

N-26 USMC H-1 UPGRADE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)

PROGRAM: USMC H-1 Upgrades

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AS OF DATE: December 31, 1996

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USMC H-1 UPGRADE

1. Designation and Nomenclature (Popular Name): USMC H-1 Upgrades Program

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

PROGRAM EXECUTIVE OFFICER (PMA-276) CAPT STEVEN L. FAHRENKROG
AIR ASW ASSAULT AND SPECIAL MISSION Assigned: September 1, 1993
PROGRAMS, 1421 JEFFERSON DAVIS HWY DSN 664-2276 x7066
ARLINGTON, VA 22243-5120 COMM (703) 604-2276 X7066

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603266N Project H2279

PE 0604245N Project H2279

PROCUREMENT:

APPN 1506 ICN 017800 (Navy)

5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated October 10, 1996 at the Milestone II decision.

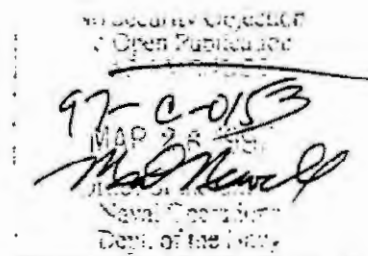
Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated October 10, 1996.

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FOR OPEN PUBLICATION

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



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6. Mission and Description:

The mission of the AH-1W attack helicopter is to provide rotary wing close air support, anti-armor, armed escort, armed/visual reconnaissance and fire support coordination capabilities under day/night and adverse weather conditions. The mission of the UH-1N utility helicopter is to provide command and control and combat assault support under day/night and adverse weather conditions. Included is special operation support; control, coordination, guidance, supporting fire and aeromedical evacuation. The H-1 Upgrades effort involves conversion of both the AH-1W and UH-1N from 2-bladed rotor system dynamics to 4 blades, referred to as "4BW and 4BN". The AH-1W will also phase a fully integrated cockpit into the development after initial work on the drive system is underway. Initial work will consist of simultaneous design efforts for the 4BW and 4BN. Major modifications include: a new rotor system with semi-automatic fold of the new composite blades, a new performance matched transmission, a new 4-bladed tail rotor and drive system, a more effective elevator, upgraded landing gear, and pylon structural modifications. The 4BW will increase aircraft agility, maximum continuous speed, and payload (ordnance) capability. The fully integrated cockpit will reduce operator workload and improve situational awareness, thus increasing safety. It will provide growth potential for future weapon systems and avionics, which would increase mission effectiveness and survivability. (As discrete systems have been added to the aircraft, pilot workload has progressively worsened.) The cockpit will include integration of on-board mission planning, communications, digital fire control, self navigation, night targeting, and weapons systems in near mirror image crew stations reducing training requirements. The 4BN effort will incorporate the 4BW rotor system into the UH-1N aircraft, maximizing commonality between the two aircraft and providing needed improvements in crew and passenger survivability, payload, power available, endurance, range, airspeed, maneuverability and supportability.

7. Executive Summary:

This is the initial SAR for the USMC H-1 Upgrades Program. The H-1 program had a positive Milestone II decision on October 10, 1996 and subsequently awarded the Engineering Manufacturing Development (EMD) contract to Bell Helicopter Textron, Inc. on November 15, 1996. The program has no issues at this time.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
4BW (AH-1W)				
Milestone II	SEP 96	SEP 96	OCT 96	(Ch-1)
Preliminary Design Review Complete	JUL 97	JUL 97	JUL 97	
Critical Design Review Complete	JUL 98	JUL 98	JUL 98	
TECHEVAL Testing Complete	DEC 02	DEC 02	DEC 02	
SAE LRIP Review	FEB 03	FEB 03	FEB 03	
OPEVAL Testing Complete	SEP 03	SEP 03	SEP 03	
Milestone III (SAE FRP Review - Navy)	FEB 04	FEB 04	FEB 04	
IOC	SEP 06	SEP 06	SEP 06	
Navy Support Date	SEP 08	SEP 08	SEP 08	
4BN (UH-1N)				
Milestone II	SEP 96	SEP 96	OCT 96	(Ch-1)
Preliminary Design Review Complete	JUL 97	JUL 97	JUL 97	
Critical Design Review Complete	JUL 98	JUL 98	JUL 98	
DAB LRIP #1 Review	DEC 01	DEC 01	DEC 01	
TECHEVAL Testing Complete	AUG 02	AUG 02	AUG 02	
SAE LRIP #2 Review	FEB 03	FEB 03	FEB 03	
OPEVAL Testing Complete	MAY 03	MAY 03	MAY 03	
Milestone III (SAE FRP Review - Navy)	FEB 04	FEB 04	FEB 04	
IOC	JUN 05	JUN 05	JUN 05	
Navy Support Date	SEP 07	SEP 07	SEP 07	

b. Current Change Explanations --

CH-1 The Milestone II decision was delayed from Sep 96 to Oct 96 due to administrative scheduling.

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10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
4BW (AH-1W)				
MFHBA (hrs)	35.0	35.0 / 24.0	TBD	35.0
MMH/FH (hrs)	3.6	3.6 / 4.3	TBD	3.6
Cruise Speed (kts)	165	165 / 140	TBD	165
Payload (Hot Day) (lbs)	3500	3500 / 2500	TBD	3500
Weapon Stations				
Universal Mounts	6	6 / 4	TBD	6
Precision Guided Munitions	16	16 / 12	TBD	16
Maneuverability/ Agility (G's)	-0.5 to +2.5	-0.5 to / -0.5 to +2.5 / +2.5	TBD	-0.5 to +2.5
Mission Radius (nm)	200nm x 1 (Aux Fuel)	200nm x / 50nm x 2 1 (Aux / or 110nm Fuel) / x 1	TBD	200nm x 1 (Aux Fuel)
4BN (UH-1N)				
MFHBA (hrs)	40.2	40.2 / 33.1	TBD	40.2
MMH/FH (hrs)	2.9	2.9 / 3.9	TBD	2.9
Cruise Speed (kts)	165	165 / 140	TBD	165
Payload (Hot Day) (lbs)	4500	4500 / 2800	TBD	4500
Weapon Stations	2 Univ. Mounts	2 Univ. / 2 Hard Mounts / Mounts	TBD	2 Univ. Mounts
Maneuverability/ Agility (G's)	-0.5 to +2.5	-0.5 to / -0.5 to +2.5 / +2.5	TBD	-0.5 to +2.5
Mission Radius (nm)	200nm x 1 (Aux Fuel)	200nm x / 50nm x 2 1 (Aux / or 110nm Fuel) / x 1	TBD	200nm x 1 (Aux Fuel)

b. Current Change Explanations -- None.

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	537.8	537.8	533.0
Procurement	2254.7	2254.7	2254.7
Flyaway	(1892.2)		(1892.2)
Other Wpn System Costs	(240.4)		(240.4)
Peculiar Support	(40.1)		(40.1)
Initial Spares	(82.0)		(82.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	2792.5	2792.5	2787.7
Escalation	755.0	755.0	783.6
Development (RDT&E)	(54.5)	(54.5)	(51.9)
Procurement	(700.5)	(700.5)	(731.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3547.5	3547.5	3571.3
b. Quantity --			
Development (RDT&E)	4	4	4
Procurement	280	280	280
Total	284	284	284

Note: The LRIP quantities approved at Milestone II are 5 (1st year) and 12 (2nd year) for 4BN and 5 only for 4BW. These LRIP quantities do not represent more than 10% of the total planned buy.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 96 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	2787.7	2792.5	
(2) Quantity	284	284	
(3) Unit Cost	9.816	9.833	-0.17
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	2254.7	2254.7	
(2) Quantity	280	280	
(3) Unit Cost	8.052	8.052	0.00

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	592.3	2955.2	-	3547.5
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-2.3	+36.9	-	+34.6
Quantity	-	-	-	-
Schedule	-5.1	-	-	-5.1
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-5.7	-	-5.7
Subtotal	-7.4	+31.2	-	+23.8
Total Changes	-7.4	+31.2	-	+23.8
Current Estimate	584.9	2986.4	-	3571.3

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

Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	537.8	2254.7	-	2792.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-4.8	-	-	-4.8
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-4.8	-	-	-4.8
Total Changes	-4.8	-	-	-4.8
Current Estimate	533.0	2254.7	-	2787.7

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-2.3
Budget reduction for SBIR and general inflation results in a 5-6 month delay in the 4BN development. (Schedule)	-4.8	-5.1
RD&E Subtotal	-4.8	-7.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+36.9
Rephasing of initial spares and other weapon systems support costs. (Support)	0.0	-5.7
Procurement Subtotal	0.0	+31.2

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.49	+0.12	+0.01	-0.02	--	--	--	-0.02	+0.09	12.58

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
10.55	+0.13	+0.01	--	--	--	--	-0.02	+0.12	10.67

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	SEP 96	N/A	OCT 96
Milestone III	N/A	FEB 04	N/A	FEB 04
FUE/IOC	N/A	JUN 05	N/A	JUN 05
Total Cost	N/A	3547.5	N/A	3571.3
Total Quantity	N/A	284	N/A	284
Prog Acq Unit Cost	N/A	12.49	N/A	12.58

June 05 IOC date reflects 4BN IOC; SEP 06 IOC date for the 4BW.

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

a. RDT&E --

New Contract:

Bell Helicopter Textron, Fort Worth TX
N00019-96-C-0128, CPAF
Award: November 15, 1996
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$498.0	N/A	4

Current Contract Price		
Target	Ceiling	Qty
\$498.0	N/A	4

Estimated Price At Completion	
Contractor	Program Manager
\$498.0	\$498.0

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

None.

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

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

<u>Appropriation</u>	<u>Prior Years (FY97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-11)</u>	<u>Total</u>
RDT&E	70.0	80.7	90.3	343.9	584.9
Procurement	-	-	-	2986.4	2986.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	70.0	80.7	90.3	3330.3	3571.3

b. Annual Summary -- USMC H-1 UPGRADES

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY96 Dollars Nonrec</u>	<u>Flyaway FY96 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1997				67.5	70.0
1998				76.3	80.7
1999				83.6	90.3
2000				137.8	152.0
2001				96.1	108.3
2002				44.3	51.0
2003				17.0	20.0
2004				10.4	12.6
Subtotal	4			533.0	584.9

Excludes FY96 funds which were used for studies and analyses.

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

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	5		52.3	71.6	84.3
2003	17		148.8	209.1	252.2
2004	24		187.4	260.7	322.7
2005	36		256.9	320.4	406.8
2006	36		241.6	285.9	372.5
2007	36		232.1	261.9	350.1
2008	36		225.3	250.3	343.3
2009	36		220.0	242.2	340.8
2010	35		210.4	229.2	330.9
2011	19		117.4	123.4	182.8
Subtotal	280		1892.2	2254.7	2986.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	280		1892.2	2254.7	2986.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 4.9

Percent Total Program Expended: 0.1%

Note: Total expenditures are as of February 28, 1997.

18. Operating and Support Costs:

- a. Assumptions and Ground Rules --
- Squadrons are composed of 18 4BW's and 9 4BN's.
 - Life Cycle is Phase-in + 20 years operation per aircraft.
 - Attrition rates are 1.24% for the 4BW and 1.05% for the 4BN.
 - Pipeline rates are 11% for the 4BW and 15% for the 4BN.
 - Manning (fleet squadron)
 - 45 officers for the 4BW and 23 officers for the 4BN.
 - 184/60 Squadron/Marine Air Logistics Squadron, Augmented (SQD/MALS AUG) enlisted for the 4BW; 108/30 for the 4BN

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

164 4BW's are required; 82 4BN's are required.

Each aircraft has a service life of 10,000 hours per aircraft.

Aircraft will use the organic maintenance concept.

Aircraft will fly 23 flight hours per month.

The Operating and Support cost estimate is dated August 8, 1996.

There is no antecedent system for this program.

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	USMC H-1 Upgrades	
Mission Pay & Allowances	2111.0	N/A
Unit Level Consumption	2073.0	N/A
Intermediate Maintenance	725.0	N/A
Depot Maintenance	1129.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	372.0	N/A
Indirect Costs	138.0	N/A
	N/A	N/A
	N/A	N/A
Total	6548.0	N/A

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- The Department of the Army is the Executing Agency

- (U) Ballistic Missile Defense LTG Lester Lyles, USAF
Organization, The Pentagon Assigned: August 1, 1996
Washington, DC 20301-7100 DSN 223-3025 COMM (703) 693-3025

- PROCUREMENT:**

Change in Classification
is Marked

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PATRIOT PAC-3, December 31, 1996

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

- (U) APPN 0300 ICN 0208060C (DCA/DNA) (Shared)
- (U) APPN 2032 ICN C49200 (Army)
- (U) APPN 2032 ICN C49300 (Army)
- (U) APPN 2032 ICN C50700 (Army)
- (U) APPN 2032 ICN CA0267 (Army)

5. (U) References:

SAR Baseline (Development Estimate):

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

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated August 20, 1996.

6. (U) Mission and Description:

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

The PATRIOT Advanced Capability (PAC-3) program is the result of a series of integrated, phased system improvements in combination with the PAC-3 missile (formerly ERINT). The PAC-3 missile is a high velocity hit-to-kill, surface-to-air missile capable of intercepting and destroying tactical missiles and air breathing threats. The PAC-3 missile provides the range, accuracy, and lethality to effectively defend against tactical missiles with nuclear, conventional high explosive, biological and chemical warheads. The missile uses a solid propellant rocket motor, aerodynamic vane controls, and inertial guidance to navigate to an intercept point. Shortly before arrival at the intercept point, the missile's rate of spin is increased, the on-board radar homing seeker acquires

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PATRIOT PAC-3, December 31, 1996

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

the target, and terminal homing guidance is initiated to achieve hit-to-kill by high resolution maneuvers.

7. (U) Executive Summary:

(U) The PATRIOT PAC-3 program is the evolution of the phased materiel change improvement program and new missile procurement to upgrade PATRIOT System performance. As a result of evolving threat and analysis of PATRIOT performance in Operation Desert Storm, several system upgrades are being implemented. These upgrades include the PAC-3 missile, radar enhancements, communications upgrades, and increased computer capability. In February 1994, the Army Systems Acquisition Review Committee (ASARC) made a down-select recommendation to proceed with development of the Extended Range Interceptor (ERINT) as the PAC-3 missile, in lieu of the Multimode missile. The Defense Acquisition Board (DAB) conducted a Milestone IV/II review in May 1994 and approved the PAC-3 missile for entry into the Engineering and Manufacturing Development (EMD) phase.

Program reviews with Army, BMDO, and OSD, in late FY95 and early FY96 determined significant schedule risk in executing the PAC-3 program. As a result of these reviews, budgeting decisions were made to minimize program risk by restructuring the program to extend the EMD schedule by up to ten months and establish fourth quarter FY99 as the objective date for PAC-3 First Unit Equipped. A new Acquisition Program Baseline was approved on 20 August 1996 which implemented the OSD directed program restructure based on the FY97 President's Budget. Contract modifications were incorporated into the PAC-3 Missile EMD and the Missile Segment Integration contracts to reflect the revised program.

A revised PAC-3 Test and Evaluation Master Plan (TEMP) was approved by the Director, OSD (OT&E), on November 1, 1996. A PAC-3 TEMP was initially approved by the Defense Acquisition Board in May 1994. The TEMP was updated in accordance with Congressional language approved in the FY96 Defense Authorization Bill which revised the Multiple Simultaneous Engagement requirement and added flight tests agreed to by Army and OSD.

First Unit Equipped (FUE) was achieved on December 5, 1996 for the second of three phases of the PATRIOT Growth Program. The FUE for Configuration 2 was declared with fielding of hardware and software to the 5/52 Air Defense Artillery. Configuration 2 adds communication upgrades for joint interoperability, improved radar performance, self defense capability against anti-radiation missile, and capability to receive and process information from external intelligence sources.

Developmental missile flight testing is scheduled to begin in the third quarter FY97.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>	
MISSILE				
Milestone II (Missile) (DAB)	MAY 94	MAY 94	MAY 94	
Development Contract Award	SEP 94	SEP 94	OCT 94	
Preliminary Design Review Complete	SEP 95	SEP 95	OCT 95	
Critical Design Review Complete	MAR 96	MAR 96	MAR 96	
Service Final DT&E				
Start	JAN 97	APR 97	JUN 97	(Ch-1)
Complete	DEC 97	DEC 98	DEC 98	
Low Rate Initial Production Decision (DAB)	JUN 97	SEP 97	DEC 97	(Ch-1)
Low Rate Initial Production Contract Award	JUL 97	OCT 97	JAN 98	(Ch-1)
Begin LRIP	N/A	N/A	DEC 97	
Low Rate Production First Delivery	MAY 98	APR 99	APR 99	
IOT&E				
Start	JAN 98	FEB 99	FEB 99	
Complete	JUN 98	MAR 99	MAR 99	
Milestone III Production Decision	AUG 98	JUN 99	JUN 99	
Full Rate Production Contract Award	AUG 98	OCT 99	OCT 99	
First Unit Equipped	SEP 98	JUL 99	JUL 99	
Service Depot Support	SEP 01	JUL 02	JUL 02	
Initial Operational Capability	(b)(1)			
OTHER UPGRADES				
Configuration 1 Production	MAR 95	MAR 95	MAY 95	(Ch-2)
Confirmatory Test				
Configuration 1 First Unit Equipped	JUN 95	JUN 95	DEC 95	
Configuration 2 Follow On Test	DEC 95	DEC 95	MAY 96	

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Configuration 2 First Unit Equipped	JUN 96	JUN 96	DEC 96 (Ch-3)
Configuration 3 Follow On Test	JUN 98	FEB 99	FEB 99
Configuration 3 First Unit Equipped	SEP 98	JUL 99	JUL 99

(U) PAC-3 Missile First Unit Equipped (FUE) is considered achieved when the first Fire Unit is equipped with sixteen PAC-3 missiles with which to load four PAC-3 missiles on each of four PAC-3 capable launching stations.

PAC-3 Initial Operational Capability (IOC) is considered achieved when a PATRIOT Battalion, consisting of five Fire Unit (FU), is equipped with thirty-two PAC-3 missiles per FU.

The Begin LRIP milestone is not an Acquisition Program Baseline milestone and will be deleted in the next SAR.

b. (U) Current Change Explanations --

(Ch-1) Current program planning is to conduct first missile flight test in 3rd quarter FY97. Schedule for subsequent flight tests required to meet Low Rate Initial Production Exit Criteria, requires change of Production Decision and Contract Award current estimates. Current Estimate changed for Service Final DT&E - Start, from APR 97 to JUN 97; Low Rate Initial Production Decision (DAB), from SEP 97 to DEC 97; and Low Rate Initial Production Contract Award, from OCT 97 to JAN 98.

(Ch-2) Current Estimate reflects actual completion of MAY 95.

