling	Qty
	526.4 2/	526.4	18

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
N/A	526.4	18	526.4 2/	1/

	Cost Variance	Schedule Variance
Previous Cumlative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

FY-86 Production AWG-9 Hughes Aircraft Co. Los Angeles, CA N00019-85-C-0219/AAC# Award: December 31, 1984 Definitized: not definitized	Initial Contract Price Target	Ceiling	Qty
	181.5 2/	181.5	63

15. Contract Information: (Cont'd) (Then-Year Dollars in Millions)

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
N/A	181.5	63	181.5 2/	1/

	Cost Variance	Schedule Variance
Previous Cumlative Variances	N/A	N/A
Cumulative Variances to Date	N/A	N/A
Net Change	N/A	N/A

* Firm Fixed Price Contracts do not have Targets or Ceilings.

Advance Acquisition Contracts. (A fully structured contract initially containing advance procurement funds which is converted to an FFP contract in the full funding year.)

1/ Contract is currently in negotiations. It is inappropriate to disclose PMs estimate due to sensitivity of pricing.

2/ Contractor's FY-86 proposal.

16. Program Funding Summary: (Current Estimate in Millions of Dollars)

a. Program Status --

(1) Percent Program Completed: 60% (18 yrs/30 yrs)

(2) Percent Program Cost Appropriated: 44.4% (15435.8/34759.7)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Yrs (FY 86)	Budget Year (FY 87)	Balance to Complete FYDP (FY88-91)	Balance to Complete Beyond FYDP (FY 92)	Total
RDT&E	2314.3	268.4	571.0	58.0	3211.7
Procurement	13111.4	695.8	5333.1	12384.5	31524.8
MILCON	10.1	-	4.6	8.5	23.2
Total	15435.8	964.2	5908.7	12451.0	34759.7

16. Program Funding Summary (Con't): (Current Estimate in Millions of Dollars)

c. Annual Summary --

Fiscal Year	Qty	FY 69 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: RDT&E								
1969	12			167.5			172.5	4.72
1970	-			470.8			512.1	5.51
1971	-			300.6			342.1	5.14
1972	-			190.0			226.0	4.61
1973	-			127.4			160.4	4.35
1974	-			39.7			54.3	7.97
1975	-			9.3			13.9	10.94
1976	-			0.6			1.0	6.61
197T	-			1.0			1.6	2.88
1977	-			1.4			2.4	2.58
1978	-			20.1			36.6	6.80
1979	-			10.2			20.4	8.40
1980	-			11.8			26.1	10.59
1981	-			14.8			35.8	10.61
1982	-			7.8			19.8	7.60
1983	-			8.1			21.6	4.90
1984	-			15.6			43.1	3.80
1985	-			96.6			276.7	3.60
1986	-			117.2			347.9	3.20
1987	-			87.0			268.4	4.10
1988	-			49.0			156.7	3.90
1989	-			44.5			146.7	3.40
1990	-			38.9			131.6	2.90
1991	-			39.3			136.0	2.30
1992	-			14.1			50.0	2.30
1993	-			2.2			8.0	2.30
1994	-			-			-	2.30
1995	-			-			-	2.30
1996	-			-			-	2.30
1997	-			-			-	2.30
1998	-			-			-	2.30
1999	-			-			-	2.30
Subtotal	12			1885.5			3211.7	