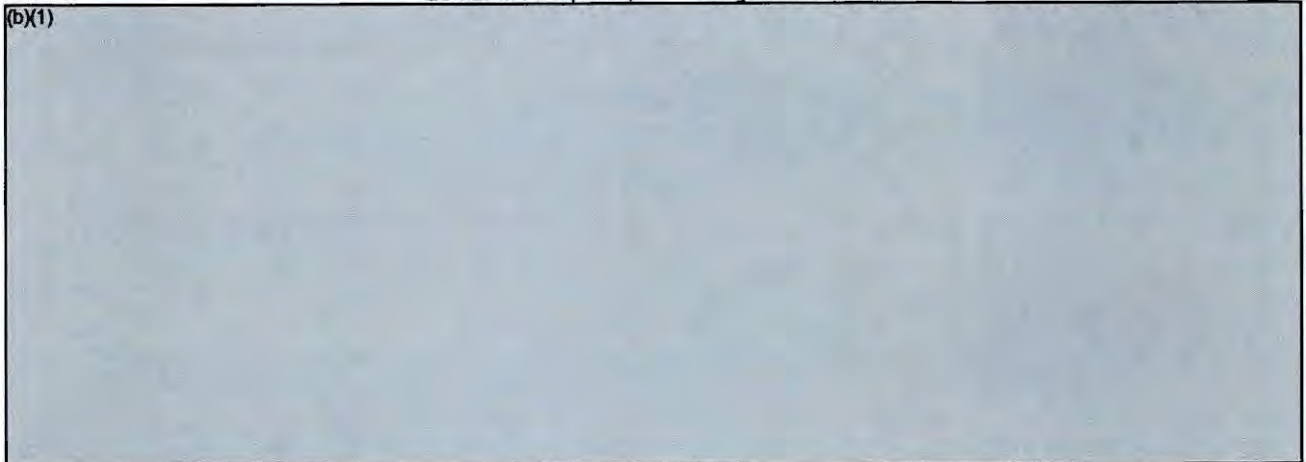
(Ch-3) Current Estimate is actual accomplishment date.

10. (U) Performance Characteristics:

a. Performance --

Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)



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

Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)



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

(b)(1)

b. Current Change Explanations -- None.

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	2015.6	2332.3	2376.4
Procurement	2783.2	3122.7	3204.1
Recurring Flyaway	(1498.8)		(2307.8)
Nonrecurring Flyaway	(1244.7)		(734.3)
Total Flyaway	(2743.5)		(3042.1)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(39.7)		(162.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 88 Base-Year \$	4798.8	5455.0	5580.5
Escalation	1582.8	1798.4	1845.1
Development (RDT&E)	(420.2)	(528.5)	(542.5)
Procurement	(1162.6)	(1269.9)	(1302.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6381.6	7253.4	7425.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	54	54	54
Total	54	54	54

(U) The Unit of Measure is a Fire Unit (FU) which consists of a Radar Set, an Engagement Control Station, an Electric Power Plant, and up to eight Launching Stations equipped with missiles.

The Low Rate Initial Production (LRIP) quantity for the PAC-3 missile established by the 7 July 1994 Milestone IV/II Acquisition Decision Memorandum was 90. The LRIP missile quantity changed to 120, in accordance with the OSD directed program restructure based on the FY97 President's Budget. The change was approved by the USD(A&T) in December 1996, as part of the program rebaselining action. The LRIP missile quantity is 10% of the production quantity.

c. Foreign Military Sales -- None.

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

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (AUG 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 88 BY\$)	5580.5	5455.0	
(2) Quantity	54	54	
(3) Unit Cost	103.343	101.019	+2.30
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 88 BY\$)	3204.1	3122.7	
(2) Quantity	54	54	
(3) Unit Cost	59.335	57.828	+2.61

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2435.8	3945.8	-	6381.6
Previous Changes:				
Economic	-3.2	-123.9	-	-127.1
Quantity	-	-	-	-
Schedule	+296.6	-444.5	-	-147.9
Engineering	-	+282.2	-	+282.2
Estimating	+131.6	+616.0	-	+747.6
Other	-	-	-	-
Support	-	+117.0	-	+117.0
Subtotal	+425.0	+446.8	-	+871.8
Current Changes:				
Economic	+0.4	-11.6	-	-11.2
Quantity	-	-	-	-
Schedule	-	-3.8	-	-3.8
Engineering	+52.6	+145.2	-	+197.8
Estimating	+5.1	-70.0	-	-64.9
Other	-	-	-	-
Support	-	+54.3	-	+54.3
Subtotal	+58.1	+114.1	-	+172.2
Total Changes	+483.1	+560.9	-	+1044.0
Current Estimate	2918.9	4506.7	-	7425.6

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2015.6	2783.2	-	4798.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	+218.6	-375.3	-	-156.7
Engineering	-	+190.4	-	+190.4
Estimating	+97.7	+440.2	-	+537.9
Other	-	-	-	-
Support	-	+84.2	-	+84.2
Subtotal	+316.3	+339.5	-	+655.8
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+40.9	+93.5	-	+134.4
Estimating	+3.6	-50.2	-	-46.6
Other	-	-	-	-
Support	-	+38.1	-	+38.1
Subtotal	+44.5	+81.4	-	+125.9
Total Changes	+360.8	+420.9	-	+781.7
Current Estimate	2376.4	3204.1	-	5580.5

b. (U) Current Change Explanations --

(1) RDT&E	(Dollars in Millions)	
	Base-Year	Then-Year
Revised escalation indices. (Economic)	N/A	+0.4
Adjustment for Current and Prior Inflation. (Estimating)	-1.1	-1.4
Return of funds previously provided to Navy (Estimating)	+3.2	+4.1
Small Business Innovative Research reduction (Estimating)	-4.4	-5.7
Reprogramming to Air Defense Command and Control System (Estimating)	-1.2	-1.5
Revised estimate to include target costs. (Estimating)	+7.5	+10.1
Revised program office estimate. (Estimating)	-0.4	-0.5
Multi-Mode Missile Risk Reduction Requirement (Engineering)	+9.9	+11.6

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PATRIOT PAC-3, December 31, 1996 —

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Horizontal Battlefield Digitization (Engineering)	+4.4	+6.0
Anti-Cruise Missile Requirement (Engineering)	+26.6	+35.0
RDT&E Subtotal	+44.5	+58.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-13.3
Economic adjustment for negative program change. (Economic)	N/A	+1.7
Adjustment for Current & Prior Inflation. (Estimating)	+0.9	+1.2
Realignment of procurement buy profile due to extension of EMD to reduce risk (Schedule)	0.0	-3.8
Refined Flyaway Cost estimate. (Estimating)	-51.1	-71.2
Special Target Funding (Engineering)	+6.4	+8.6
FY97 Congressional Supplement for Integrated Diagnostics Support System (IDSS)/Guidance Enhancement Missile (GEM) (Engineering)	+9.1	+12.1
Revised IDSS and missile modification (Engineering)	+22.3	+34.5
Modification kits for Radar, Remote Launch/Communications Enhancement Upgrades (RLCEU) and other upgrades (Engineering)	+55.7	+90.0
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Initial Spares Requirement (Support)	+37.9	+54.1
Procurement Subtotal	+81.4	+114.1

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14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
118.18	-2.56	--	-2.81	+8.89	+12.64	--	+3.17	+19.33	137.51

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
73.07	-2.51	+0.01	-8.30	+7.91	+10.11	--	+3.17	+10.39	83.46

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	MAY 94	N/A	MAY 94
Milestone III	N/A	AUG 98	N/A	JUN 99
FUE/IOC	N/A	SEP 98	N/A	JUL 99
Total Cost	N/A	6381.6	N/A	7425.6
Total Quantity	N/A	54	N/A	54
Prog Acq Unit Cost	N/A	118.18	N/A	137.51

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

a. RDT&E --

(U) FY89 ENGINEERING DEVEL:

RAYTHEON Co., BEDFORD, MA

DAAH01-89-C-0458, CPIF

Award: April 10, 1989

Definitized: April 10, 1989

Initial Contract Price

Target	Ceiling	Qty
\$159.8	N/A	0

Current Contract Price

Target	Ceiling	Qty
\$162.0	N/A	0

Estimated Price At Completion

Contractor	Program Manager
\$185.6	\$185.6

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-24.5	\$-2.4
Cumulative Variances To Date (12/31/96)	\$-26.6	\$-2.1
Net Change	\$-2.1	\$0.3

Explanation of Change:

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

All contract effort since the prior report is associated with the CDI-3 task. The change in the estimated price at completion and the cumulative cost variance is due to the increased system complexity and problems experienced with integration and checkout of hardware, additional labor for rework and retest of modules, and more extensive development required for operational and diagnostic software.

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

This contract has met the 90% completion criteria and this is the final report for this contract.

(U) PAC-3 MISSILE EMD:			Initial Contract Price		
LORAL VUGHT SYSTEMS, DALLAS, TX			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-95-C-0021, CPIF/AF			\$515.8	N/A	0
Award: October 26, 1994					
Definitized: November 7, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$693.1	N/A	0	\$693.1	\$713.5	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/31/96)			\$-15.1	\$-17.2	
Net Change			\$-24.4	\$-11.5	
			\$-9.3	\$5.7	

Explanation of Change:

(U) Per FY96 funding guidance, EMD was extended to minimize program risk. Current Contract Price and the Contractor Estimated Price at Completion increased \$110.6M for risk abatement modifications. The Program Manager Estimated Price at Completion includes the modifications and the projected overrun.

The cost variance change was primarily driven by extended design and

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

integration activities for the Enhanced Launcher Electronics System, seeker development refinements to improve performance and reduce costs, and greater than planned efforts in Radio Frequency Down Link brassboard and first flight article fabrication.

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

(U) PAC-3 MSL INTEGRATION:

RAYTHEON CO., BEDFORD, MA

DAAH01-95-C-0022, CPIF/AF

Award: October 31, 1994

Definitized: October 23, 1995

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$104.8	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$138.2	N/A	0	\$138.2	\$138.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.5	\$-2.5
Cumulative Variances To Date (12/31/96)	\$1.1	\$-3.2
Net Change	\$0.6	\$-0.7

Explanation of Change:

(U) The Current Contract Price and Estimated Price at Completion increased \$33.4M for the contract modification to align contract activities with the overall PAC-3 program restructure initiated by the program funding changes.

The schedule variance change is primarily due to delays in delivery of the Fire Solution Computer and Enhanced Launcher Electronics System hardware which impacted the start of system integration testing.

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

(U) REM LCH COMMO ENH UPGRAD:

Raytheon Co., Bedford, MA

DAAF01-96-C-0018, CPIF

Award: November 6, 1995

Definitized: December 23, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$66.5	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$66.5	N/A	0	\$66.5	\$66.5

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/96)	\$0.0	\$-2.8
Net Change	\$0.0	\$-2.8

Explanation of Change:

(U) The Initial Contract Price, Current Contract Price, and Estimated Price at Completion are shown at the definitized contract target price of \$66.5M.

The schedule variance change is primarily due to delays in the Integrated Digital Operator Control System system design which caused slips in hardware selection and subsequent manufacturing effort.

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

(U) <u>TMD Targets Program:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Coleman Research Corp., Orlando FL DASG60-92-C-0217, CPFF Award: October 14, 1992 Definitized: October 14, 1992	\$144.2	N/A	25

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$219.2	N/A	25	\$208.2	\$215.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.1	\$-1.6
Cumulative Variances To Date (12/31/96)	\$-5.4	\$-3.9
Net Change	\$-1.3	\$-2.3

Explanation of Change:

(U) The unfavorable cost variance is the result of various problems from development to reworking hardware and performing additional testing. The remaining 19 Hera targets are to be re-designed to provide four new types of re-entry threat signature. This change in contract scope resulted in an increase of \$40M to the contract.

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

b. Procurement --

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

(U) <u>RADAR ENH PH3 MOD KITS:</u>	Initial Contract Price		
Raytheon, Co., Bedford, MA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-95-C-0446, FFP	\$201.3	N/A	0
Award: September 29, 1995			
Definitized: December 6, 1996			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$201.3	N/A	0	\$201.3	\$201.3

Explanation of Change:

(U) This contract was initially awarded in Sep 95 for six modification kits and spares to support program test and evaluation. A full production decision was authorized in Dec 95 for up sixty-nine additional modification kits and spares to retrofit the balance of PATRIOT Fire Unit radars. A contract modification for procurement of sixteen kits and spares was awarded in Dec 95.

Cost and schedule variance reporting is not required for this FFP contract.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY83-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-07)	<u>Total</u>
RDT&E	2578.9	218.5	110.9	10.6	2918.9
Procurement	1308.2	372.7	389.1	2436.7	4506.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3887.1	591.2	500.0	2447.3	7425.6

b. Annual Summary -- FIRE UNIT

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1983				38.0	33.3
1984				26.5	24.1
1985				21.8	20.4
1986				15.7	15.1
1987				30.4	30.2
1988				17.4	18.0
1989				60.6	65.2
1990				34.3	38.3
1991				126.5	146.5

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

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				258.2	306.0
1993				189.2	229.5
1994				174.9	216.2
1995				273.8	345.4
1996				291.8	375.9
1997				288.3	379.2
1998				153.6	206.1
1999				74.0	101.4
Subtotal				2075.0	2550.8

(U) Base Year dollars calculated using Army indices prepared on 27 Dec 96.

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				21.8	23.4
1990				28.8	32.1
1991				39.6	45.9
1992				32.0	37.9
1993				37.8	45.8
1994				30.9	38.2
1995				18.2	22.9
1996				33.5	43.1
1997				35.2	46.3
1998				9.2	12.4
1999				6.9	9.5
2000				4.1	5.8
2001				3.4	4.8
Subtotal				301.4	368.1

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992		20.5		20.5	24.9
1993		60.8		60.8	75.2
1994		95.2		95.2	120.1
1995		195.0		195.0	251.1
1996		219.0		219.0	286.0
1997		143.8		163.2	217.9
Subtotal		734.3		753.7	975.2

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

(U) Base Year dollars calculated using Army indices prepared on 27 Dec 96.

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990			16.5	16.5	19.1
1991			126.1	126.1	149.6
1992			39.8	39.8	48.3
1993			13.7	14.3	17.7
1994			14.8	20.1	25.4
1995			20.1	25.1	32.3
1996			5.2	7.8	10.2
1997			17.5	22.8	30.4
1998	52		242.2	273.0	372.7
1999	68		253.4	279.1	389.1
2000	180		322.0	339.0	482.7
2001	212		312.1	324.7	472.5
2002	220		294.4	305.3	454.8
2003	240		261.4	271.6	414.9
2004	226		257.5	265.9	416.7
2005			50.6	54.5	87.7
2006			53.0	55.8	92.1
2007			7.5	9.0	15.3
Subtotal	1200		2307.8	2450.4	3531.5

(U) The Program Acquisition Unit Cost (PAUC) unit of measure is tactical Fire Units (FUs), see Section 12. The end item quantities reported above are missile procurements. Non-recurring procurement costs include all costs except missile hardware costs.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD		734.3		2828.7	3526.0
Army	1200		2307.8	2751.8	3899.6
Grand Total	1200	734.3	2307.8	5580.5	7425.6

17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2012.7

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17b. (U) Delivery/Expenditure Information (Cont'd):

(U) Percent Total Program Expended: 27.1%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

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

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

b. (U) Costs -- (FY 1988 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Patriot PAC-3 Fire Unit	Avg Annual Cost Per Antecedent System N/A
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	2.0	0.0
Intermediate Maintenance	0.9	0.0
Depot Maintenance	0.6	0.0
Contractor Support	0.2	0.0
Sustaining Support	0.1	0.0
Indirect Costs	1.2	0.0
Total	5.0	0.0

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N-3 AN/SQQ-89

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: AN/SQQ-89 ASWCS

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): ASW COMBAT SYSTEM

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

PM for Surface Ship ASWCS Program CAPT Richard Goldsby
ATTN: PMS411 Assigned: February 20, 1996
2531 Jefferson Davis Hwy DSN 664-5070; COMM (703) 604-5070
Arlington, VA 22242-5169

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

RDT&E:

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

PROCUREMENT:

(U) APPN 1810 ICN 33213300 (Navy)
(U) APPN 1810 ICN 33213400 (Navy)
(U) APPN 1810 ICN 33213600 (Navy)
(U) APPN 1810 ICN 33223600 (Navy)
(U) APPN 1810 ICN 33425500 (Navy)
(U) APPN 1810 ICN 33545200 (Navy)
(U) APPN 1810 ICN 0204228N (Navy) (Shared)
(U) APPN 1810 ICN 0204243N (Navy)

MILCON:

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AN/SQQ-89 ASWCS, December 31, 1996

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

(U) PE 0204262N
O&M:
(U) PE 78012N
(U) PE 78017N

5. (U) References:

SAR Baseline (Production Estimate):

(U)

- (1) DCP-92 dated August 16, 1976 (AN/SQR-19)
- (2) DCP-85 dated March 5, 1979 (AN/SRQ-4 and AN/SQQ-28)
- (3) OR 062-03-86 dated December 24, 1985 (AN/SQQ-89)
- (4) ASN (RE&S) Milestone IIIC (NPDM held November 19, 1987; Decision Memorandum was issued March 1988) (AN/SQS-53C); The AN/SQS-53C subsystem entered full rate production in June 1989.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated May 10, 1991.

6. (U) Mission and Description:

The AN/SQQ-89 is required to provide detection, classification, tracking and attack capabilities to surface ship combatants to allow them to prosecute enemy submarines in open ocean and littoral environments. The AN/SQQ-89 provides (b)(1)

(b)(1)

(b)(1)

in selected areas of the world's oceans for CG 47, FFG 7, DDG 51, and DD 963 class ships. The AN/SQQ-89 has various configurations achieved by installing components of the AN/SQQ-89 according to the current configuration of each ship; the set of equipments procured for a specific ship therefore varies with each installation.

7. (U) Executive Summary:

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

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AN/SQQ-89 ASWCS, December 31, 1996

7. (U) Executive Summary (Cont'd):

AN/SQQ-89 production. While GE was the first to produce integrated AN/SQQ-89s, WEC won the first production competition in FY90 and subsequently the FY92-95 production lots.

Lockheed Martin, who purchased the GE Electronics Division, won the competitive procurement for the FY96-00 production lots in February, 1996. Northrup Grumman (NG), who purchased the WEC sonar division, submitted a claim against the Navy for \$306M based on their belief that they were to have been the sole source producer of the AN/SQQ-89(V) as a result of their winning the competition for the FY92-95 contract. On 22 November 1996, the Contracting Officer denied NG's claim. NG was advised that they have 90 days to appeal the decision to the Armed Services Board of Contract Appeals (ASBCA) or 12 months to file with the United States Court of Federal Claims. (The 90 day period to appeal to the ASBCA expired on 03 March 97 with no action taken by NG)

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

In an effort to reduce initial procurement, upgrade, and life cycle costs, the Navy is incrementally converting the AN/SQQ-89(V) architecture to an open system based on industry standard commercial "off the shelf" (COTS) hardware and software. PMS411 has a COTS insertion program for both backfit and forward-fit. Backfitting COTS will be accomplished via upgrades to the AN/SQQ-89(V)6 systems installed on designated CGs, DDs, and DDGs. These upgrades open the combat system architecture and insert COTS-based system enhancements for shallow water environments.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

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8. (U) Threshold Breaches (Cont'd):

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
AN/SRQ-4 Subsystem			
FSD Contract Award	SEP 77	SEP 77	SEP 77
DNSARC III	JUN 82	JUN 82	JUN 82
Approval for Production	DEC 82	DEC 82	DEC 82
AN/SRQ-19 Subsystem			
FSD Contract Award	OCT 76	OCT 79	OCT 79
DNSARC III	NOV 80	MAR 83	MAR 83
Approval for Production	MAR 83	DEC 84	DEC 84
AN/SQQ-28 Subsystem			
FSD Contract Award	FEB 76	FEB 78	FEB 76
DNSARC IIIA (PASU)	DEC 81	DEC 81	DEC 81
DNSARC IIIB (ASU)	AUG 82	AUG 82	AUG 82
AN/SQS-53B Subsystem			
FSD Contract Award	JUN 79	JUN 79	JUN 79
DNSARC III	DEC 82	DEC 82	DEC 82
Approval for Production	JUN 83	JUN 83	JUN 83
AN/SQS-53C Subsystem			
FSD Contract Award	MAY 82	MAY 82	MAY 82
DNSARC IIIA	JAN 86	JAN 86	JAN 86
Navy Prod Decision Memo IIIB	SEP 86	SEP 86	SEP 86
Navy Prod Decision Memo IIIC	DEC 87	DEC 87	MAR 88
Approval for Production	DEC 87	DEC 87	JUN 89
MK 116 Subsystem			
Approval for Production	DEC 82	DEC 82	DEC 82

b. Current Change Explanations -- None.

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AN/SQQ-89 ASWCS, December 31, 1996

10. (U) Performance Characteristics:

a. Performance --

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
AN/SRQ-4				
Data Transfer				
Reliability (%)				
() ASW at 100nm	(b)(1)			
() ASST at 40nm				
AN-SQR-19				
Detection at own				
ship speed (20				
knots)(dB)				
() Fig. of Merit				
Narrowband				
() Fig. Of Merit				
Broadband				
() Bearing Accuracy				
(degrees)				
() Frequency Coverage				
(Narrowband) (Hz)				
() Frequency Coverage				
(Broadband) (Hz)				
Mechanical				
Characteristics				
() Survival Speed				
(knots)				
() Streaming &				
Recovery Time				
(min)				
Reliability/Main-				
tainability (hrs)				
() Shipbased				
Electronics MTBF				
() Shipbased				
Electronics MTTR				
() Array MTBF				
() Array MTTR				
() Software MTBF				
() Software MTTR				
() Operational				
Availability (Ao)				
AN/SQS-53C				
() Space/Weight	178/16.5	178/16.5/ 179/16.5	179/16.5	179/16.5
(Electronics)				
(sq ft.)/(tons)				
Reliability				
() Passive Subsystem	600	600 / 600	(b)(1)	
(MTBF) (HW) (hrs)				

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(C) Active Subsystem (hrs)	1100	1100 / 1100	(b)(1)	
(C) Total Subsystem (MTBF) (HW) (hrs)	460	460 / 460		
(C) Operational Availability (Ao)	(b)(1)			
(C) Active Detection				
(C) BB, CZ, PDT Search Coverage (deg)				
(C) Noise Limited FOM 15 kt (db)				
(C) Passive Detection				
(C) Passive Narrow Band Search Coverage (deg)				
(C) Passive Narrow Band Search FOM (db)				
(C) Passive Broad Band Search Coverage (deg)				
(C) Passive Broad Band Search FOM (db)				
(C) Mean Time Between Mission Critical Failure (MTBMCF) (hrs)				
(C) Mission Time to Repair Hardware (MTTR) (HW) (hrs)				
(C) Mean Time to Restore a SW Failure (MTTR) (SW) (hrs)				
(C) Operational Availability				

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

(U) FOM Narrowband and FOM broadband under AN/SQR-19 -

(b)(1)

Streaming and Recovery Time under AN/SQR-19 -

(b)(1)

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

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

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

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

(U) The AN/SQQ-28 is required to process the sonobuoys identified, and has demonstrated this capability.

b. Current Change Explanations -- None.

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	754.2	1331.2	1095.6
Procurement	218.3	2637.6	2468.4
			(1379.9)
			(468.4)
Peculiar Support	(0.0)		(31.3)
Initial Spares	(218.3)		(164.7)
Construction (MILCON)	0.0	4.6	4.6
Acquisition O&M	183.8	79.3	79.3
Total FY 85 Base-Year \$	1156.3	4052.7	3647.9
Escalation	2991.3	635.9	493.6
Development (RDT&E)	(-66.4)	(76.0)	(-18.2)
Procurement	(3034.6)	(554.6)	(506.4)
Construction (MILCON)	(0.0)	(-0.2)	(-0.1)
Acquisition O&M	(23.1)	(5.5)	(5.5)
Total Then Year \$	4147.6	4688.6	4141.5
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	120	92	91
Total	120	92	91

c. (U) Foreign Military Sales --
AN/SQQ-89(V) subsystems and support have been procured by both Canada and Spain. Currently, Canada has procured 7 Handling and Stowage Groups and 14 Towed Array Groups. These equipments are subsets of the AN/SQR-19(V). Total Canadian case values (including spares and support) are 46.2M. Spain has procured 6 full AN/SQR-19(V) subsystems, 6 AN/SQQ-28(V) subsystems, 10 AN/UYQ-25 subsystems and 6 AN/SRQ-4 subsystems. Total Spanish case values (including spares and support) are 90.4M.

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

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAY 91 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 85 BY\$)	3647.9	4052.7	
(2) Quantity	91	92	
(3) Unit Cost	40.087	44.051	-9.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 85 BY\$)	2468.4	2637.6	
(2) Quantity	91	92	
(3) Unit Cost	27.125	28.670	-5.39

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	687.8	3252.9	-	206.9	4147.6
Previous Changes:					
Economic	+1.6	+33.8	+0.1	+5.7	+41.2
Quantity	-	-798.1	-	-	-798.1
Schedule	+4.5	+639.8	-	-	+644.3
Engineering	+6.7	+397.4	-	-	+404.1
Estimating	+353.5	-558.9	-	-25.3	-230.7
Other	-	-	-	-	-
Support	-	-114.2	+4.4	-102.5	-212.3
Subtotal	+366.3	-400.2	+4.5	-122.1	-151.5
Current Changes:					
Economic	-0.4	-1.3	-	-	-1.7
Quantity	-	-	-	-	-
Schedule	-	+4.2	-	-	+4.2
Engineering	+24.0	+91.2	-	-	+115.2
Estimating	-0.3	+12.3	-	-	+12.0
Other	-	-	-	-	-
Support	-	+15.7	-	-	+15.7
Subtotal	+23.3	+122.1	-	-	+145.4
Total Changes	+389.6	-278.1	+4.5	-122.1	-6.1
Current Estimate	1077.4	2974.8	4.5	84.8	4141.5

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

(U) Summary (FY 1985 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	754.2	2961.0	-	183.8	3899.0
Previous Changes:					
Quantity	-	-673.1	-	-	-673.1
Schedule	+4.7	+276.2	-	-	+280.9
Engineering	+9.0	+303.0	-	-	+312.0
Estimating	+312.5	-363.8	-	-23.6	-74.9
Other	-	-	-	-	-
Support	-	-111.9	+4.6	-80.9	-188.2
Subtotal	+326.2	-569.6	+4.6	-104.5	-343.3
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+15.7	+56.9	-	-	+72.6
Estimating	-0.5	+10.4	-	-	+9.9
Other	-	-	-	-	-
Support	-	+9.7	-	-	+9.7
Subtotal	+15.2	+77.0	-	-	+92.2
Total Changes	+341.4	-492.6	+4.6	-104.5	-251.1
Current Estimate	1095.6	2468.4	4.6	79.3	3647.9

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year(1) RDT&E

Revised escalation indices. (Economic)	N/A	-0.4
Additional requirements to upgrade ASW combat system (Engineering)	+14.3	+22.0
Additional development effort for the Towed Active Receive System (TARS) (Engineering)	+1.4	+2.0
Change due to program budget reductions (Estimating)	-0.5	-0.3

RDT&E Subtotal

+15.2 +23.3

(2) Procurement

Revised escalation indices. (Economic)	N/A	-1.3
Acceleration/Stretchout of annual procurement buy profile. (Schedule)	0.0	+4.2
System backfit modifications including torpedo alertment, shallow water and multistatic processing upgrades. (Engineering)	+55.4	+89.0
Shore site system component upgrades (Engineering)	+1.5	+2.2
Adjustment for Current and Prior Inflation. (Estimating)	0.0	+0.1

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
EC-16 contract savings due to earlier procurement. (Estimating)	-2.0	-3.0
Production engineering and support to system upgrades. (Estimating)	+12.4	+15.2
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Trainers upgrades and support and test equipment. (Support)	+2.7	+4.3
Adjustment for additional tech support and installation. (Support)	+3.7	+5.6
Additional spares associated with upgrades and system backfit modifications. (Support)	+3.1	+5.6
Procurement Subtotal	+77.0	+122.1

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
34.56	+0.43	+2.24	+7.13	+5.71	-2.40	--	-2.16	+10.95	45.51

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.11	+0.36	-0.14	+7.08	+5.37	-6.01	--	-1.08	+5.58	32.69

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14c. (U) Unit Cost and Other History (Cont'd):c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	FEB 88	FEB 88
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	N/A	4147.6	4141.5
Total Quantity	N/A	N/A	120	91
Prog Acq Unit Cost	N/A	N/A	34.56	45.51

(U) The AN/SQQ-89(V) was established as a Post-Milestone III program, integrating the AN/SQR-19, MK 116, AN/SQQ-28, AN/SRQ-4, and AN/SQS-53B. A Planning Estimate and Developing Estimate are not available at the AN/SQQ-89(V) program level since all the subsystems had passed Milestone III at the time of program creation. Further, there is no AN/SQQ-89(V) IOC date; each subsystem achieved IOC prior to program creation.

15. (U) Contract Information (Then-Year Dollars in Millions):a. Procurement --(U) AN/SQQ-89 ASWCS:

Westinghouse Electric Co., Sykesville MD

N00024-92-C-6300, FFP

Award: September 11, 1992

Definitized: September 11, 1992

Initial Contract Price		
Target	Ceiling	Qty
\$143.2	N/A	7

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$237.8	N/A	17	\$241.0	\$237.8

Explanation of Change:

(U) Cost and Schedule Variances are not required on this FFP Contract.

(U) AIDS DEVELOPMENT:

Diagnostic Retrieval Sys, Oakland NJ

N00024-92-C-6308, CPIF/FFP

Award: April 15, 1992

Definitized: April 15, 1992

Initial Contract Price		
Target	Ceiling	Qty
\$85.0	N/A	83

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$83.9	N/A	141	\$83.9	\$83.9

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.3	\$-0.2
Cumulative Variances To Date (12/12/94)	\$-1.3	\$-0.2
Net Change	\$0.0	\$0.0

Explanation of Change:

None.

(U) Contract Comments:

This contract consists of a definitized 19.1M cost-plus incentive fee (CPIF) development effort and a definitized 64.8M firm-fixed price (FFP) production effort. Total contract price is 83.9M. The development portion is complete, and the production portion was definitized in September, 1996. We are procuring 138 production systems and have procured 3 development systems for a total of 141. The Statement of Work was restructured to reflect the change to develop an NDI/COTS-based system vice a fully contractor developed system. This change resulted in more than expected cost savings, and as a result a greater quantity was able to be purchased.

(U) AN/SQQ-89 ASWCS:
 Lockheed-Martin, Syracuse, NY
 N00024-96-C-6300, FFP
 Award: February 27, 1996
 Definitized: February 27, 1996

<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$65.0	\$	0

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$80.2	\$	2	\$179.0	\$179.0

Explanation of Change:

(U) Cost and Schedule Variances are not required on this FFP Contract.

(U) Contract Comments:

This contract contains AN/SQQ-89(V) OPN funding as well as SCN funding from the AEGIS Program Manager, and contains FY96-00 options. Initial contract price included engineering services to design test and integrate the AN/SQQ-89(V)X configuration as well as installation and checkout kits and other small parts. The current contract price includes 2 DDG 51 production systems. These are SCN procured systems. Estimated Price at Completion (\$179M) includes undefinitized future options.

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AN/SQQ-89 ASWCS, December 31, 1996

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

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

<u>Appropriation</u>	<u>Prior Years (FY75-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RDT&E	1011.1	8.0	7.2	51.1	1077.4
Procurement	2655.2	23.2	45.9	250.5	2974.8
MILCON	4.5	-	-	-	4.5
O&M	84.8	-	-	-	84.8
Total	3755.6	31.2	53.1	301.6	4141.5

b. Annual Summary -- AN/SQQ-89 ASWCS

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY85 Dollars Nonrec</u>	<u>Flyaway FY85 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1975				16.4	8.7
1976				18.8	10.6
1977				7.0	4.1
1978				41.6	25.1
1979				57.9	37.6
1980				65.0	46.6
1981				93.8	74.3
1982				81.2	70.2
1983				85.5	77.8
1984				94.5	89.9
1985				71.3	70.3
1986				60.4	61.4
1987				50.0	52.3
1988				35.9	38.6
1989				19.3	21.5
1990				14.6	16.9
1991				37.0	44.6
1992				96.1	120.1
1993				54.1	69.6
1994				12.8	16.9
1995				16.9	22.7
1996				11.2	15.3
1997				6.8	9.5
1998				4.6	6.5
1999				5.5	8.0
2000				4.8	7.2
2001				8.7	13.2
2002				10.1	15.7
				6.9	11.0

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AN/SQQ-89 ASWCS, December 31, 1996

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

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				6.9	11.2
Subtotal				1095.6	1077.4

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1979			0.6	0.9	0.7
1980			2.5	2.7	2.3
1981			3.8	3.9	3.6
1982			33.5	39.4	37.6
1983	2	6.0	72.1	124.7	123.4
1984	8	10.9	151.9	264.8	269.7
1985	9	7.7	137.4	234.1	245.9
1986	12	5.9	135.2	216.0	234.4
1987	5	10.7	133.1	211.7	238.0
1988	3	9.4	110.7	139.4	164.0
1989	5	34.3	137.5	184.8	225.6
1990	5	13.1	122.8	152.1	191.7
1991	6	63.8	117.0	216.9	278.4
1992	7	3.4	157.3	189.9	251.3
1993	6	1.0	69.3	98.4	131.8
1994	2	0.9	59.5	74.8	101.7
1995	3	0.9	36.9	62.7	86.9
1996	12	0.3	10.9	27.3	38.6
1997		0.1	8.1	20.8	30.0
1998	2	0.1	5.8	15.7	23.2
1999	2	1.2	15.7	30.5	45.9
2000	2	2.4	18.9	33.3	51.3
2001		0.7	25.4	37.6	59.1
2002		0.8	29.4	43.3	69.7
2003		0.9	34.2	42.7	70.4
Subtotal	91	174.5	1629.8	2468.4	2974.8

(U) There are 91 funded OPN AN/SQQ-89(V) systems which include 7 OPN configuration variants. The quantity of 91 consist of 70 full-up systems and their associated upgrades procured with OPN funds and 21 upgrades to existing CG 47 class systems. Of the 21 CG 47 class upgrades, 14 had an existing AN/SQQ-89(V) procured with SCN funds (which are not part of PMS411's baseline program) via the AEGIS Program Manager. The remaining 7 incorporated some of the AN/SQQ-89(V) subsystems which were procured with SCN funds but did not have full AN/SQQ-89(V) capability. We are procuring upgrade equipment with OPN funds which will give these 7 systems

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AN/SQQ-89 ASWCS, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):
AN/SQQ-89(V) capabilities.

The last full-up OPN system was procured with FY92 funds. All outyear quantities are upgrades and high priority performance improvements as described above. Each system is counted at the time that its current major OPN-funded upgrade is planned to be procured.

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				2.7	2.6
1983				1.9	1.9
Subtotal				4.6	4.5

Appropriation: 1804 Operation and Maintenance, Navy

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				1.2	1.2
1985				15.2	15.4
1986				15.8	16.6
1987				30.6	33.0
1988				11.0	12.2
1989				5.5	6.4
Subtotal				79.3	84.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	91	174.5	1629.5	3647.9	4141.5

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	60	60

(U) Percent Total Program Quantities Delivered: 65.9%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3614.2

(U) Percent Total Program Expended: 87.3%

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AN/SQQ-89 ASWCS, December 31, 1996

17. (U) Delivery/Expenditure Information (Cont'd):

(U) There are 91 funded OPN AN/SQQ-89(V) systems which are made up of 70 full-up production systems and their associated upgrades and 21 upgrades to existing CG 47 class systems. Currently, we have delivered all 70 production systems and 1 upgraded CG 47 system. However, many of the 70 production systems will receive upgrades in future years and are counted as delivered when that upgrade occurs. The quantity of 60 consists of 59 of the production systems and the 1 upgraded CG 47 system. The remaining 11 production systems (70 - 59) are scheduled to receive future upgrades.

In the prior SAR, the quantity of 81 delivered systems included both OPN and SCN systems. AN/SQQ-89(V)s are being procured for the AEGIS program; however, these quantities are not part of the AN/SQQ-89(V)s baseline program. There are currently 28 delivered SCN AEGIS systems. The total amount of AN/SQQ-89(V)'s delivered is 88 (60 OPN + 28 SCN).

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

1. There is no antecedent system.
2. This O&S cost estimate for the AN/SQQ-89 is based upon 75 AN/SQQ-89 systems and was done in January 1993.
3. OPN O&S costs are for ECPs to the system and procurement of spares.
4. MPN O&S costs are for personnel required to operate and support the shipboard system.
5. O&M,N O&S costs are for laboratory and program office support in-service systems, field services, and equipment and software maintenance.

b. (U) Costs -- (FY 1985 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per System	Avg Annual Cost Per N/A
Mission Pay & Allowances	0.7	N/A
Unit Level Consumption	N/A	0.0
Intermediate Maintenance	N/A	0.0
Depot Maintenance	0.7	0.0
Contractor Support	0.5	N/A
Sustaining Support	1.2	N/A
Indirect Costs	0.3	N/A
Total	3.4	0.0

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N-23 TOMAHAWK

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: TOMAHAWK (R/UGM-109)

AS OF DATE: December 31, 1996

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TOMAHAWK

1. (U) Designation and Nomenclature (Popular Name): RGM-109/UGM-109 (TOMAHAWK)
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
PEO Cruise Missiles and Joint RADM Barton D. Strong
Unmanned Aerial Vehicles Assigned: June 8, 1995
Arlington, VA 22246-5000 DSN 664-1088; COMM 703-604-1088
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0204229N Project W0545
(U) PE 0604367N Project W1784
PROCUREMENT:
(U) APPN 1507 ICN 30210100 (Navy)
(U) APPN 1507 ICN 30612000 (Navy)
(U) APPN 1810 ICN 33525000 (Navy)
(U) APPN 1810 ICN 33525500 (Navy)
(U) APPN 1810 ICN 33902000 (Navy)

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TOMAHAWK (R/UGM-109), December 31, 1996

5. (U) References:

TOMAHAWK

SAR Baseline (Development Estimate):

(U) Draft DCP 125 dated Dec 22, 1976 (Land-Attack), Program Memorandum No. 117, Dec 22, 1976 (Anti-Ship) approved by SECNAV Jan 5, 1977; NDCP W0545 dated Aug 31, 1987 (Rev Aug 89), Annex B, (TOMAHAWK Weapons System) approved by OPNAV.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated September 16, 1994.

TOMAHAWK TBIP

SAR Baseline (Development Estimate):

(U) NAE Approved Acquisition Program Baseline dated September 16, 1994.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated September 16, 1994.

6. (U) Mission and Description:

The TOMAHAWK Land Attack Missile counters threats against the U.S. Forces by destroying targets ashore including fleet command, control and logistic systems; industrial or other high value targets and ground-based air defense systems. The TOMAHAWK Anti-Ship Missile (TASM) redresses the current Commonwealth of Independent States (CIS) anti-ship cruise missile stand-off advantage and complements aircraft strikes against combat ships with effective air defense systems. The TOMAHAWK Land Attack Missile/Nuclear (TLAM/N) variant provides a highly survivable, worldwide theater nuclear capability. The TOMAHAWK program does not replace any existing weapon system.

Tomahawk Baseline Improvement Program (TBIP) is a major modification to all segments of the Tomahawk Weapon System (TWS) to improve system effectiveness, flexibility and responsiveness for Conventional Tomahawk.