16. Program Funding Summary (Con't): (Current Estimate in Millions of Dollars)

c. Annual Summary (con't) --

Fiscal Year	Qty	FY 69 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Nonrec	Flyaway Rec	Total	Advance Proc Debit	Advance Proc Credit	Total	
Appropriation: APN								
1969	-	-	-	-	-	-	-	3.17
1970	-	-	-	7.9	-	9.1	9.1	3.93
1971	26	-	375.7	601.0	9.1	59.2	690.9	4.55
1972	48	7.7	417.7	649.9	59.2	84.3	787.5	3.83
1973	48	6.0	311.4	424.4	84.3	74.6	565.2	4.16
1974	50	-	389.7	491.9	74.6	56.6	685.1	5.77
1975	50	7.2	372.5	486.9	56.6	74.5	717.0	8.81
1976	36	8.4	279.9	392.7	74.5	94.5	618.0	6.59
197T	9	0.2	74.6	79.4	45.9	49.7	133.2	3.56
1977	36	7.1	305.8	395.0	98.2	120.3	694.5	3.78
1978	44	0.8	361.6	425.5	120.3	132.0	821.7	6.80
1979	36	5.2	322.8	391.8	132.0	146.2	847.4	8.72
1980	30	0.5	271.5	317.3	146.2	130.9	765.0	11.80
1981	30	4.9	293.3	337.7	130.9	145.8	902.6	11.60
1982	30	2.9	309.5	402.3	145.8	178.8	1165.0	14.30
1983	24	9.9	241.0	308.7	178.8	200.1	956.7	9.00
1984	24	22.9	216.0	304.5	200.1	179.3	991.0	8.00
1985	24	22.1	209.2	288.6	179.3	194.9	976.9	4.10
1986	18	21.4	187.0	223.6	194.9	119.2	784.6	4.10
1987	15	13.3	150.4	191.5	119.2	127.7	695.8	4.10
1988	12	38.6	143.1	257.3	127.7	178.4	963.0	3.90
1989	18	23.8	216.4	325.1	178.4	229.2	1247.8	3.40
1990	24	24.8	275.9	344.3	229.2	276.9	1354.3	2.90
1991	36	27.7	375.1	440.0	276.9	287.1	1768.0	2.30
1992	30	23.5	307.0	421.9	287.1	289.7	1735.3	2.30
1993	30	22.6	304.7	431.0	289.7	294.9	1811.9	2.30
1994	30	17.5	303.0	414.8	294.9	300.3	1783.8	2.30
1995	30	14.7	301.6	400.0	300.3	305.7	1760.6	2.30
1996	30	13.5	300.1	384.9	305.7	311.4	1733.7	2.30
1997	30	12.5	298.9	394.5	311.4	400.1	1819.2	2.30
1998	39	14.0	375.6	370.5	400.1	-	1740.0	2.30
1999	-	-	-	-	-	-	-	2.30
Subtotal	887	373.7	8291.0	10904.9	5051.3	5051.4	31524.8	

16. Program Funding Summary (Con't): (Current Estimate in Millions of Dollars)

c. Annual Summary (con't) --

Fiscal Year	Qty	FY 69 Base-Year Dollars			Then-Year Dollars			Escl Rate (%)
		Flyaway			Advance Proc			
		Nonrec	Rec	Total	Debit	Credit	Total	
Appropriation: MILCON								
1969				-			-	6.18
1970				-			-	7.84
1971				2.4			3.2	8.69
1972				-			-	5.94
1973				0.5			0.8	5.55
1974				1.7			3.0	11.76
1975				-			-	16.12
1976				0.5			1.0	3.02
197T				-			-	1.56
1977				-			-	2.80
1978				-			-	7.68
1979				0.9			2.1	9.31
1980				-			-	10.59
1981				-			-	10.61
1982				-			-	7.60
1983				-			-	4.90
1984				-			-	3.80
1985				-			-	3.60
1986				-			-	3.20
1987				-			-	4.10
1988				-			-	3.90
1989				1.2			4.6	3.40
1990				-			-	2.90
1991				-			-	2.30
1992				2.1			8.5	2.30
1993				-			-	2.30
1994				-			-	2.30
1995				-			-	2.30
1996				-			-	2.30
1997				-			-	2.30
1998				-			-	2.30
1999				-			-	2.30
Subtotal				9.3			23.2	
(RDT&E/APN/MILCON) Total	899	373.7	8291.0	12799.7	5051.3	5051.4	34759.7	