On 5 August 1996, the TBIP restructure was approved for completion in two phases. Baseline IV, Phase 1, will provide improvements to the core missile navigation, guidance and communication subsystems, and will deploy concurrent upgrades to mission planning systems and launch platform weapon systems to provide improved system effectiveness, flexibility and responsiveness. Baseline IV, Phase 2, when funded, will further improve terminal accuracy, further reduce system response time, provide shipboard route and terminal planning, and continue growth toward potential new payload configurations such as hard target penetrators or advanced submunitions. Baseline IV will maximize its use of existing TWS program and logistics support. There will be no changes to the system's overall support concept, where system upgrades require new hardware and software; these elements will be incorporated into existing ILSPs.

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TOMAHAWK (R/UGM-109), December 31, 1996

7. (U) Executive Summary:

(U) Since this program is more than 90% expended, this may be the final report for the Tomahawk portion of this SAR.

TOMAHAWK development of this generation of U.S. cruise missiles began in 1972. Since then, the 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 3,500 missiles in operational status have been delivered to the Navy. Sea-launched cruise missiles have been deployed in more than 150 surface ships and submarines.

Beginning with the FY92 procurement, the Tomahawk program began a two-year remanufacturing program which diverted 415 depot-bound conventional Block II missiles to the manufacturing facility to be rebuilt in the new Block III configuration. In addition, a nominal 200 new missiles per year were manufactured in the new Block III configuration through FY95. Out year Block III new production quantities are a nominal 120 per year. The Block III upgrade program includes Global Positioning System, range extension of 30%, selectable fuse, improved engine, time on target software, improved warhead, and an updated Digital Scene Matching Area Correlator (DSMAC IIA). Initial Operational Capability was achieved in May 1993. The remanufacturing program was suspended after the FY95 procurement with 100 approved for FY95, because of affordability considerations in the Navy.

TOMAHAWK cruise missiles played a key role in the initial stages of OPERATION DESERT STORM. The success of the TOMAHAWK in targeting high priority targets helped to ensure that there was greatly reduced risk to manned aircraft in the crucial early stages of the operation. There were 288 launches of Tomahawk missiles of which 282 successfully transitioned to cruise flight.

In September 1994, the Tomahawk program which had been dual source competitive since 1984, was singled-up with Hughes Missile System Company (HMSC). As a result of the acquisition strategy, PEO(CU) reduced the Tomahawk budget, FY94 through the end of the program, by over \$500 million in WPN. These savings were returned to Navy. The Block IV AUR EMD contract, a key element of the Tomahawk Baseline Improvement Program (TBIP), was also awarded to HMSC. TBIP is now being reported as a separate end item. The TBIP development provides a comprehensive baseline upgrade to the TWS to improve system flexibility and responsiveness.

During calendar year 1996, 6 of 8 Operational Test Launch (OTL) flights were completed successfully. The Operational Test Launch (OTL) program supported the continued testing of Tomahawk Land Attack Missile Performance Testing (OTL-193R, OTL-190, OTL-191Q, OTL-186, OTL-184, OTL-188, OTL-185Q, and OTL-204Q), supported developmental testing for Tomahawk In-Flight Position Reporting System (TIPRS) (OTL-190), and continued testing in support of the Quality Assurance Service Test (QAST) program (OTL-191Q, OTL-204Q).

In Sep 96, 31 Tomahawks were successfully launched as part of Operation Desert Strike.

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TOMAHAWK (R/UGM-109), December 31, 1996

7. (U) Executive Summary (Cont'd):

The FY 97 Congressional budget provided an O&M,N plus-up of \$27.7M. This additional money will correct the missile readiness problem discussed in the last report.

8. (U) Threshold Breaches:

TOMAHAWK

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

TOMAHAWK TBIP

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

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TOMAHAWK (R/UGM-109), December 31, 1996

8. (U) Threshold Breaches (Cont'd):

TOMAHAWK TBIP

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

TOMAHAWK

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
DSARC II			
Nuclear	JAN 77	JAN 77	JAN 77
Anti-Ship	JAN 77	JAN 77	JAN 77
First Full Scale Development (FSD)			
Flight			
Land Attack Nuclear	MAR 77	N/A	JAN 77
Anti-Ship	FEB 77	N/A	FEB 77
Combined DTOT/OPEVAL Complete			
Land Attack Conventional			
Block IIB (Sub)	JUL 87	JUN 87	MAY 88
Block IIB (Ship)	JUL 87	JUN 87	MAY 88
Block III	N/A	MAR 93	MAR 93
Anti-Ship (Sub)	MAY 80	N/A	OCT 83
Anti-Ship (Ship)	JAN 81	N/A	MAY 84
Land Attack Nuclear (Ship)	JAN 81	N/A	OCT 83
Land Attack Nuclear (Sub)	MAY 80	N/A	APR 84
NPDM			
Land Attack Dispenser	DEC 87	AUG 88	AUG 88
Anti-Ship (Sub)	SEP 80	N/A	DEC 84
Anti-Ship (Ship)	MAY 81	N/A	DEC 84
Land Attack Nuclear (Sub)	SEP 80	N/A	OCT 83
Land Attack Nuclear (Ship)	MAY 81	N/A	APR 84
IOC Complete			
Land Attack Conventional			
Block IIB (Sub)	SEP 87	SEP 88	SEP 88
Block IIB (Ship)	SEP 87	SEP 88	SEP 88
Block III AUR	N/A	MAR 93	MAY 93
Anti-Ship (Sub)	JUN 81	N/A	NOV 83
Anti-Ship (Ship)	JUN 82	N/A	JUN 84
Land Attack Nuclear (Sub)	JAN 82	N/A	JUN 84
Land Attack Nuclear (Ship)	JUN 82	N/A	JUN 84
TMPC(U)	N/A	MAR 93	MAY 93
APS	N/A	JUN 93	SEP 93

b. Current Change Explanations -- None.

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TOMAHAWK (R/UGM-109), December 31, 1996

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

a. Milestones --

	Development Estimate (SAR) N/A	Approved Program (APB) SEP 94	Current Estimate SEP 94	
Milestone IV/II Development				
Contract Award				
Tomahawk Multi-Mission Missile (TMM)				
Development Flight Test				
Start	SEP 97	SEP 97	MAR 98	(Ch-1)
Complete (DT/OT)	JUN 99	JUN 99	SEP 99	(Ch-1)
Operational Flight Test				
Start	NOV 99	NOV 99	OCT 99	(Ch-1)
Complete (OT)	MAR 00	MAR 00	JAN 00	(Ch-1)
LRIP Authorization	APR 98	APR 98	SEP 98	(Ch-1)
Tomahawk Hard Target Penetrator (THTP)				
Development Flight Test				
Start	APR 00	APR 00	OCT 00	(Ch-2)
Complete (DT/OT)	OCT 00	OCT 00	APR 01	(Ch-2)
Operational Flight Test				
Start	JAN 01	JAN 01	JUL 01	(Ch-2)
Complete (OT)	JUN 01	JUN 01	DEC 01	(Ch-2)
Milestone III	SEP 00	SEP 00	JUL 00	(Ch-1)
FRP Contract Award	OCT 00	OCT 00	JUL 00	(Ch-1)
Initial Operational Capability (TMM)	SEP 00	SEP 00	AUG 00	(Ch-1)
Full Operational Capability (TMM)	SEP 01	SEP 01	SEP 01	(Ch-1)

b. (U) Current Change Explanations --

(Ch-1) Scheduled current estimate dates were adjusted to reflect Phase I of the restructured program.

(Ch-2) Current estimate will be changed upon new BLK IV APBA approval to reflect Phase I of the restructured program which terminated the THTP.

10. (U) Performance Characteristics:
TOMAHAWK

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

(Ch-1)

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TOMAHAWK (R/UGM-109), December 31, 1996

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

Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)

(Ch-1)

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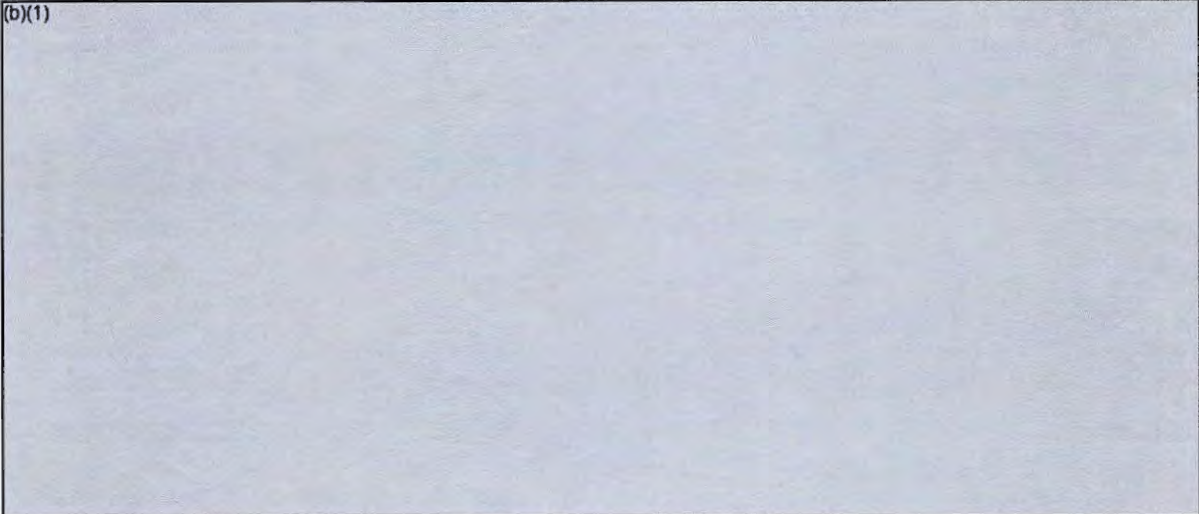
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TOMAHAWK (R/UGM-109), December 31, 1996

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

(Ch-1)

(Ch-1)

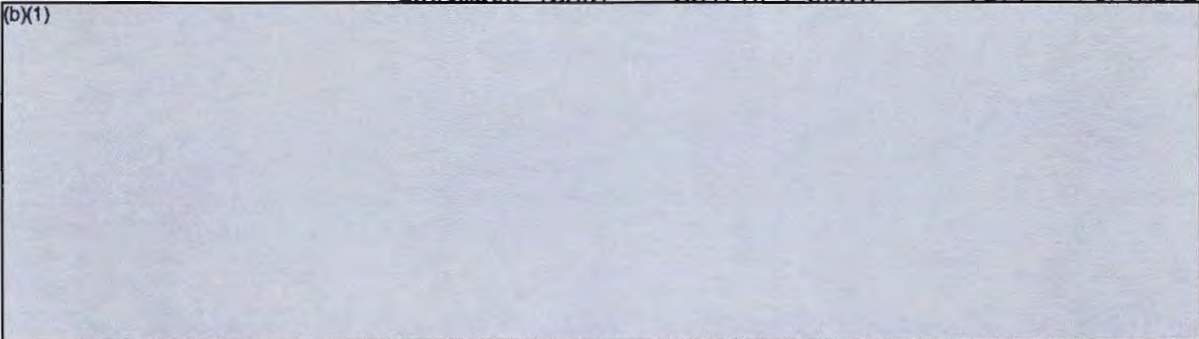
(Ch-1)

b. (U) Current Change Explanations --

(Ch-1) Changes are all based on results of latest flight test and storage data through December 1996.

TOMAHAWK TBIP

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

(Ch-1)

(U) Penetration Capability - Current Estimate will be changed upon new Block IV APBA approval to reflect Phase 1 of the restructured program which terminated the THTP.

b. (U) Current Change Explanations --

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TOMAHAWK (R/UGM-109), December 31, 1996

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

TOMAHAWK TBIP

(Ch-1) Accuracy Land Attack - Program manager's current estimate reflects TBIP restructured program approved by ASN(RD&A) 5 Aug 96. Expect updated APBA following approval of ORD revisions to reflect these values.

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

TOMAHAWK

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	(b)(1)		
Procurement			
Flyaway			
Other Weapon System			
Peculiar Support			
Initial Spares			
Construction (MILCON)			
Acquisition O&M			
Total FY 77 Base-Year \$			
Escalation			
Development (RDT&E)			
Procurement			
Construction (MILCON)			
Acquisition O&M			
Total Then Year \$			

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

b. (U) Quantity --

Development (RDT&E)	81	74	74
Procurement	1082	4568	4301
Total	1163	4642	4375

c. (U) Foreign Military Sales --
TOMAHAWK

United Kingdom commitments are for 65 production submarine launched Tomahawk missiles and associated mission planning, weapons control systems and support efforts. AUR contract signed 31 Jan 96, concurrently with the FY96 Navy option. United Kingdom AUR deliveries are scheduled to begin in Sep 97 at a rate of two per month.

(b)(1) Nuclear Costs --
The nuclear weapon costs ended in August 1989.

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TOMAHAWK (R/UGM-109), December 31, 1996

11a. ~~(S)~~ Total Program Cost and Quantity (Cont'd):
TOMAHAWK TBIP

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	(b)(1)		
Procurement			
Flyaway			
Other Procurement Costs			
Peculiar Support			
Initial Spares			
Construction (MILCON)			
Acquisition O&M			
Total FY 77 Base-Year \$			
Escalation			
Development (RDT&E)			
Procurement			
Construction (MILCON)			
Acquisition O&M			
Total Then Year \$			

(U) Note: procurement quantities consist of re-manufacture of Block II missiles. 50 of the 1253 missiles are Low Rate Initial Production in FY 99.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	1181	1181	1253
Total	1181	1181	1253

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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TOMAHAWK (R/UGM-109), December 31, 1996

12. (U) Unit Cost Summary:

TOMAHAWK

	Current Estimate (Dec 96 SAR)	UCR Baseline (SEP 94 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 77 BY\$)	5406.9	5537.6	
(2) Quantity	4375	4642	
(3) Unit Cost	1.236	1.193	+3.60
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 77 BY\$)	4027.8	4189.8	
(2) Quantity	4301	4568	
(3) Unit Cost	0.936	0.917	+2.07

TOMAHAWK TBIP

	Current Estimate (Dec 96 SAR)	UCR Baseline (SEP 94 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 77 BY\$)	639.4	833.0	
(2) Quantity	1253	1181	
(3) Unit Cost	0.510	0.705	-27.66
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 77 BY\$)	417.5	544.2	
(2) Quantity	1253	1181	
(3) Unit Cost	0.333	0.461	-27.77

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TOMAHAWK (R/UGM-109), December 31, 1996

13. (U) Cost Variance Analysis:

TOMAHAWK

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	866.1	1556.8	-	2422.9
Previous Changes:				
Economic	-2.3	-1750.4	+1.4	-1751.3
Quantity	-22.6	+8085.4	-	+8062.8
Schedule	+211.6	-117.6	-	+94.0
Engineering	+769.9	+1567.5	-	+2337.4
Estimating	+104.3	-2256.6	+83.4	-2068.9
Other	-	-	-	-
Support	+2.9	+2151.0	+0.5	+2154.4
Subtotal	+1063.8	+7679.3	-95.3	+8828.4
Current Changes:				
Economic	-2.3	-3.6	-0.5	-6.4
Quantity	-	-	-	-
Schedule	-	-14.4	-11.1	-3.3
Engineering	-	-	-	-
Estimating	+4.0	-114.7	-14.3	-125.0
Other	-	-	-	-
Support	-	+246.4	-	+246.4
Subtotal	+1.7	+113.7	-3.7	+111.7
Total Changes	+1065.5	+7793.0	-81.6	+8940.1
Current Estimate	1931.6	9349.8	81.6	11363.0

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TOMAHAWK (R/UGM-109), December 31, 1996

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

TOMAHAWK

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	782.8	1023.6	-	1806.4
Previous Changes:				
Quantity	-17.5	+2792.9	-	+2775.4
Schedule	+148.5	-315.7	-	-167.2
Engineering	+400.5	+620.8	-	+1021.3
Estimating	+26.8	-919.0	+35.9	-856.3
Other	-	-	-	-
Support	+2.1	+785.4	+0.4	+787.9
Subtotal	+560.4	+2964.4	+36.3	+3561.1
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	+4.1	+4.1
Engineering	-	-	-	-
Estimating	+0.9	-51.3	-5.4	-55.8
Other	-	-	-	-
Support	-	+91.1	-	+91.1
Subtotal	+0.9	+39.8	-1.3	+39.4
Total Changes	+561.3	+3004.2	+35.0	+3600.5
Current Estimate	1344.1	4027.8	35.0	5406.9

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices (Economic)	N/A	-2.3
	Net effect of various budget adjustments (Estimating)	+0.9	+4.0
	RDT&E Subtotal	+0.9	+1.7
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-3.6
	Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+1.5
	Net effect of various budget adjustments (Support)	+39.7	+99.2
	Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.3
	Net effect of various budget adjustments (Estimating)	-51.7	-116.2
	Two additional years of procurement (OPN) appropriation (Support)	+45.0	+126.0
	Three additional years of WPN appropriation (Support)	+6.3	+20.9

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TOMAHAWK (R/UGM-109), December 31, 1996

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

TOMAHAWK

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
Rephasing 35 missiles from FY 98 to FY 97 (Schedule)		0.0	-14.4
Procurement Subtotal		+39.8	+113.7
(3) <u>MILCON</u>			
Revised escalation indices. (Economic)		N/A	-0.5
Adjustment for Current and Prior Inflation. (Estimating)		+0.2	+0.4
Net effect of various budget adjustments (Estimating)		-5.6	-14.7
Two additional years of MILCON (Schedule)		+4.1	+11.1
MILCON Subtotal		-1.3	-3.7

TOMAHAWK TBIP

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	745.7	1868.6	-	2614.3
Previous Changes:				
Economic	-31.4	-144.0	-	-175.4
Quantity	-	-	-	-
Schedule	+83.5	+52.0	-	+135.5
Engineering	-	-	-	-
Estimating	+3.7	-11.5	-	-7.8
Other	-	-	-	-
Support	-	+29.2	-	+29.2
Subtotal	+55.8	-74.3	-	-18.5
Current Changes:				
Economic	-2.2	-2.4	-	-4.6
Quantity	-	+49.7	-	+49.7
Schedule	-	+129.4	-	+129.4
Engineering	-259.3	-630.5	-	-889.8
Estimating	+2.2	+43.4	-	+45.6
Other	-	-	-	-
Support	-	-25.1	-	-25.1
Subtotal	-259.3	-435.5	-	-694.8
Total Changes	-203.5	-509.8	-	-713.3
Current Estimate	542.2	1358.8	-	1901.0

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TOMAHAWK (R/UGM-109), December 31, 1996

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	288.8	544.2	-	833.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	+30.5	+3.0	-	+33.5
Engineering	-	-	-	-
Estimating	-0.9	-3.0	-	-3.9
Other	-	-	-	-
Support	-	+4.3	-	+4.3
Subtotal	+29.6	+4.3	-	+33.9
Current Changes:				
Economic	-	-	-	-
Quantity	-	+21.5	-	+21.5
Schedule	-	+49.7	-	+49.7
Engineering	-92.5	-182.2	-	-274.7
Estimating	-4.0	-3.1	-	-7.1
Other	-	-	-	-
Support	-	-16.9	-	-16.9
Subtotal	-96.5	-131.0	-	-227.5
Total Changes	-66.9	-126.7	-	-193.6
Current Estimate	221.9	417.5	-	639.4

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-2.2
	Economic adjustment for negative program change. (Economic)	N/A	0.0
	Restructure. Revise estimate to reflect TBIP (Engineering)	-92.5	-259.3
	Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.2
	Net effect of various budget adjustments (Estimating)	-4.1	+2.0
	RDT&E Subtotal	-96.5	-259.3
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-2.4
	Economic adjustment for negative program change. (Economic)	N/A	0.0
	Quantity increase of 72 missiles from 1181 to 1253 missiles. (Quantity)	+21.5	+49.7
	Allocation to estimating variance as a result of quantity increase. (Estimating)	-1.9	-9.3

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TOMAHAWK (R/UGM-109), December 31, 1996

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Net effect of procurement profile changes	+49.7	+129.4
-WPN profile extended one year +163.2		
-OPN profile shortened one year -33.8		
(Schedule)		
Net effect of various budget adjustments	-1.2	+52.7
(Estimating)		
Net effect of various budget adjustments	-16.9	-25.1
(Support)		
Revise Procurement Estimates to reflect	-182.2	-630.5
restructure (Engineering)		
Procurement Subtotal	-131.0	-435.5

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):
TOMAHAWK

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.08	-0.40	+0.32	+0.02	+0.53	-0.50	--	+0.55	+0.52	2.60

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.44	-0.41	+0.80	-0.03	+0.36	-0.55	--	+0.56	+0.73	2.17

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TOMAHAWK (R/UGM-109), December 31, 1996

14c. (U) Unit Cost and Other History (Cont'd):

TOMAHAWK

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	JAN 77	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	SEP 87	N/A	SEP 88
Total Cost	0	2422.8	0	11363
Total Quantity	0	1163	0	4375
Prog Acq Unit Cost	0	2.08	0	2.6

(U) Tomahawk had multiple IOC and milestones, depending on the variant. The first IOC date is shown above.

TOMAHAWK TBIP

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.21	-0.14	-0.08	+0.21	-0.71	+0.03	--	--	-0.69	1.52

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.58	-0.12	-0.05	+0.14	-0.50	+0.03	--	--	-0.50	1.08

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	SEP 94
Milestone III	N/A	SEP 00	N/A	JUL 00
FUE/IOC	N/A	SEP 00	N/A	AUG 00
Total Cost	N/A	2614.3	N/A	1901
Total Quantity	N/A	1181	N/A	1253
Prog Acq Unit Cost	N/A	2.21	N/A	1.52

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TOMAHAWK (R/UGM-109), December 31, 1996

14. (U) Unit Cost and Other History (Cont'd):

TOMAHAWK TBIP

(U) Program restructure August 1996.

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

a. Procurement --

(U) FY94 AUR: Hughes Missile Systems Co, Tucson AZ N00019-94-C-0257, FFP Award: September 16, 1994 Definitized: September 16, 1994	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$130.3	N/A	216

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

Explanation of Change:

(U) Cost and schedule variance reporting is not required on this FFP contract.

(U) FY94 TBIP: Hughes Missile Systems Co, Tucson AZ N00019-94-C-0258, CPIF/AF Award: September 16, 1994 Definitized: September 16, 1994	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$226.5	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$237.5	N/A	0	\$275.2	\$275.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.7	\$1.0
Cumulative Variances To Date	\$3.7	\$1.0
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) Due to requirements changes, the TBIP program was restructured. The above price estimates reflect the PMB agreed to by EMSC and the Government for the contract in the restructured program estimates. Cost and schedule

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TOMAHAWK (R/UGM-109), December 31, 1996

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

variances have been reset to zero because HMSC has requested, and the government has authorized the reporting of actuals only until the new baseline is in place.

(U) FY95 AUR:	Initial Contract Price		
Hughes Missile Systems Co, Tucson AZ	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-94-C-0257, FFP	\$140.0	N/A	120
Award: January 20, 1995			
Definitized: January 20, 1995			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$140.0	N/A	120	\$140.0	\$140.0

Explanation of Change:

(U) Cost and schedule variance reporting is not required on this FFP contract.

(U) FY96 AUR:	Initial Contract Price		
Hughes Missile System Co., Tucson AZ	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-95-C-0257, FFP	\$113.0	N/A	120
Award: January 31, 1996			
Definitized: January 31, 1996			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$113.0	N/A	120	\$113.0	\$113.0

Explanation of Change:

None.

(U) Contract Comments:

Contracts N00019-93-C-0045 and N00019-93-C-0046 are more than 90% complete and will no longer be reported.

(U) FY 96 AUR:	Initial Contract Price		
Hughes Missile System Co., Tucson AZ	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-94-C-0257, FFP	\$113.0	N/A	120
Award: January 31, 1996			
Definitized: January 31, 1996			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$113.0	N/A	120	\$113.0	\$113.0

Explanation of Change:

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TOMAHAWK (R/UGM-109), December 31, 1996

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

(U) Included FY 96 option year exercised on contract N00019-94-C-0257.

(U) Contract Comments:

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

FY94 AUR Contract N00019-94-C-0257 is more than 90% complete and will no longer be reported.

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

Total Program

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

<u>Appropriation</u>	<u>Prior Years (FY74-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-06)</u>	<u>Total</u>
RDT&E	2265.0	93.4	67.3	48.1	2473.8
Procurement	8908.3	122.0	241.2	1437.1	10708.6
MILCON	70.5	-	-	11.1	81.6
O&M	-	-	-	-	-
Total	11243.8	215.4	308.5	1496.3	13264.0

TOMAHAWK

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

<u>Appropriation</u>	<u>Prior Years (FY74-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RDT&E	1906.1	7.9	7.8	9.8	1931.6
Procurement	8896.9	97.2	71.3	284.4	9349.8
MILCON	70.5	-	-	11.1	81.6
O&M	-	-	-	-	-
Total	10873.5	105.1	79.1	305.3	11363.0

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TOMAHAWK (R/UGM-109), December 31, 1996

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

TOMAHAWK TBIP

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

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-06)</u>	<u>Total</u>
RDT&E	358.9	85.5	59.5	38.3	542.2
Procurement	11.4	24.8	169.9	1152.7	1358.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	370.3	110.3	229.4	1191.0	1901.0

b. Annual Summary -- TOMAHAWK

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY77 Dollars Nonrec</u>	<u>Flyaway FY77 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1974				7.9	6.6
1975				40.9	37.3
1976				135.1	130.6
1977				115.3	119.2
1978				188.1	209.5
1979				125.3	154.1
1980				77.5	105.4
1981				90.2	133.8
1982				92.4	144.3
1983				72.6	118.4
1984				79.9	135.0
1985				46.2	80.5
1986				41.2	73.9
1987				41.6	76.8
1988				36.4	69.5
1989				28.5	56.7
1990				23.2	48.0
1991				21.2	45.4
1992				27.5	60.7
1993				13.6	30.6
1994				8.7	20.0
1995				5.1	12.0
1996				8.5	20.3
1997				7.2	17.5
1998				3.2	7.9
1999				3.1	7.8
2000				2.1	5.5
2001				1.6	4.3
Subtotal	74			1344.1	1931.6

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TOMAHAWK (R/UGM-109), December 31, 1996

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

TOMAHAWK

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY77 Dollars Nonrec	Flyaway FY77 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1980	6	1.6	13.5	22.5	34.6
1981	50	13.8	69.7	100.1	171.7
1982	61	15.5	89.6	119.0	221.6
1983	51	14.1	84.0	111.2	218.9
1984	124	20.2	121.4	167.6	343.3
1985	180	32.2	192.7	266.2	561.2
1986	249	34.0	219.2	315.9	689.0
1987	324	44.7	233.3	323.7	731.6
1988	475	43.2	278.5	361.0	847.9
1989	510	50.9	241.4	280.8	685.4
1990	400	49.8	195.5	237.9	600.8
1991	678	37.4	351.7	414.4	1073.0
1992	176	23.0	104.6	161.5	428.9
1993	200	16.1	110.1	157.4	425.8
1994	216	17.9	60.9	89.4	247.0
1995	274	23.0	69.7	95.1	267.8
1996	107	12.7	24.7	40.9	117.7
1997	120	3.9	24.9	37.7	110.8
1998	100	11.0	14.6	18.1	54.2
1999				1.6	4.9
2000				3.5	10.8
2001				3.5	11.1
2002				3.4	11.2
2003				2.9	9.7
Subtotal	4301	465.0	2500.0	3335.3	7878.9

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY77 Dollars Nonrec	Flyaway FY77 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1981				22.3	35.0
1982				36.8	60.4
1983				72.7	123.7
1984				35.0	61.4
1985				44.2	79.8
1986				56.0	104.6
1987				54.6	105.7
1988				26.0	54.3
1989				17.5	36.8
1990				25.5	55.3
1991				10.7	23.6
1992				26.2	59.7

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TOMAHAWK (R/UGM-109), December 31, 1996

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

TOMAHAWK

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY77 Dollars Nonrec	Flyaway FY77 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				26.2	60.3
1994				21.8	50.9
1995				30.8	73.6
1996				25.2	61.4
1997				29.5	73.4
1998				16.9	43.0
1999				25.6	66.4
2000				22.9	60.7
2001				20.3	54.9
2002				22.8	63.1
2003				22.2	62.9
Subtotal				692.5	1470.9

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY77 Dollars Nonrec	Flyaway FY77 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				0.3	0.5
1983					
1984					
1985					
1986					
1987				1.9	3.7
1988					
1989				4.1	8.5
1990				2.1	4.6
1991				5.0	11.2
1992				8.2	18.8
1993					
1994					
1995				2.8	6.9
1996				6.5	16.3
1997					
1998					
1999					
2000				2.8	7.5
2001					
2002				1.3	3.6
Subtotal				35.0	81.6

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TOMAHAWK (R/UGM-109), December 31, 1996

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

TOMAHAWK

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	4375	465.0	2500.0	5406.9	11363.0

b. Annual Summary -- TOMAHAWK TBIP

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY77 Dollars Nonrec	Flyaway FY77 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				10.3	23.6
1995				30.3	71.1
1996				59.0	141.3
1997				50.2	122.9
1998				34.2	85.5
1999				23.3	59.5
2000				12.6	32.9
2001				1.8	4.8
2002				0.1	0.3
2003				0.1	0.3
Subtotal				221.9	542.2

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY77 Dollars Nonrec	Flyaway FY77 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998					
1999	130	7.8	30.0	44.4	136.0
2000	136	7.6	29.5	42.0	131.4
2001	136	7.4	28.7	41.4	132.4
2002	88	4.7	18.3	30.4	99.5
2003	198	10.5	40.4	54.2	181.7
2004	200	10.4	40.0	56.1	193.1
2005	200	10.3	39.6	55.3	195.1
2006	165	8.4	32.4	45.1	163.2
Subtotal	1253	67.1	258.9	368.9	1232.4

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY77 Dollars Nonrec	Flyaway FY77 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				4.6	11.4
1998				9.8	24.8

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TOMAHAWK (R/UGM-109), December 31, 1996

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

TOMAHAWK TBIP

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY77 Dollars Nonrec	Flyaway FY77 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999				13.1	33.9
2000				10.9	28.8
2001				10.2	27.5
2002					
Subtotal				48.6	126.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1253	67.1	258.9	639.4	1901.0

17. (U) Delivery/Expenditure Information:

TOMAHAWK

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	74	74
Procurement	4301	3746

(U) Percent Total Program Quantities Delivered: 87.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 10666.1

(U) Percent Total Program Expended: 93.9%

TOMAHAWK TBIP

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 0.1

(U) Percent Total Program Expended: 0.0%

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TOMAHAWK (R/UGM-109), December 31, 1996

18. (U) Operating and Support Costs:
TOMAHAWK

a. (U) Assumptions and Ground Rules --

The Operating and Support costs are based on annual averages derived from a fifteen-year period from FY89 through FY03.

The operational concept is a "Wooden round" which does not undergo maintenance except at the depot level. This maintenance cycle is known as a recertification and includes examination and replacement of time limited components. The recertifications average 500 per year in FY99 through FY03.

An operational flight test program is conducted to determine operational readiness and aging effects of the deployed weapons system and to provide fleet training. Operational flight tests are currently scheduled at the rate of eight per year.

The software support activity includes hardware and software maintenance for the operational flight system, the weapons fire control system, and independent validation and verification of the software.

Technical and Operations costs include life cycle management training, Naval Weapons station operations, integrated logistics support, and contractor engineering technical services.

Theater Mission Planning provides for the programming of Tomahawk missions and maintenance of hardware and software systems.

Platform maintenance is included for Tomahawk launch platforms at an approximate level of 132 platforms per year.

There is no antecedent system.

For Tomahawk only.

Updated February 1997.

b. (U) Costs -- (FY 1977 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Total system	Avg Annual Cost Per N/A
Mission Pay & Allowances	N/A	0.0
Unit Level Consumption	N/A	0.0
Intermediate Maintenance	N/A	0.0
Depot Maintenance	6.7	0.0
Contractor Support	N/A	0.0
Sustaining Support	N/A	0.0
Indirect Costs	N/A	N/A
Operational Test Launch	8.0	N/A
Software Support Program	6.4	N/A

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TOMAHAWK (R/UGM-109), December 31, 1996

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

b. (U) Costs -- (FY 1977 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Total system	Avg Annual Cost Per N/A
Technical/Ops Support	8.6	N/A
Platform Maintenance	0.9	N/A
Theater Mission Planning	7.3	N/A
Total	37.9	0.0

TOMAHAWK TBIP

a. (U) Assumptions and Ground Rules --
TBIP, as currently planned, will not increase the depot O&S costs of the Tomahawk system because there will be no net increase to inventory. TBIP assets will be remanufactured from older, existing Tomahawk missiles. There will be some decrease in Depot Maintenance costs because TBIP will have a ten year recertification interval. As currently planned, the first TBIP recertification would not occur until FY 2009.

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

Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

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A-7 BLACKHAWK

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: UH-60L BLACK HAWK

AS OF DATE: December 31, 1996

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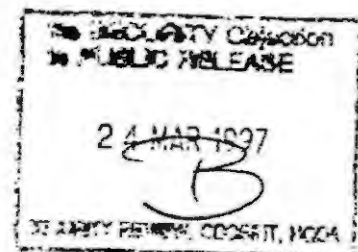


1. Designation and Nomenclature (Popular Name): UH-60L BLACK HAWK
2. DoD Component: Army
3. Responsible Office and Telephone Number:
Utility Helicopters Project Mgr. Off COL Chester Rees, Jr.
ATTN: SFAE-AV-BH Assigned: June 1, 1993
4300 Goodfellow Blvd DSN 693-1700; COMM (314) 263-1700
St. Louis, MO 63120-1798
4. Program Elements/Procurement Line Items:
PROCUREMENT:
APPN 0350 ICN ----- (NGRE)
APPN 2031 ICN A05002 (Army)
APPN 2031 ICN A09400 (Army)
APPN 2031 ICN AA0005 (Army)
APPN 2031 ICN AA0952 (Army)
MILCON:
PE 22483
PE 22496
PE 22696
PE 85796

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UH-60L BLACK HAWK, December 31, 1996

5. References:

SAR Baseline (Production Estimate):

AAE approved Acquisition Program Baseline, dated February 26, 1990.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated July 13, 1993.

6. Mission and Description:

The BLACK HAWK is a twin engine helicopter that is used in the performance of the air assault, air cavalry, and aeromedical evacuation mission. This aircraft is sized as an infantry squad assault helicopter, capable of carrying up to 14 troops, but normally configured for a crew of 3 and 11 troops. It performs the missions of transporting troops and equipment into combat, resupplying the troops while in combat, and performing the associated functions of aeromedical evacuation, repositioning of reserves, and command and control. The UH-60L BLACK HAWK is continuing to replace the UH-1H Iroquois in air assault, air cavalry, and aeromedical evacuation units.

7. Executive Summary:

The FY 1997 procurement appropriation provided funding to procure six aircraft for the National Guard, convert four UH-60L BLACK HAWK aircraft to a UH-60Q MEDEVAC configuration, and buy additional mission flexibility kits. The FY98 President's Budget reduces the annual quantity of aircraft being procured from FY 1998 to FY 2001 from 36 to 18 and implements a multiservice procurement. Army procurement ends and Navy procurement begins in FY 1999. The budget provides funding to the Army over the the period from FY 1997 through FY 1999 for the procurement of 64 aircraft as well as for the necessary mission flexibility kits. Funding is also provided in FY00 for fielding of aircraft and the associated FM Administration. The funding provided to the Navy for the procurement of 42 aircraft from FY 1999 through FY 2001 is not included in this report.

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UH-60L BLACK HAWK, December 31, 1996

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
	JAN 88	JAN 88	JAN 88
Multiyear Airframe Contract Award (FY 88-91)			
Multiyear Engine Contract Award (FY 89-93)	NOV 88	NOV 88	NOV 88
Approval of Revised UH-60 Procurement Objective (2253)	FEB 89	FEB 89	FEB 89
DA IPR for Type Class of UH-60L	SEP 89	SEP 89	SEP 89
Incorp of GE T701C Engine	OCT 89	OCT 89	OCT 89
Multiyear Airframe Contract Award (FY90)	NOV 89	NOV 89	NOV 89
Multiyear Engine Contract Award (FY90)	NOV 89	NOV 89	NOV 89
Multiyear Airframe Contract Award (FY91)	NOV 90	NOV 90	DEC 90
Multiyear Engine Contract Award (FY91)	NOV 90	NOV 90	DEC 90
Deployment Plan			
TXNG -- Austin, TX	NOV 89	NOV 89	NOV 89
2/229 Aslt -- Ft Rucker	JAN 90	JAN 90	JAN 90
1/6th AHB -- Ft Hood	MAR 90	MAR 90	MAR 90
4/6th AHB -- Ft Hood	MAR 90	MAR 90	MAR 90
3rd ACR -- Ft Bliss	APR 90	APR 90	APR 90
3/6 AHB -- Ft Hood	MAY 90	MAY 90	MAY 90
1/3rd AHB -- Ft Hood	MAY 90	MAY 90	MAY 90
C/25th Aslt -- Ft Drum	JUN 90	JUN 90	JUN 90
E/3 Aslt -- Ft Hood	JUN 90	JUN 90	JUN 90
1/4th AHB -- Ft Carson	JUL 90	JUL 90	JUL 90
1/5th AHB -- Ft Polk	SEP 90	SEP 90	SEP 90
SOCOM -- Ft Campbell, KY	N/A	AUG 90	AUG 90

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UH-60L BLACK HAWK, December 31, 1996

9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
2-82nd Aslt -- Ft Bragg, NC	N/A	DEC 90	DEC 90
E-149th Aslt TX ARNG -- Austin, TX	N/A	FEB 91	FEB 91
1-151st AHB SC ARNG -- Eastover, SC	N/A	MAR 91	MAR 91
1-111th AHB FL ARNG--Jacksonville, FL	N/A	APR 91	APR 91
1-207th Aslt AK ARNG--Ft Richardson, AK	N/A	MAY 91	MAY 91
MDW -- Ft Belvoir, VA	N/A	MAY 91	MAY 91
1-149th AHB TX ARNG -- Houston, TX	N/A	MAY 91	MAY 91
SOCOM -- Ft Campbell, KY	N/A	JUL 91	JUL 91
E-130th AVIM NC ARNG -- Salisbury, NC	N/A	APR 92	APR 92
E-131st AVIM AL ARNG -- Birmingham, AL	N/A	JUN 92	JUN 92
SOCOM -- Ft Campbell, KY	N/A	SEP 92	SEP 92
1-17th Cav -- Ft Bragg, NC	N/A	NOV 92	NOV 92
F-149th AVIM TX ARNG -- Austin TX	N/A	NOV 92	NOV 92
101st Abn Div -- Ft Campbell, KY	N/A	DEC 93	DEC 93
MY III Engine Contract Award (FY 92)	N/A	JAN 92	JAN 92
MY IV Airframe Contract Award (FY 92)	N/A	APR 92	APR 92
Deliveries MYC 92-96 Start	N/A	APR 92	APR 92
MY III Engine Contract Award (FY 93)	N/A	NOV 92	NOV 92
MY IV Airframe Contract Award (FY 93)	N/A	NOV 92	NOV 92
MY III A/P Contract Deliveries Complete	N/A	SEP 93	JAN 94
MY IV Engine Contract Award (FY 94)	N/A	NOV 93	APR 94
MY IV Airframe Contract Award (FY 94)	N/A	NOV 93	JAN 94

The Production Estimate shown above reflects what should have been the Initial SAR Baseline at the time this program started reporting.

b. Current Change Explanations -- None.