16. Program Funding Summary (Con't):

d. Obligations and Expenditures -

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	TOTAL	Obligated	Expended
Appropriation: RDT&E			
1969	172.5	172.5	172.4
1970	512.1	511.9	511.7
1971	342.1	342.1	341.0
1972	226.0	225.9	225.3
1973	160.4	159.9	159.2
1974	54.3	53.5	53.2
1975	13.9	13.9	13.5
1976	1.0	1.0	1.0
197T	1.6	1.6	1.6
1977	2.4	2.4	2.3
1978	36.6	36.6	36.4
1979	20.4	20.4	20.2
1980	26.1	26.1	26.0
1981	35.8	35.8	35.5
1982	19.8	19.5	18.9
1983	21.6	21.6	19.9
1984	43.1	43.0	36.7
1985	276.7	271.6	186.9
1986	347.9	-	-
To complete	897.4	88.6	10.2
Total	3,211.7	2,047.9	1,871.9
Appropriation: APN			
1970	9.1	9.1	9.1
1971	690.9	690.9	689.1
1972	787.5	787.5	785.8
1973	565.2	565.2	564.4
1974	685.1	685.1	685.1
1975	717.0	717.0	711.1
1976	618.0	618.0	612.9
197T	133.2	133.2	130.8
1977	694.5	694.5	685.2
1978	821.7	821.7	821.7
1979	847.4	847.4	837.9
1980	765.0	765.0	733.8
1981	902.6	902.6	894.6
1982	1,165.0	1,165.0	1,139.0
1983	956.7	956.7	881.6
1984	991.0	939.0	664.8
1985	976.9	975.2	196.2
1986	784.6	-	-
To complete	18,413.4	-	-
Total	31,524.8	12,273.1	11,043.1

16. Program Funding Summary (Con't)
d. Obligations and Expeditures -

Fiscal Year	Then Year Dollars (Current Estimate in Millions)		
	TOTAL	Obligated	Expended
	Appropriation: MILCON		
1971	3.2	3.1	3.1
1972	-	-	-
1973	.8	.8	.8
1974	3.0	3.0	3.0
1975	-	-	-
1976	1.0	1.0	1.0
197T	-	-	-
1977	-	-	-
1978	-	-	-
1979	2.1	2.1	2.1
1980	-	-	-
1981	-	-	-
1982	-	-	-
1983	-	-	-
1984	-	-	-
1985	-	-	-
1986	-	-	-
To Complete	13.1	-	-
Total	23.2	10.0	10.0

17. Production Rate Data
a. Annual Production Rates -- F-14A -N/A. F-14D program is in full scale development.

Fiscal Year	Production Rates (Quantity/Year)			
	Development Estimate	Production Estimate	Current Estimate	Maximum
1988	N/A	N/A	7	N/A
1989	N/A	N/A	18	N/A
1990	N/A	N/A	24	N/A
1991	N/A	N/A	36	N/A
1992	N/A	N/A	30	N/A
1993	N/A	N/A	30	N/A
1994	N/A	N/A	30	N/A
1995	N/A	N/A	30	N/A
1996	N/A	N/A	30	N/A
1997	N/A	N/A	30	N/A
1998	N/A	N/A	39	N/A

Deliveries (Plan/Actual) --

	To Date
RDT&E	12/12
PROCUREMENT	527/524

18. Operating and Support Costs: N/A - Reference DOD Instruction 7000.3, Paragraph 18.

A-19 SHORAD C^2

SELECTED ACQUISITION REPORT (RCS: DD-COMP(Q&A)823)

PROGRAM: SHORT RANGE AIR DEFENSE COMMAND AND CONTROL SYSTEMS (SHORAD C^2)

85-025

AS OF DATE: December 31, 1985

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FOR OPEN PUBLICATION
MAR 21 1986
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW (OASD—PA)
DEPARTMENT OF DEFENSE

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1. Designation and Nomenclature (Popular Name): Not Assigned/Short Range Air Defense Command and Control Systems (SHORAD C^2)

2. DoD Component: Department of the Army.

3. Responsible Office and Telephone Number:

Project Manager
Air Defense Command and Control Systems
Redstone Arsenal, AL

PM: Kenneth N. Brown, COL
Assigned: 3 September 1985
AUTOVON: 742-3440
Commercial: (205) 895-3440

4. Program Elements:

RDT&E: PE 64741A Project D126 (FAAD C^2)(No shared funding)

PROCUREMENT: SSN AD5050 (No shared funding), APPN 2035

MILCON: N/A

No SECURITY Objection to PUBLIC RELEASE
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5. Related Programs: PJH, STINGER, Chaparral/FAAR, Vulcan, ACCS

6. Mission and Description:

The SHORAD C^2 is an automated command and control system designed to maximize effective use of the new family of short range air defense weapons and to overcome present shortfalls by integrating weapons, sensors data and identification data into a functional system through the use of the Army approved communications equipment. The system will be used by all SHORAD battalions (divisional and non-divisional) and separate batteries for active components. The mission will be accomplished through digital processing of target information, improved dissemination of air threat warning and weapon control orders, and the introduction of essential equipment at all echelons to provide data processing and display capabilities with emphasis on the needs of the fire units.