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Payload (lbs)				
Troops	11	11 / 11	11	11
Pounds	2640	2640 / 2640	2640	2640
Air Transportability (qty)				
C-141	2	2 / 2	2	2
C-5	6	6 / 6	6	6
Flight Performance with Payload				
Vertical Rate of Climb (ft/min)	900	900 / 785	785	785
Cruise Speed (knots) (using max cont power)	152	152 / 150	150	150
Endurance (hrs)	2.3	2.3 / 2.1	2.1	2.1

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UH-60L BLACK HAWK, December 31, 1996

10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Mission Reliability				
Probability of Success	.991	.991 / .987	.987	.987
Mean Time Between Maintenance Actions (hrs)	106.0	106.0 / 75.9	75.9	75.9
System Mean Time Between Failures (hrs)	4.7	4.7 / 4.0	4.0	4.0
Maintenance Manhours per Flight Hours (MMH/FH)	3.0	3.0 / 3.8	3.8	3.8

Notes:

The UH-60L is a derivative of the UH-60A. Approval for production incorporation was granted by a DA IPR for type classification.

Vertical Rate of Climb (VROC) in FPM is predicated on using 95% of Intermediate Rated Power (IRP).

Cruise Speed in Knots is based on using Maximum Continuous Power (MCP).

Endurance in Hours is based on using a mission profile.

Maintenance Man-hours per Flight Hour (MMH/FH) include inspection and servicing, total corrective MMH/FH, through Aviation Intermediate Maintenance (AVIM) level.

The requirement for Air Transportability on a C-130 was approved for deletion from the program (TWX, DAMO-RQD, June 8, 1978).

Mission reliability is currently being measured in terms of Meantime Between Mission Aborts (MTBMA) in hours. The value shown is equivalent to the value for probability of success.

The Production Estimate shown above reflects what should have been the Initial SAR Baseline at the time this program started reporting.

b. Current Change Explanations -- None.

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UH-60L BLACK HAWK, December 31, 1996

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0.0	0.0	0.0
Procurement	2216.6	2257.8	969.3
Airframe	(1449.6)		(640.3)
Engine	(304.4)		(128.3)
Avionics	(74.0)		(24.3)
Other recurring flyaway	(196.8)		(68.7)
Nonrecurring flyaway	(40.1)		(13.0)
Total Flyaway	(2064.9)		(874.6)
OWS-Data	(25.7)		(13.4)
OWS-Training	(53.7)		(9.6)
Other	(0.0)		(27.5)
Total Other Wpn Sys	(79.4)		(50.5)
Peculiar Support	(23.6)		(2.2)
Initial Spares	(48.7)		(42.0)
Construction (MILCON)	0.0	2.7	2.8
Acquisition O&M	0.0	0.0	0.0
Total FY 71 Base-Year \$	2216.6	2260.5	972.1
Escalation	8498.6	8610.3	3012.4
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(8498.6)	(8607.5)	(3004.7)
Construction (MILCON)	(0.0)	(2.8)	(7.7)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	10715.2	10870.8	3984.5

The Production Estimate shown above reflects what should have been the Initial SAR Baseline at the time this program started reporting.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	1277	1268	547
Total	1277	1268	547

c. Foreign Military Sales --

UH-L BLACK HAWK (Colombia)	7 Ea	\$64.2M
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d. Nuclear Costs -- None.

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UH-60L BLACK HAWK, December 31, 1996

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUL 93 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 71 BY\$)	972.1	2260.5	
(2) Quantity	547	1268	
(3) Unit Cost	1.777	1.783	-0.34
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 71 BY\$)	969.3	2257.8	
(2) Quantity	547	1268	
(3) Unit Cost	1.772	1.781	-0.51

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	10715.2	-	10715.2
Previous Changes:				
Economic	-	-441.4	+0.7	-440.7
Quantity	-	-2768.7	-	-2768.7
Schedule	-	+224.2	-	+224.2
Engineering	-	-62.1	+27.5	-34.6
Estimating	-	-2663.3	-17.7	-2681.0
Other	-	+1.4	-	+1.4
Support	-	-184.4	-	-184.4
Subtotal	-	-5894.3	+10.5	-5883.8
Current Changes:				
Economic	-	-15.9	-	-15.9
Quantity	-	-355.1	-	-355.1
Schedule	-	-3.4	-	-3.4
Engineering	-	-	-	-
Estimating	-	-383.9	-	-383.9
Other	-	-	-	-
Support	-	-88.6	-	-88.6
Subtotal	-	-846.9	-	-846.9
Total Changes	-	-6741.2	+10.5	-6730.7
Current Estimate	-	3974.0	10.5	3984.5

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UH-60L BLACK HAWK, December 31, 1996

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

Summary (FY 1971 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	2216.6	-	2216.6
Previous Changes:				
Quantity	-	-531.6	-	-531.6
Schedule	-	-	-	-
Engineering	-	-5.4	+7.8	+2.4
Estimating	-	-498.5	-5.1	-503.6
Other	-	-	-	-
Support	-	-38.4	-	-38.4
Subtotal	-	-1073.9	+2.7	-1071.2
Current Changes:				
Economic	-	-	-	-
Quantity	-	-74.6	-	-74.6
Schedule	-	-0.2	-	-0.2
Engineering	-	-	-	-
Estimating	-	-80.0	+0.1	-79.9
Other	-	-	-	-
Support	-	-18.6	-	-18.6
Subtotal	-	-173.4	+0.1	-173.3
Total Changes	-	-1247.3	+2.8	-1244.5
Current Estimate	-	969.3	2.8	972.1

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-15.9
Quantity decrease in FY 1998 through FY 2001 from 144 to 30 and quantity increase in FY 1994 and FY 1995 from 123 to 138. (Quantity)	-74.6	-355.1
Increased production rate in FY94 and FY95 and decreased production rate in FY98 and FY99. (Schedule)	-0.2	-3.4
Decreased Army production shutdown costs due to multiservice procurement strategy. (Estimating)	-3.2	-15.6
Allocation to estimating variance resulting from quantity change. (Estimating)	-105.9	-506.2
Increased airframe cost due to reduced production rate. (Estimating)	+9.4	+46.4
Increased GFE cost due to reduced production rate. (Estimating)	+0.6	+4.6
Increased requirements for External Stores Support (ESSS) and Aeromedical mission flexibility kits. (Estimating)	+19.1	+86.9
Decreased data requirement due to reduced procurement years. (Support)	-3.3	-15.9
Decreased support equipment cost due to quantity decrease. (Support)	-0.2	-1.0

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UH-60L BLACK HAWK, December 31, 1996

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Decreased PM administration and fielding cost due to quantity decrease. (Support)	-5.9	-29.1
Decreased initial spares cost due to quantity decrease. (Support)	-9.2	-42.6
Procurement Subtotal	-173.4	-846.9
(2) <u>MILCON</u>		
Adjustment for current and prior year inflation. (Estimating)	+0.1	0.0
MILCON Subtotal	+0.1	0.0

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.39	-0.83	+5.48	+0.40	-0.06	-5.60	--	-0.50	-1.11	7.28

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.39	-0.84	+5.50	+0.40	-0.11	-5.57	--	-0.50	-1.12	7.27

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14c. Unit Cost and Other History (Cont'd):

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	JUN 71	JUN 71
Milestone III	N/A	SEP 76	NOV 76	NOV 76
FUE/IOC	N/A	JUN 79	OCT 89	OCT 89
Total Cost	N/A	2307.3	10715.1	3984.5
Total Quantity	N/A	1107	1277	547
Prog Acq Unit Cost	N/A	2.08	8.39	7.28

Milestone I and milestone II dates are for the UH-60A BLACK HAWK--UH-60L production was approved at a production IPR in September 1989. IOC, Cost, and Quantity data for the DE is for the UH-60A/L BLACK HAWK and the corresponding data for the PDE and CE is for the UH-60L BLACK HAWK.

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

a. Procurement --
Airframe MYC IV(FY92-96):
 United Technologies Corp., Stratford CT
 DAAJ09-92-C-A004, FFP
 Award: April 28, 1992
 Definitized: April 28, 1992

Initial Contract Price		
Target	Ceiling	Qty
\$1539.4	N/A	300

Current Contract Price		
Target	Ceiling	Qty
\$1752.2	N/A	328

Estimated Price At Completion	
Contractor	Program Manager
\$1752.2	\$1752.2

Explanation of Change:

Cost and schedule variance reporting is not required for this FFP contract.

Engine SY with options:
 General Electric, Lynn, MA
 DAAJ09-94-C-0044, FFP
 Award: April 15, 1994
 Definitized: April 15, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$115.4	N/A	188

Current Contract Price		
Target	Ceiling	Qty
\$308.5	N/A	583

Estimated Price At Completion	
Contractor	Program Manager
\$308.5	\$308.5

Explanation of Change:

Cost and schedule variance reporting is not required for this FFP contract.

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UH-60L BLACK HAWK, December 31, 1996

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

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

<u>Appropriation</u>	<u>Prior Years (FY87-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00)</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	3628.3	210.7	127.1	7.9	3974.0
MILCON	10.5	-	-	-	10.5
O&M	-	-	-	-	-
Total	3638.8	210.7	127.1	7.9	3984.5

b. Annual Summary -- UH-60L BLACK HAWK

Appropriation: 0350 National Guard & Reserve Equipm, Defense

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY71 Dollars Nonrec</u>	<u>Flyaway FY71 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1991	24		39.6	39.6	156.0
1993	8		13.6	13.6	56.0
1994	5		7.6	7.6	31.8
1995	8		13.1	13.1	56.3
Subtotal	45		73.9	73.9	300.1

Appropriation: 2031 Aircraft Procurement, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY71 Dollars Nonrec</u>	<u>Flyaway FY71 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1987				0.6	1.7
1988				34.7	115.8
1989	23	2.2	39.9	91.5	336.8
1990	72	0.5	98.7	107.2	409.0
1991	48	3.8	68.6	40.8	160.8
1992	60	1.5	97.2	124.6	502.5
1993	52	2.3	71.6	86.6	356.5
1994	63	0.1	92.4	101.2	425.1
1995	60	1.3	88.4	73.3	314.2
1996	60	1.3	90.9	92.8	406.3
1997	34		61.4	66.9	299.5
1998	18		49.2	46.2	210.7
1999	12		28.9	27.3	127.1
2000			0.5	1.7	7.9
2001					
Subtotal	502	13.0	787.7	895.4	3673.9

Recurring flyaway cost may exceed total base year dollars in years when the advance procurement credits inherent in multiyear contracting are

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UH-60L BLACK HAWK, December 31, 1996

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

significantly greater than the advance procurement funding for future years.

The FLYAWAY cost shown in FY 2001 is for contractor engineering support (project management, system engineering, system safety, configuration management, logistics management, and flight safety. These efforts are required to support both the fielded fleet as well as ongoing production deliveries, but are not specifically attributable to a discrete production aircraft.

Appropriation: 2050 Military Construction, Army

Fiscal Year	Qty	Flyaway FY71 Dollars Nonrec	Flyaway FY71 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				0.9	3.5
1996				1.9	7.0
Subtotal				2.8	10.5

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	45		73.9	73.9	300.1
Army	502	13.0	787.7	898.2	3684.4
Grand Total	547	13.0	861.6	972.1	3984.5

17. Delivery/Expenditure Information:

a. Deliveries To Date

	Plan	Actual
RDT&E	0	0
Procurement	453	453

Percent Total Program Quantities Delivered: 82.8%

b. Total Expenditures To Date (In Millions of Dollars): \$ 3014.4

Percent Total Program Expended: 75.7%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

UH-60L cost estimates are based on a flying hour rate of 18.2 hours per aircraft per month, with aircraft deployed in three representative units--a Combat Aviation Company, an Air Cavalry Troop (Air Cavalry Squadron), and a Medical Evacuation Company. Personnel cost includes the Pay and Allowances and Permanent Change of Station (MPA appropriation) for crew, maintenance, and support personnel attributable to the UH-60A/L BLACK HAWK in the above listed units. Consumption includes the cost of replenishment spares and repair parts, war reserve spares and repair parts, and petroleum, oil, and lubricants (POL). Depot maintenance includes the cost of labor, material, and transportation associated

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UH-60L BLACK HAWK, December 31, 1996

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

with the end item as well as component repair programs. Material modifications reflect the estimated hardware cost of aircraft changes installed after fielding. Other direct costs include the cost of civilian maintenance on the flight simulators, as well as the application of modifications with OLR teams. Other indirect costs include the cost of replacement training for military personnel, as well as the cost of quarters, maintenance, and utilities. The source of the O&S estimate is the Baseline Cost Estimate (BCE) dated July 1991. Assumptions and ground rules for the UH-1 (antecedent system) are the same as for the UH-60, except for a flying hour rate of 20 hours per aircraft per month and that the flight simulator maintenance as well as modification application are completed by military personnel. Source of the estimate is a 1987 study.

b. Costs -- (FY 1971 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per 1,000 Flying Hours UH-60L BLACK HAWK	Avg Annual Cost Per 1,000 Flying Hours UH-1 Iroquois
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	24.9	135.5
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Consumption	240.6	130.2
Personnel	463.5	355.7
Modifications--Material	25.2	19.4
Other Direct Cost	80.1	0.0
Other Indirect Cost	95.7	153.9
Total	930.0	794.7

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N-7 CVN 68

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: CVN-68 Class

AS OF DATE: December 31, 1996

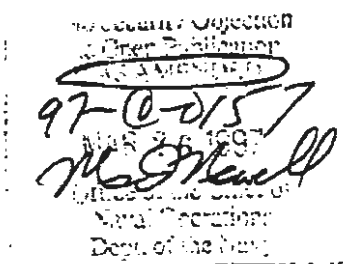
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1. (U) Designation and Nomenclature (Popular Name): CVN-68 Class/Carrier
Replacement Program (Nuclear Aircraft Carriers)
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
Aircraft Carrier Program Capt. Mark O'Hare
Program Executive Office Carriers, Assigned: September 10, 1996
Littoral Warfare and Auxiliary Ships DSN 332-7280; COMM (703) 602-7280
Arlington, VA 22242-5171
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0604567N
(U) PE 0605567N Project S1803
PROCUREMENT:
(U) APPN 1611 ICN 32200100 (Navy)

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FOR OPEN PUBLICATION
AS AMENDED
MAR 26 1997 9



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

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CVN-68 Class, December 31, 1996

5. (U) References:

CVN-74/75

SAR Baseline (Production Estimate):

(U) FY 1988 President's Budget

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated October 2, 1992.

CVN-76

SAR Baseline (Production Estimate):

(U) The FY 1992 President's Budget.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated October 2, 1992.

CVN-77

SAR Baseline (Production Estimate):

(U) FY 1994 President's Budget dated April 08, 1993.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated January 7, 1997.

6. (U) Mission and Description:

(U) Nuclear Aircraft Carriers (CVN 68 CLASS) support and operate aircraft to engage in attacks on targets afloat and ashore which threaten our use of the sea and to engage in sustained operations in support of other forces. These ships have two nuclear reactors and nuclear fuel for at least 20 years of normal carrier operations, the equivalent of 11 million barrels of propulsion fuel oil. Speeds of over 30 knots were achieved during NIMITZ (CVN 68) trials. The ship's overall length is 1,092 feet with an extreme breadth of 252 feet. Combat load displacement is approximately 97,000 tons. The flight deck area is about 4.5 acres. The ship has four propellers, four aircraft elevators, and four catapults.

7. (U) Executive Summary:

(U) Construction of the CVN 68 Class aircraft carriers began in October 1967 with the start of the NIMITZ (CVN 68). To date six ships have been delivered. The USS NIMITZ (CVN 68), USS DWIGHT D. EISENHOWER (CVN 69), USS CARL VINSON (CVN 70), USS THEODORE ROOSEVELT (CVN 71), USS ABRAHAM LINCOLN (CVN 72), USS GEORGE WASHINGTON (CVN 73), and USS JOHN C. STENNIS (CVN 74) were delivered in 1975, 1977, 1982, 1986, 1989, 1992 and 1995 respectively. There are two ships currently under construction at Newport News Shipbuilding the HARRY S. TRUMAN (CVN 75) and the RONALD REAGAN (CVN 76). CVN 75 construction began in April

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CVN-68 Class, December 31, 1996

7. (U) Executive Summary (Cont'd):

1989 and the keel was laid on 29 November 1993. Contract delivery date is June 1998. CVN 76 is scheduled for delivery in December 2002.

8. (U) Threshold Breaches:

CVN-74/75

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

CVN-76

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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CVN-68 Class, December 31, 1996

8. (U) Threshold Breaches (Cont'd):
CVN-77

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:
CVN-74/75

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
CVN-74			
Definitization of Contract	AUG 88	JUN 88	JUN 88
Start Production	JAN 89	NOV 88	OCT 88
Lay Keel	OCT 91	DEC 90	MAR 91
Launch	JAN 94	DEC 93	NOV 93
Target Delivery	N/A	DEC 95	NOV 95
Contract Delivery	SEP 96	JUN 96	JUN 96
CVN-75			
Definitization of Contract	AUG 88	JUN 88	JUN 88
Start Production	JAN 89	NOV 89	APR 89
Lay Keel	APR 93	NOV 93	NOV 93
Launch	JUL 96	SEP 96	SEP 96
Delivery	SEP 97	JUN 98	JUN 98

b. Current Change Explanations -- None.

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CVN-68 Class, December 31, 1996

9a. (U) Schedule (Cont'd):
CVN-76

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
CVN-76			
Contract Award	JUN 95	JUN 95	DEC 94
Start Production	NOV 95	NOV 95	MAY 95
Lay Keel	DEC 97	DEC 97	FEB 98
Launch	DEC 00	DEC 00	MAR 00
Delivery	DEC 02	DEC 02	DEC 02

b. Current Change Explanations -- None.

CVN-77

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
CVN 77			
Definitization of Contracts	DEC 00	JUN 01	DEC 01
Start Production	NOV 01	NOV 01	MAR 02
Lay Keel	DEC 03	DEC 03	MAR 03
Launch	DEC 06	DEC 06	MAR 06
Delivery	DEC 08	DEC 08	JAN 08

b. Current Change Explanations -- None.

10. (U) Performance Characteristics:
CVN-74/75

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Length Overall	1092	1092 / 1092	1092	1092
Beam	134	134 / 134	134	134
Maximum Width	252	252 / 252	252	252
Draft (Combat Load) (ft)	38.4	39.0 / 40.4	40.4	38.9
Displacement (tons)	96300	99000 / 102500	102500 1/	97337

(b)(1)

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CVN-68 Class, December 31, 1996

10a. (U) Performance Characteristics (Cont'd):
CVN-74/75

Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
------------------------------	--	---------------------------	---------------------

(b)(1)

b. Current Change Explanations -- None.