SHORAD C^2 is an evolutionary development program consisting of two phases. The test bed (first phase) provides an interim solution to the requirement for the earliest field demonstration of a viable command and control system. Previously developed hardware will be utilized to the maximum. . The test bed will provide automatic track extraction from the High-to-Medium Air Defense (HIMAD) source and transmission through the HIMAD Liaison Office (LNO) to the Air Battle Management Operations Center (ABMOC) and between the HIMAD LNO and the Battery Command Post C^2 subsystems. Local SHORAD Air Surveillance track data will be provided via a sensor interface at the Battery Command Post C^2 and ABMOC subsystems to supplement the HIMAD track data. Fire unit subsystems will be equipped with displays and AN/VRC-12 radios to receive C^2 and air surveillance data automatically forwarded from the Battery Command Post. Full scale development (second phase) consists of the equipment necessary to provide an automated capability for Army divisional and non-divisional Air Defense Artillery in autonomous or joint/combined deployment. Command and control will be provided for all echelons of a SHORAD battalion. Automated data links, processor, and displays will be provided to each echelon down to the fire unit level.

7. Program Highlights:

a. Significant Historical Developments -- SHORAD C^2 program was presented to the ASAPC (MDRII) in 4QFY85. Program was approved to proceed to DSARC.

b. Significant Developments Since Last Report -- SHORAD C^2 now includes a non-dev sensor and will use ACCS common hardware/software. SHORAD C^2 was withheld from DSARC review pending completion of the Forward Area Air Defense (FAAD) study.

c. Changes Since "As of" Date - On 3 Jan 86, the FAAD study results and the SHORAD C^2 system approach in support of FAAD were presented to an ASARC level review. The review approved the SHORAD C^2 Full Scale Development as part of FAAD.

8. Decision Coordinating Paper (DCP) Threshold Breaches: (Draft DCP, 31 Jan 86)

None

9. Schedule:

a. Milestones --	Planning Estimate/ Approved Program	Current Estimate	
(1) Test Bed			
Contract Award	2QFY84/2QFY84	2QFY84	
Contractor Test Complete	4QFY85/4QFY85	2QFY86	(CH-1)
Begin Field Test	1QFY86/1QFY86	1QFY86	
(2) Full Scale Development			
ASARC II	3QFY84/3QFY84	4QFY85	(CH-2)
DSARC II	3QFY84/3QFY84	2QFY86	(CH-2)
Full Scale Engineering Development Contract Award	3QFY84/3QFY84	3QFY86	(CH-2)
Milestone III (LP)	TBD	TBD	
Milestone III (FSP)	TBD	TBD	
Full Scale Production Contract Award (LP)	TBD	TBD	
Full Scale Production Contract Award (FSP)	4QFY85/4QFY85	TBD	
Start DT/OT II	TBD	TBD	
Complete DT/OT II	TBD	TBD	
Initial Operational Capability	4QFY89/4QFY89	TBD	

b. Previous Change Explanations --

Completion of ASARC/DSARC II and Full Scale Engineering Development contract award slipped from 3QFY84 to 3QFY85 per Congressional Data Sheet accompanying FY 86 President's Budget.

c. Current Change Explanations --

(CH-1) Contractor Test completion slipped due to computer hardware failure and software problems. Problems are currently being resolved by the engineers.

(CH-2) Army Command and Control System (ACCS) Laydown decisions resulted in delay of ASARC II, subsequently causing delay of DSARC II and award of Full Scale Engineering Development contract.

d. References --

Planning Estimate: FY85 President's Budget

Approved Program: Same as planning estimate.