CVN-76

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Length Overall	1092	1092 / 1092	1092	1092
Beam	134	134 / 134	134	134
Maximum Width	252	252 / 252	252	252
Draft (Combat Load) (ft)	38.4	39.0 / 40.4	40.4	38.9
Displacement (tons)	96300	99000 / 102500	102500 1/	97337

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CVN-68 Class, December 31, 1996

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

CVN-76

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

b. Current Change Explanations -- None.

CVN-77

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Length Overall	1092	1092 / 1092	1092	1092
Beam	134	134 / 134	134	134
Maximum Width	252	252 / 252	252	252
Draft (Combat Load) (ft)	40.4	39.0 / 40.4	40.4	40.4
Displacement (tons)	97337	99000 / 102500	102500 1/	97337

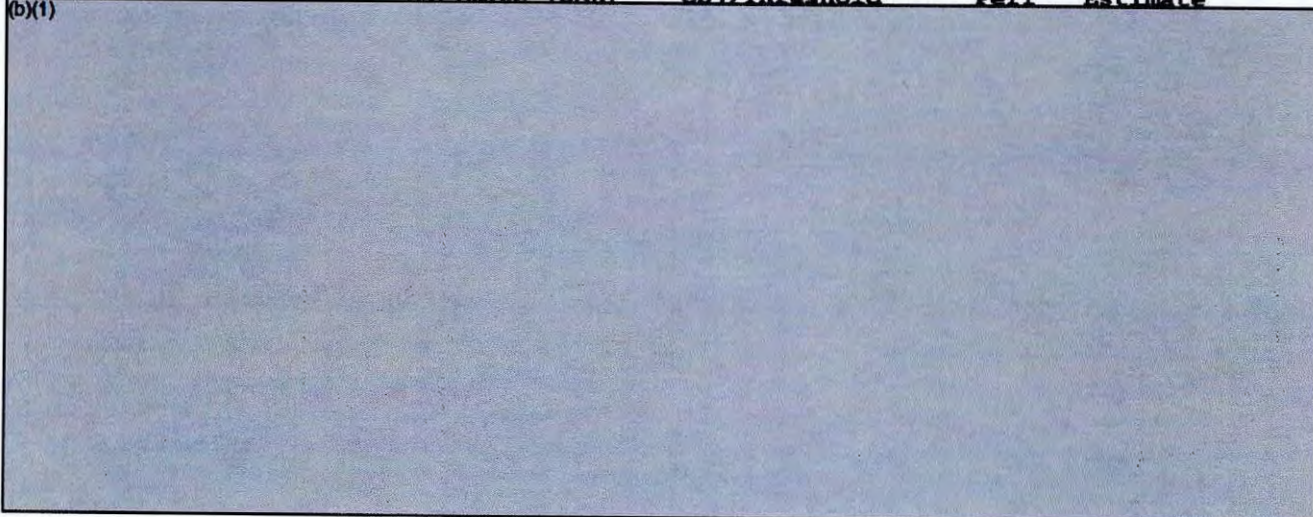
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CVN-68 Class, December 31, 1996

10a. (U) Performance Characteristics (Cont'd):
CVN-77

	Production Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

b. Current Change Explanations -- None.

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CVN-68 Class, December 31, 1996

11. (U) Total Program Cost and Quantity (Dollars in Millions):
CVN-74/75

a. (U) Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	0.0	0.0	0.0
Procurement	5911.0	6528.4	6521.5
Basic	(3744.9)		(4742.0)
Government Furnished Eq	(1998.1)		(1631.5)
Other Costs	(28.1)		(33.0)
OF/PD	(139.9)		(115.0)
Total Sailaway	(5911.0)		(6521.5)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 88 Base-Year \$	5911.0	6528.4	6521.5
Escalation	1055.0	576.9	500.1
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(1055.0)	(576.9)	(500.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6966.0	7105.3	7021.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	2	2	2
Total	2	2	2

c. Foreign Military Sales -- None.

d. (U) Nuclear Costs --
\$1,165.0M

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CVN-68 Class, December 31, 1996

11a. (U) Total Program Cost and Quantity (Cont'd):
CVN-76

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	48.1	48.1	38.2
Procurement	3862.7	4488.6	4136.4
Basic	(2458.7)		(2762.9)
Government Furnished Eq	(1311.7)		(1264.4)
Other	(18.6)		(25.1)
OF/PD	(73.7)		(84.0)
Total Sailaway	(3862.7)		(4136.4)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 95 Base-Year \$	<u>3910.8</u>	<u>4536.7</u>	<u>4174.6</u>
Escalation	386.4	433.2	234.7
Development (RDT&E)	(-1.1)	(-1.1)	(-0.8)
Procurement	(387.5)	(434.3)	(235.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>4297.2</u>	<u>4969.9</u>	<u>4409.3</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1</u>	<u>1</u>	<u>1</u>
Total	1	1	1

c. Foreign Military Sales -- None.

d. (U) Nuclear Costs --
\$901.9M

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CVN-68 Class, December 31, 1996

11a. (U) Total Program Cost and Quantity (Cont'd):
CVN-77

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	0.0	145.7	105.1
Procurement	4557.1	4719.2	4309.3
Basic	(2901.1)		(3177.2)
Government Furnished Eq	(1547.8)		(1028.0)
Other Costs	(21.9)		(25.0)
OF/PD	(86.3)		(79.1)
Total Sailaway	(4557.1)		(4309.3)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 95 Base-Year \$	4557.1	4864.9	4414.4
Escalation	983.7	1037.0	997.6
Development (RDT&E)	(0.0)	(17.3)	(12.6)
Procurement	(983.7)	(1019.7)	(985.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5540.8	5901.9	5412.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1</u>	<u>1</u>	<u>1</u>
Total	1	1	1

c. Foreign Military Sales -- None.

d. (U) Nuclear Costs --
\$695.4M

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CVN-68 Class, December 31, 1996

12. (U) Unit Cost Summary:

CVN-74/75

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 92 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 88 BY\$)	6521.5	6528.4	
(2) Quantity	2	2	
(3) Unit Cost	3260.750	3264.200	-0.11
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 88 BY\$)	6521.5	6528.4	
(2) Quantity	2	2	
(3) Unit Cost	3260.750	3264.200	-0.11

CVN-76

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 92 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	4174.6	4536.7	
(2) Quantity	1	1	
(3) Unit Cost	4174.600	4536.700	-7.98
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	4136.4	4488.6	
(2) Quantity	1	1	
(3) Unit Cost	4136.400	4488.600	-7.85

CVN-77

	Current Estimate (Dec 96 SAR)	UCR Baseline (JAN 97 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	4414.4	4864.9	
(2) Quantity	1	1	
(3) Unit Cost	4414.400	4864.900	-9.26
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	4309.3	4719.2	
(2) Quantity	1	1	
(3) Unit Cost	4309.300	4719.200	-8.69

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CVN-68 Class, December 31, 1996

13. (U) Cost Variance Analysis:
CVN-74/75

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

	RDTE	PROC	MILCON	TOTAL
Production Estimate	-	6966.0	-	6966.0
Previous Changes:				
Economic	-	-99.1	-	-99.1
Quantity	-	-	-	-
Schedule	-	-644.4	-	-644.4
Engineering	-	-	-	-
Estimating	-	+792.5	-	+792.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+49.0	-	+49.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+6.6	-	+6.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+6.6	-	+6.6
Total Changes	-	+55.6	-	+55.6
Current Estimate	-	7021.6	-	7021.6

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CVN-68 Class, December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):
CVN-74/75

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

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	-	5911.0	-	5911.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-124.1	-	-124.1
Engineering	-	-	-	-
Estimating	-	+723.0	-	+723.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+598.9	-	+598.9
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+11.6	-	+11.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+11.6	-	+11.6
Total Changes	-	+610.5	-	+610.5
Current Estimate	-	6521.5	-	6521.5

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) <u>Procurement</u>		
Increase attributable to estimating change in Change Orders, Electronics, Hull, Mechanical & Electrical (HM&E) and Program Manager's Growth. (Estimating)	+67.2	+72.0
Decreased shipbuilding contract estimate. (Estimating)	-76.2	-91.8
Increased post delivery and outfitting estimate. (Estimating)	+20.6	+26.4
Procurement Subtotal	+11.6	+6.6

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CVN-68 Class, December 31, 1996

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

CVN-76

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	47.0	4250.2	-	4297.2
Previous Changes:				
Economic	+0.8	-162.1	-	-161.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.5	+306.4	-	+295.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.7	+144.3	-	+134.6
Current Changes:				
Economic	-	+0.1	-	+0.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.1	-22.7	-	-22.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.1	-22.6	-	-22.5
Total Changes	-9.6	+121.7	-	+112.1
Current Estimate	37.4	4371.9	-	4409.3

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CVN-68 Class, December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):
CVN-76

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	48.1	3862.7	-	3910.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.0	+296.1	-	+286.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-10.0	+296.1	-	+286.1
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.1	-22.4	-	-22.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.1	-22.4	-	-22.3
Total Changes	-9.9	+273.7	-	+263.8
Current Estimate	38.2	4136.4	-	4174.6

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Increase to cost estimate. (Estimating)	+0.1	+0.1
	RDT&E Subtotal	+0.1	+0.1
(2)	<u>Procurement</u>		
	Economic adjustment for negative program change. (Economic)	N/A	+0.1
	Offset for recalculation of indicies. (Estimating)	-30.1	-32.2
	Increase to post delivery and outfitting estimates. (Estimating)	+7.7	+9.5
	Procurement Subtotal	-22.4	-22.6

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CVN-68 Class, December 31, 1996

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

CVN-77

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	5540.8	-	5540.8
Previous Changes:				
Economic	-1.2	-112.0	-	-113.2
Quantity	-	-	-	-
Schedule	-	+235.3	-	+235.3
Engineering	-	-	-	-
Estimating	+30.2	+848.4	-	+878.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+29.0	+971.7	-	+1000.7
Current Changes:				
Economic	-0.1	-33.5	-	-33.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+88.8	-311.0	-	-222.2
Estimating	-	-873.7	-	-873.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+88.7	-1218.2	-	-1129.5
Total Changes	+117.7	-246.5	-	-128.8
Current Estimate	117.7	5294.3	-	5412.0

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CVN-68 Class, December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):
CVN-77

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	4557.1	-	4557.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+68.3	-	+68.3
Engineering	-	-	-	-
Estimating	+25.9	+631.0	-	+656.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+25.9	+699.3	-	+725.2
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+79.2	-249.5	-	-170.3
Estimating	-	-697.6	-	-697.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+79.2	-947.1	-	-867.9
Total Changes	+105.1	-247.8	-	-142.7
Current Estimate	105.1	4309.3	-	4414.4

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.1
	Increased R&D estimate to include process and design changes to reduce manning and high maintenance drivers on CVN 68 Class. (Engineering)	+79.2	+88.8
	RDT&E Subtotal	+79.2	+88.7
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-41.3
	Economic adjustment for negative program change. (Economic)	N/A	+7.8
	Reduction in estimating assumptions resulting from the Navy's decision not to procure reactor plant heavy equipment. The production back-up set will be used in the construction of CVN 77. (Estimating)	-405.6	-500.0
	Correction to Dec 95 SAR to reflect current labor and inflation rates (Estimating)	-324.5	-404.7

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CVN-68 Class, December 31, 1996

13b. (U) Cost Variance Analysis (Cont'd):
CVN-77

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Increase to adjustment for revised advanced procurement phasing (Estimating)	+32.7	+31.4
Reduced post delivery and outfitting estimates (Estimating)	-0.2	-0.4
Deletion of planned technology enhancements. (Engineering)	-249.5	-311.0
Procurement Subtotal	-947.1	-1218.2

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):
CVN-74/75

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3483.00	-49.55	--	-322.20	--	+399.55	--	--	+27.80	3510.80

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3483.00	-49.55	--	-322.20	--	+399.55	--	--	+27.80	3510.80

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	SEP 96	JUN 96
Total Cost	N/A	N/A	6966	7021.6
Total Quantity	N/A	N/A	2	2
Prog Acq Unit Cost	N/A	N/A	3483	3510.8

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CVN-68 Class, December 31, 1996

14a. (U) Unit Cost and Other History (Cont'd):
CVN-76

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4297.20	-161.20	--	--	--	+273.30	--	--	+112.10	4409.30

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4250.20	-162.00	--	--	--	+283.70	--	--	+121.70	4371.90

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	DEC 02	DEC 02
Total Cost	N/A	N/A	4297.2	4409.3
Total Quantity	N/A	N/A	1	1
Prog Acq Unit Cost	N/A	N/A	4297.2	4409.3

CVN-77

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5540.80	-146.80	--	+235.30	-222.20	+4.90	--	--	-128.80	5412.00

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CVN-68 Class, December 31, 1996

14b. (U) Unit Cost and Other History (Cont'd):
CVN-77

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5540.80	-145.50	--	+235.30	-311.00	-25.30	--	--	-246.50	5294.30

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	DEC 08	JAN 08
Total Cost	N/A	N/A	5540.8	5412
Total Quantity	N/A	N/A	1	1
Prog Acq Unit Cost	N/A	N/A	5540.8	5412

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

a. Procurement --

(U) Nuclear Components:
DEPARTMENT OF ENERGY, WASHINGTON DC
N00024-67-F-5110, FFP/CPFF
Award: February 1, 1988
Definitized: February 1, 1988

Initial Contract Price		
Target	Ceiling	Qty
\$865.2	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$867.2	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$867.2	\$867.2

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

Cost Variance	Schedule Variance
\$	\$
\$	\$
\$	\$

Explanation of Change:

(U) The contract amounts include funding for CVN 74/75 and CVN 76. Cost performance reporting is not required on this FFP contract.

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CVN-68 Class, December 31, 1996

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

(U) <u>CVN-74/75 Construction:</u>			Initial Contract Price		
Tenneco, Newport News, VA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00024-88-C-2055, FPIF	\$3674.0	\$4318.6	2		
Award: June 30, 1988					
Definitized: June 30, 1988					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$3844.0	\$4514.0	2	\$3902.1	\$3983.1	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/31/96)			\$-77.7	\$-48.5	
Net Change			\$-77.6	\$-25.1	
			\$0.1	\$23.4	

Explanation of Change:

(U) There was no significant change in cost variance since the December 95 SAR.

The negative schedule variance improved from last year primarily due to the delivery of CVN 74 on 9 November 1995. Material schedule variance has also continued to improve as NNS continues to payoff the back log of payments on large procurement items. All material has been received and installed.

(U) <u>Nuclear Components:</u>			Initial Contract Price		
Westinghouse Electric Co., Monroeville Pa	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00024-88-C-4007, FFP/CPFF	\$814.0	N/A	0		
Award: February 1, 1988					
Definitized: February 1, 1988					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$845.1	N/A	0	\$845.1	\$845.1	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date			\$	\$	
Net Change			\$	\$	

Explanation of Change:

(U) The contract amounts include funding for CVN 74/75 and CVN 76. Cost performance reporting is not required on the FFP contract.

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CVN-68 Class, December 31, 1996

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

(U) Nuclear Components:
Westinghouse Electric Co., Schenectady NY
N00024-88-C-4008, FFP/CPFF
Award: February 28, 1988
Definitized: February 28, 1988

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$354.6	N/A	0

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$354.6	N/A	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$354.6	\$354.6

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
\$	\$
\$	\$
\$	\$

Explanation of Change:

(U) The contract amounts include funding for CVN 74/75 and CVN 76. Cost performance reporting is not required for this FFP contract.

(U) CVN-76 Construction:
Newport News Shipbuilding, Newport News VA
N00024-95-C-2106, FPIF
Award: December 8, 1994
Definitized: December 8, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$2517.3	\$2884.0	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$2518.0	\$2885.0	1

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$2514.4	\$2518.2

Previous Cumulative Variances
Cumulative Variances To Date (08/18/96)
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
\$1.0	\$12.9
\$2.2	\$-7.3
\$1.2	\$-20.2

Explanation of Change:

(U) There was no significant change in cost variance since the December 95 SAR.

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CVN-68 Class, December 31, 1996

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

Total Program

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

<u>Appropriation</u>	<u>Prior Years (FY82-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-09)</u>	<u>Total</u>
RD&E	37.4	17.9	34.8	65.0	155.1
Procurement	11234.1	6.8	46.8	5400.1	16687.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	11271.5	24.7	81.6	5465.1	16842.9

CVN-74/75

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

<u>Appropriation</u>	<u>Prior Years (FY88-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete</u>	<u>Total</u>
RD&E	-	-	-	-	-
Procurement	6968.0	6.8	46.8	-	7021.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6968.0	6.8	46.8	-	7021.6

CVN-76

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

<u>Appropriation</u>	<u>Prior Years (FY91-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-04)</u>	<u>Total</u>
RD&E	37.4	-	-	-	37.4
Procurement	4266.1	-	-	105.8	4371.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4303.5	-	-	105.8	4409.3

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CVN-68 Class, December 31, 1996

16a. (U) Program Funding Summary (Cont'd):
CVN-77

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

<u>Appropriation</u>	<u>Prior Years</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-09)</u>	<u>Total</u>
RDT&E	-	17.9	34.8	65.0	117.7
Procurement	-	-	-	5294.3	5294.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	-	17.9	34.8	5359.3	5412.0

b. Annual Summary -- CVN-74/75

Appropriation: 1611 Shipbuilding and Conversion, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY88 Dollars Nonrec</u>	<u>Flyaway FY88 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1988	2		6521.5	6348.3	6799.7
1992				65.5	78.9
1993				10.8	13.2
1994				15.6	19.7
1995				18.4	23.8
1996				24.7	32.6
1997				0.1	0.1
1998				4.9	6.8
1999				33.2	46.8
Subtotal	2		6521.5	6521.5	7021.6

	<u>Qty</u>	<u>Flyaway Dollars Nonrec</u>	<u>Flyaway Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
Grand Total	2		6521.5	6521.5	7021.6

b. Annual Summary -- CVN-76

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY95 Dollars Nonrec</u>	<u>Flyaway FY95 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1991				1.9	1.8
1992				8.6	8.2
1993				12.3	12.0
1994				10.6	10.5
1995				4.8	4.9

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CVN-68 Class, December 31, 1996

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

CVN-76

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal				38.2	37.4

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				825.0	829.5
1994					
1995	1		4136.4	3227.5	3436.6
1999					
2000					
2001				16.0	19.4
2002				7.2	8.9
2003				44.3	56.2
2004				16.4	21.3
Subtotal	1		4136.4	4136.4	4371.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		4136.4	4174.6	4409.3

b. Annual Summary -- CVN-77

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				16.6	17.9
1999				31.6	34.8
2000				31.1	35.0
2001				12.2	14.0
2002				9.4	11.0
2003				4.2	5.0
Subtotal				105.1	117.7

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CVN-68 Class, December 31, 1996

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

CVN-77

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				591.8	695.4
2001					
2002	1		4309.3	3638.4	4484.7
2006				10.5	14.4
2007				9.9	13.9
2008				15.7	22.5
2009				43.0	63.4
Subtotal	1		4309.3	4309.3	5294.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		4309.3	4414.4	5412.0

17. (U) Delivery/Expenditure Information:

CVN-74/75

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	1	1

(U) Percent Total Program Quantities Delivered: 50.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 5512.7

(U) Percent Total Program Expended: 78.5%

CVN-76

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 489.5

(U) Percent Total Program Expended: 11.1%

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CVN-68 Class, December 31, 1996

17b. (U) Delivery/Expenditure Information (Cont'd):
CVN-77

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 0

(U) Percent Total Program Expended: 0.0%

18. (U) Operating and Support Costs:
CVN-74/75

a. (U) Assumptions and Ground Rules --

These costs are based on the operating costs for supplies, equipment, and pier side support when deployed. The O&S costs reported in the Dec 95 SAR was estimated LIFE costs vice ANNUAL costs. This SAR reflects O&S annual costs in 92 constant dollars. Cost estimate performed DEC 95. There is no antecedent system.

b. (U) Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CVN	N/A
Mission Pay & Allowances	130.1	N/A
Unit Level Consumption	11.5	N/A
Intermediate Maintenance	9.6	N/A
Depot Maintenance	103.3	N/A
Contractor Support	0.0	N/A
Sustaining Support	7.7	N/A
Indirect Costs	1.9	N/A
Total	264.1	N/A

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CVN-68 Class, December 31, 1996

18a. (U) Operating and Support Costs (Cont'd):
CVN-76

a. (U) Assumptions and Ground Rules --
Same as CVN 74/75 above.