10. Technical/Operational Characteristics:

	Planning Estimate/ Approved Program	Demonstrated Performance	Current Estimate
a. Technical --	TBD/TBD	TBD	TBD
b. Operational --	TBD/TBD	TBD	TBD

c. Previous Change Explanations -- N/A

d. Current Change Explanations -- N/A

e. References -- N/A

11. Program Acquisition Cost: (Current Estimate in Millions of Dollars)

	Planning Estimate	Changes	Current Estimate
a. Cost --			
Development (RDT&E)	$ 360.3	$+ 22.2	$ 382.5
Procurement	423.7	+176.4	600.1
Construction (MILCON)	0	0	0
Total FY 85 Base-Year $	784.0	+198.6	982.6
Escalation	91.5	+101.8	193.3
Development (RDT&E)	(14.6)	(+ 15.8)	(30.4)
Procurement	(76.9)	(+ 86.0)	(162.9)
Construction (MILCON)	0	0	0
Total Then-Year $	875.5	$ +300.4	$1757.9
1/b. Quantities --	TBD	N/A	TBD
c. Unit Cost --			
Procurement: FY 85 Base-Year $ Then-Year $	N/A	N/A	N/A
Program: FY 85 Base-Year $ Then-Year $	N/A	N/A	N/A

2/d. Approved Design to Cost Goal -- N/A

e. Foreign Military Sales -- None

f. Nuclear Costs -- None

1/ Quantities remain to be determined
2/ DRAFT DCP, 31 Jan 86, includes request for waiver for DTC. Program is primarily off-the-shelf NDI. Therefore, Design to Cost Goals do not apply.

12. Program Acquisition/Current Procurement Unit Cost Summary: (Current (Then-Yr) Dollars in Millions).

	Current Year		Budget Year
	SAR Current Estimate	UCR Baseline Estimate	UCR Baseline Estimate
a. Program Acquisition --			
(1) Cost	1175.9	992.8	1175.9
(2) Quantity	TBD	TBD	TBD
(3) Unit Cost	N/A	N/A	N/A
b. Current Procurement --	(FY 86)	(FY 86)	(FY 87)
(1) Cost	N/A	N/A	N/A
Less CY Adv Proc	N/A	N/A	N/A
Plus PY Adv Proc	N/A	N/A	N/A
Net Total	N/A	N/A	N/A
(2) Quantity	N/A	N/A	N/A
(3) Unit Cost	N/A	N/A	N/A

13. Cost Variance Analysis:

a. Summary - (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	TOTAL
Planning Estimate	374.9	500.6	875.5
Previous Changes:			
Economic	-0-	-.8	-.8
Quantity			
Schedule	+95	+23.1	+118.1
Engineering			
Estimating			
Other			
Support			
Subtotal	+95.0	+22.3	+117.3
Current Changes:			
Economic	- 5.8	-14.8	-.20.6
Quantity			
Schedule			
Engineering	-19.2	+254.9	+235.7
Estimating	-32.0		-32.0
Other			
Support			
Subtotal	-57.0	+240.1	+183.1
Total Changes	+38.0	+262.4	+300.4
Current Estimate	412.9	763.0	1175.9

13. Cost Variance Analysis (Cont'd):
(FY 85 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	TOTAL
Planning Estimate	360.3	423.7	784.0
Previous Changes:			
Quantity			
Schedule	+67.5	-34.4	+33.1
Engineering			
Estimating			
Other			
Support			
Subtotal	+67.5	-34.4	+33.1
Current Changes:			
Quantity			
Schedule			
Engineering	-14.4	+210.8	+196.4
Estimating	-30.9		-30.9
Other			
Support			
Subtotal	-45.3	+210.8	+165.5
Total Changes	+22.2	+176.4	198.6
Current Estimate	382.5	600.1	982.6

b. Previous Change Explanations --

(1) RDT&E
Schedule: program restructure to extend schedule and revise system configuration as a result of FY 84 HQDA guidance

(2) Procurement
Economic: revised Jan 85 economic escalation rates
Schedule: program restructure to extend schedule and revise system configuration as a result of FY 84 HQDA guidance

c. Current Change Explanations --

	(Dollars in Millions) Base-Year	Then-Year
(1) RDT&E		
The change in cost is due to decrease in RDT&E schedule, incorporation of Army Command and Control Systems (ACCS) common software and the addition of a non-developmental item sensor. (Engineering)	-14.4	-19.2
Revised Jan 86 economic escalation rates. (Economic)	N/A	- 5.8
OSD returned these dollars to Congress. (Estimating)	-30.9	-32.0

13. Cost Variance Analysis: (Cont'd):
(Current Change Explanations)

	(Dollars in Millions) Base-Year	Then-Year
(2) Procurement The change in cost is due to a decrease in the number of SHORAD C^2 subsystems/ Force Structure and addition of a non-developmental item sensor. (Engineering)	+210.8	+254.9
Revised Jan 86 economic escalation rates. (Economic)	N/A	- 14.8

(3) MILCON - N/A

d. References --

Planning Estimate: FY 85 President's Budget

14. Program Acquisition Unit Cost (PAUC) History: (Millions of Then-Year Dollars)

Initial SAR Estimate to Current Estimate

PAUC (Initial SAR Est)	Changes (Then-Year Dollars in Millions)								PAUC (Current Estimate
	Econ	Qty	Sch	Eng	Est	Spt	Other	Total	
TBD	-	-	-	-	-	-	-	-	TBD

15. Contract Information: (Then-Year Dollars in Millions)

a. RDT&E--

Test Bed:	Initial Contract Price Target	Ceiling	Qty
Singer-Kearfott DAAH01-84-C-A095, CPFF Award: 14 Mar 84 Definitized: 14 Mar 84	$ 18.4	$ 18.4	N/A

Current Contract Price Target	Ceiling	Qty	Estimated Price at Completion Contractor	Program Manager
$18.4	$18.4	N/A	$18.4	$ 18.4

Previous Cumulative Variances
None

Cost Variance
None

Schedule Variance
None

16. Program Funding Summary: (Current Estimate in Millions of Dollars)

a. Program Status --

(1) Percent Program Completed: 46.7% (7/15)

(2) Percent Program Cost Appropriated: 9.8% ($115.0/$1175.9)

b. Appropriation Summary --

(Then-Year Dollars in Millions)

Appropriation	Current & Prior Years (FY 80 - 86)	Budget Budget Year (FY 87)	Balance FYDP (FY 88 - 91)	To Complete Beyond FYDP (FY 92 - TBD)	Total
RDT&E	115.0	82.1	215.8	-	412.9
Procurement	-	-	273.1	489.9	763.0
Total	115.0	82.1	488.9	489.9	1175.9

c. Annual Summary -

FISCAL YEAR	QTY	FY 85 BASE-YEAR DOLLARS			THEN-YEAR DOLLARS			ESC RATE
		FLYAWAY			ADVANCE PROC			
		NON-REC	REC	TOTAL	DEBIT	CREDIT	TOTAL	%
Appropriation: RDT&E								
1980				4.0			3.0	5.9
1981				13.2			10.0	6.1
1982				14.2			13.2	7.6
1983				1.0			1.0	4.9
1984				40.3			36.8	3.8
1985				18.0			50.4	3.6
1986				30.7			32.6	3.2
1987				74.5			82.1	4.1
1988				101.9			116.2	3.9
1989				81.6			95.9	3.4
1990				3.1			3.7	2.9
1991				-			-	-
1992				-			-	-
SUBTOTAL				382.5			412.9	
Appropriation: Procurement								
1987				-			-	-
1988				-			-	-
1989				31.7			38.4	3.4
1990				54.2			67.1	2.9
1991				132.3			167.6	2.3
TOC				381.9			489.9	N/A
SUBTOTAL				600.1			763.0	
TOTAL				982.6			1175.9	

16. Program Funding Summary (Cont'd):

d. Obligations and Expenditures --

Fiscal Year	THEN-YEAR DOLLARS (Current Estimate in Millions)		
	Total	Obligated	Expended
Appropriation: RDT&E			
1980	3.0	2.9	2.9
1981	10.0	9.9	9.7
1982	13.2	13.1	12.8
1983	1.0	1.0	1.0
1984	36.8	32.8	30.6
1985	18.4	15.7	7.4
1986	32.6	2.6	-
To Complete	297.9	N/A	N/A
Total	412.9	78.0	64.4

17. Production Rate Data: N/A

18. Operating and Support Costs: N/A