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

Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

CVN-77

a. (U) Assumptions and Ground Rules --
Same as CVN 74/75 above.

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

Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: NAVSTAR GPS

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): NAVSTAR GPS/NAVSTAR Global Positioning System

2. (U) DoD Component: USAF

Joint Participants:

United States Army (USA), United States Navy (USN), United States Marine Corps (USMC)

3. (U) Responsible Office and Telephone Number:

NAVSTAR GPS Joint Program Office	COL JAMES B. ARMOR, JR.
Space and Missile Systems Center	Assigned: July 28, 1996
2435 Vela Way, Suite 1613	DSN 833-1526; COMM (310) 363-1526
Los Angeles AFB, CA 90245-5500	ARMORJB@GPS1.LAAFB.AF.MIL

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

RDT&E:

(U)	PE 0206626M
(U)	PE 0305164A
(U)	PE 0305164F
(U)	PE 0305164M
(U)	PE 0305164N
(U)	PE 0305165F
(U)	PE 0603421F
(U)	PE 0604478F
(U)	PE 0604480F

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FOR OPEN PUBLICATION
AS AMENDED
17 MAR 4 1997

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

SAF/PAS

97-0104

CONGRESSIONAL

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~~Downgrade instructions: Not Subject to International Downgrade~~
~~Declassify on: Originating Agency's Determination Required~~

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

(U) PE 0604777N
(U) PE 0604778A
(U) PE 0604778F

PROCUREMENT:

(U) APPN 1109 ICN N/A (Navy)
(U) APPN 1506 ICN OSIP 17-88 (Navy)
(U) APPN 1611 ICN N/A (Navy)
(U) APPN 1810 ICN BLI265700 (Navy)
(U) APPN 2031 ICN K47800 (Army)
(U) APPN 2035 ICN K47800 (Army)
(U) APPN 3010 ICN 000000 (Air Force)
(U) APPN 3020 ICN MGPS00 (Air Force)
(U) APPN 3080 ICN 836730 (Air Force)
(U) APPN 3080 ICN 836790 (Air Force)
(U) APPN 3080 ICN 86190A (Air Force)

MILCON:

(U) PE 0305165F

O&M:

(U) PE 0305164F
(U) PE 0305164N
(U) PE 0305165F

5. (U) References:

NAVSTAR GPS Satellite

SAR Baseline (Development Estimate):

(U) Decision Coordinating Paper (DCP) #133, Revision B, February 1, 1980.

Approved Program:

(U) AFAB Approved Acquisition Program Baseline (APB) dated May 3, 1996.

NAVSTAR GPS User Equip

SAR Baseline (Development Estimate):

(U) Decision Coordinating Paper (DCP) #133, Revision B, February 1, 1980.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated May 3, 1996.

6. (U) Mission and Description:

(U) The NAVSTAR Global Positioning System (GPS) is a space-based radio positioning, navigation, and time distribution system. The GPS provides precise, continuous, all-weather, common-grid positioning, velocity, navigation, and time reference capability to civil, commercial, and military users worldwide. Military mission areas supported include navigation and position fixing, air interdiction, close air support, special operations, strategic attack, counterair and aerospace defense, theater and tactical command, control,

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

communications, and intelligence, precision munition guidance, and ground/sea warfare. GPS carries a suite of nuclear detonation detection system sensors as a secondary payload. These sensors provide worldwide, near realtime, 3-dimensional location of nuclear detonations. NAVSTAR GPS does not replace any United States Air Force weapon system; however, it provides the capability to replace the following support systems: Very High Frequency (VHF) Omnidirectional Range (VOR), Long Range Aid to Navigation (LORAN), OMEGA, Tactical Air Navigation (TACAN), and Distance Measurement Equipment (DME). Many of these systems are planned to be retired over the next decade, i.e. OMEGA, 30 September 1997.

7. (U) Executive Summary:

(U) Full scale development of the NAVSTAR GPS satellite program began in June 1979, with approval of Milestone II. Between this date and October 1985, the Joint Program Office (JPO) launched 10 Block I satellites and developed the associated ground control system software to support system testing. Furthermore, the JPO successfully launched the first production satellite in February 1989, and has since completed an additional 26 (Block II/IIA) successful launches. In June 1989, the NAVSTAR GPS JPO awarded a production contract for a block change of 20 additional replenishment satellites (Block IIR) to the approved program, with priced options for six more. Of the six satellites covered by the options, only one was actually exercised, in 1995. Finally, in April 1996, the JPO awarded a sustainment contract (Block IIF) for six production satellites, with priced options for blocks of 15 and 12 additional satellites. Initial operational capability (IOC) was declared on 8 December 1993 in a joint announcement by the Department of Defense (DoD) and Department of Transportation (DOT).

Air Force Space Command (AFSPC) assumed management responsibility for the ground control segment in April 1990. This segment consists of ground antennas, monitor stations, and a master control station necessary to control GPS satellites.

In October 1992, the NAVSTAR GPS program transferred from a Program Executive Officer for Space to a Designated Acquisition Commander Program. In addition, the Defense Acquisition Executive redesignated GPS from an Acquisition Category 1D to a 1C program.

GPS user equipment development began in June 1979 with receiver testing (using Block I satellites) in a variety of land, sea, and air vehicles. Since then, the JPO has awarded contracts for the research and development as well as production for 1-, 2-, and 5-channel GPS airborne, shipboard, and manpack (portable) receivers. GPS user equipment successfully completed the Defense Acquisition Board (DAB) Milestone IIIB in January 1992, achieved depot IOC in March 1993, and declared depot full operational capability (FOC) in November 1996.

In calendar year (CY) 95, work began on the Navigation Warfare (NAVWAR) Advanced Concept Technology Demonstration (ACTD). The ACTD objectives included: 1) formulating a Concept of Operations for joint forces using GPS in

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7. (U) Executive Summary (Cont'd):

an electronic warfare environment; 2) developing, fielding, and demonstrating new protection and operational employment (prevention) capabilities for airborne and ground-based platforms; and 3) providing the basis for a program to implement these new capabilities into DoD and Allied forces.

In January 1996, development began on the GPS Operations System Simulator. This simulator provides an off-line training and engineering capability to GPS operations crews, increasing system performance and safety. It will simulate the full GPS constellation of intermixed Block IIA and IIR satellites.

In February 1996, the JPO announced slips to three Block IIR milestones. These slips are a result of the contractor's declaration that the milestones could not be met due to various qualification and environmental testing issues. First and second contract deliveries slipped from April 1996 and June 1996 to August 1996 and November 1996, respectively. First launch availability slipped from August 1996 to January 1997. As a result, we breached three Block IIR schedule milestones in the approved APB. A program deviation report and baseline change request were submitted in late March 1996, and approved in May 1996.

Miniaturized Airborne GPS Receiver (MAGR) depot FOC was declared by Tobyhanna Army Depot on 22 November 1996. This completed the full depot capability milestone seven months ahead of the objective date.

On 17 January 1997, a Delta II space launch vehicle carrying the first GPS Block IIR satellite exploded after launch from Cape Canaveral Air Station, Florida. A joint contractor/Government team led by Air Force Space Command is investigating why the vehicle initiated its automatic destruct system approximately 13 seconds into flight. There were no fatalities or injuries, and damage assessments to the launch pad and surrounding area are ongoing. While it is currently unknown how long the board will need to determine the accident's cause, past investigations normally have taken months to find the most likely cause. Once the board releases its findings and publishes its formal report, additional time may be required to implement corrective actions.

In the near term, loss of the first Block IIR satellite will not degrade GPS system performance. The GPS constellation currently consists of 25 Block II/IIA satellites providing worldwide military precision navigational services. Maintaining 24 satellites in the constellation ensures that existing signal coverage requirements are met. The first Block IIR was not intended to replace a failed satellite, rather it was scheduled to allow early on-orbit verification of IIR performance. One Block IIA and one Block IIR satellite are presently in storage at Cape Canaveral.

Over the longer term, loss of the Block IIR satellite and potential delays in future planned launch opportunities may impair our ability to sustain desired navigation signal coverage. Eighteen of the 25 satellites in the constellation have at least one subsystem that has lost its redundant backup. Extending life of the on-orbit vehicles using power management techniques is problematic. Using analytical tools for predicting constellation health and life expectancy, and the planned launches per the National Mission Model, there is a significant

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7. (U) Executive Summary (Cont'd):

probability that over the next five years the constellation may temporarily drop below 24 satellites, affecting navigation performance.

To meet future satellite replenishment needs given uniform sustainment budgets and constrained launch opportunities, the GPS program has transitioned from a launch on need to a launch on schedule strategy. Four GPS launches per year were planned over each of the next four years. Depending on the duration of the investigation and recovery time, increased launch rates may be required over this period to sustain GPS system performance.

The NAVSTAR GPS program is expected to satisfy all mission requirements.

8. (U) Threshold Breaches:

NAVSTAR GPS Satellite

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	NO
Performance	NO
COST -- RDT&E	NO
-- Procurement	NO
-- MILCON	NO
-- O&M	NO
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	NO
Average Procurement Unit Cost	NO

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NAVSTAR GPS, December 31, 1996

8. (U) Threshold Breaches (Cont'd):
NAVSTAR GPS User Equip

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	NO
Performance	NO
Cost -- RDT&E	NO
-- Procurement	NO
-- MILCON	NO
-- O&M	NO
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Munn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	NO
Average Procurement Unit Cost	NO

9. (U) Schedule:
NAVSTAR GPS Satellite

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I (DSARC)	DEC 73	DEC 73	DEC 73
Milestone II (DSARC)	JUN 79	JUN 79	JUN 79
First Production Satellite Launch	JAN 87	FEB 89	FEB 89
Block IIR Contract Award	N/A	JUN 89	JUN 89
Control Segment Turnover to AFSPACECOM	N/A	APR 90	APR 90
Last Block IIA Satellite Delivery	N/A	NOV 92	MAY 93
21 Satellites on-orbit	N/A	MAR 93	JUN 93
First Block IIR Contract Delivery	N/A	AUG 96	AUG 96
Second Block IIR Contract Delivery	N/A	NOV 96	NOV 96
Availability of First Block IIR Satellite for Launch	N/A	JAN 97	JAN 97

b. Current Change Explanations -- None.

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9a. (U) Schedule (Cont'd):
NAVSTAR GPS User Equip

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I (DSARC)	DEC 73	N/A	DEC 73
Milestone II (DSARC)	JUN 79	N/A	JUN 79
Milestone III (DSARC)	SEP 83	N/A	SEP 83
Milestone IIIA (JRMB) Award	N/A	JUN 86	JUN 86
AF DT User Equipment (UE)			
Begin	N/A	JUL 88	JUL 88
Complete	N/A	MAY 89	AUG 89
User Equipment OT&E			
Begin	N/A	JUN 89	JUN 89
Complete	N/A	JUL 91	JUL 91
Milestone IIIB (DAB) UE	MAR 89	SEP 91	JAN 92
Initial Depot Capability	N/A	SEP 92	MAR 93
First Full-Rate UE Production Delivery	N/A	NOV 93	NOV 93
Full Depot Capability	N/A	JUN 97	NOV 96 (Ch-1)

b. (U) Current Change Explanations --

(Ch-1) The PM's Current Estimate for Full Depot Capability has changed from June 1997 to November 1996 since the last report, with the completion of Miniaturized Airborne Global Positioning System (GPS) Receiver (MAGR) depot activation at Tobyhanna Army Depot (TYAD).

10. (U) Performance Characteristics:
NAVSTAR GPS Satellite

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
3-D Sys Positioning Accuracy (meters) (Spherical Error Probable (SEP))	16	16 / 16	10	16
3-D Sys Positioning Accuracy for 180 days after last Nav Update				
Block II SEP (km)	N/A	10 / 10	TBD	10
Block IIR SEP (m)	N/A	16 / 16	TBD	16
Block II Satellite Mean Mission Duration (MMD) (yrs)	6	6 / 6	4.69 / A	6.5
System Availability % (minimum of 21 satellites are operational at any time)	98	98 / 98	99.49 / B	98

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Satellite Maximum Weight (lbs) (Delta II)	N/A	4480 / 4480	4480	4480
Expected Ground Power (End of Life) (dbw)				
L1 (C/A)	-160	-160 / -160	-160	-160
L1 (Precision Code)	-163	-163 / -163	-163	-163
L2 (Precision Code)	-166	-166 / -166	-166	-166
Cesium Clock Stability (f/f)	2x10 ⁻¹³ -13	2x10 ⁻¹³ / 2x10 ⁻¹³	1x10 ⁻¹³	1x10 ⁻¹³
Time Transfer (Universal Coordinated Time) (nsec)	+/-100	+/- 100 / +/- 100	+/-25	+/-100
Block II Satellite Design Life (yrs)	N/A	7.5 / 7.5	4.69 / A	7.5
Block I Satellite Expected Ground Power (End of Life (dbw)				
L1 (C/A)	-160	N/A / N/A	-155	-160
L1 (Precision Code)	-163	N/A / N/A	-158	-163
L2 (Precision Code)	-166	N/A / N/A	-159	-166

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Cesium Clock	2×10^{-13}	N/A / N/A	2×10^{-13}	2×10^{-13}
Stability f/f 2/	-13			□

(U) (U) A/ Current demonstrated performance reflects Block II only.

(U) B/ Requirement is 98% probability of 21 satellites operational. Demonstrated performance is based upon actual availability of the satellites in the constellation.

(U) C/ Gamma dose rate parameters listed in the approved program column are derived from the approved system operation requirements documents and technical requirements documents.

b. Current Change Explanations -- None.

NAVSTAR GPS User Equip

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Reliability Mean Time Between Operational Mission Failures (hours)				
Airborne				
5-Channel	550	590 / 500	2130.2	2130.2
2-Channel	550	929 / 500	722.8	722.8
Ground (hrs)	850	2000 / 500	1653.2	1653.2
Sea (hrs)	900	680 / 680	2880.8	2880.8
Maintainability Mean Time to Repair (hours)				
Airborne				
5-Channel	1.3	1 / 1	.75	.75
2-Channel	1.3	.75 / .75	.27	.27
Ground (hrs)	1.2	.75 / .75	.18	.18
Sea (hrs)	1.3	1.5 / 1.5	.77	.77

(U) Note: The mean time to repair reflects intermediate-level repair of the sets, not operational-level.

b. Current Change Explanations -- None.

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11. (U) Total Program Cost and Quantity (Dollars in Millions):
NAVSTAR GPS Satellite

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APR)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	967.6	1563.3	1452.3
Procurement	623.4	3026.9	2739.4
Flyaway	(583.6)		(2733.2)
Other Weapon Systems	(39.8)		(6.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	8.4	4.7	4.7
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 79 Base-Year \$	1599.4	4594.9	4196.4
Escalation	707.3	6798.0	5416.8
Development (RDT&E)	(204.9)	(1389.2)	(1123.8)
Procurement	(496.1)	(5406.2)	(4290.4)
Construction (MILCON)	(6.3)	(2.6)	(2.6)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	2306.7	11392.9	9613.2
b. (U) Quantity --			
Development (RDT&E)	12	12	12
Procurement	<u>28</u>	<u>106</u>	<u>106</u>
Total	40	118	118

(U) Note: All Research Development Test and Evaluation (RDT&E) prototypes are considered fully configured.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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11a. (U) Total Program Cost and Quantity (Cont'd):
NAVSTAR GPS User Equip

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	941.8	1005.3	1136.4
Procurement	1613.1	2143.3	1924.2
Flyaway	(1115.9)		(1246.6)
Other Weapon Systems	(497.2)		(603.4)
Peculiar Support	(0.0)		(32.0)
Initial Spares	(0.0)		(42.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	42.5
Total FY 79 Base-Year \$	2554.9	3148.6	3103.1
Escalation	2320.9	3492.9	3404.7
Development (RDT&E)	(441.9)	(593.7)	(735.7)
Procurement	(1879.0)	(2899.2)	(2624.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(44.9)
Total Then Year \$	4875.8	6641.5	6507.8
b. (U) Quantity --			
Development (RDT&E)	129	248	248
Procurement	27210	119695	194001
Total	27339	119943	194249

(U) Note: The family of NAVSTAR GPS user equipment consists of over 25 different end items or line replaceable units (LRU's). These LRU's are grouped into six broad categories: receivers, antenna electronics, antennas, control display units, mounts, and support equipment. A user equipment set consists of one or more of these LRU's, depending upon the host vehicle. All Research Development Test and Evaluation (RDT&E) units are considered fully configured end items.

c. (U) Foreign Military Sales --		
Country	Dollars	Quantities Ancillary/Receivers/Security Devices
Australia	\$.8M	1/38/1200
Belgium	\$.2M	0/0/241
Canada	\$ 2.8M	1163/243/9463
Denmark	\$.3M	0/0/908
Finland	\$.1M	0/0/350
France	\$ 1.8M	12/3/6138
Germany	\$ 12.4M	201/80/8133
Greece	\$ 1.6M	88/45/225
Israel	\$.8M	29/3/7337
Italy	\$.5M	0/0/1715
Japan	\$ 7.0M	59/80/486

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

NAVSTAR GPS User Equip

Korea	\$ 2.9M	248/11/852
Luxembourg	\$.0M	109/0/0
Netherlands	\$ 1.0M	0/0/41307
New Zealand	\$.0M	0/0/280
Norway	\$.4M	0/34/1281
Singapore	\$.2M	0/0/0
Spain	\$.6M	1790/0/23
Switzerland	\$.0M	0/0/195
Turkey	\$ 3.7M	334/113/750
United Kingdom	\$ 2.5M	0/25/7870
Mid-Life Update	\$ 13.1M	680/325/1625

Notes: 1) Security devices refer to one of many types of auxiliary output chips or security modules. 2) The mid-life update is the program for F-16 sales to Belgium, Norway, Denmark, and the Netherlands. 3) Sales to Luxembourg, New Zealand, and Switzerland have a dollar value which rounds to less than \$.1M.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

NAVSTAR GPS Satellite

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAY 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 79 BY\$)	4196.4	4594.9	
(2) Quantity	118	118	
(3) Unit Cost	35.563	38.940	-8.67
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 79 BY\$)	2739.4	3026.9	
(2) Quantity	106	106	
(3) Unit Cost	25.843	28.556	-9.50

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

NAVSTAR GPS User Equip

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAY 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 79 BY\$)	3103.1	3148.6	
(2) Quantity	194249	119943	
(3) Unit Cost	0.016	0.026	-38.46
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 79 BY\$)	1924.2	2143.3	
(2) Quantity	194001	119695	
(3) Unit Cost	0.010	0.018	-44.44

13. (U) Cost Variance Analysis:

NAVSTAR GPS Satellite

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1172.5	1119.5	14.7	2306.7
Previous Changes:				
Economic	-191.4	-759.5	-1.4	-952.3
Quantity	-	+5198.7	-	+5198.7
Schedule	+37.9	+586.8	-	+624.7
Engineering	+291.6	+344.0	-	+635.6
Estimating	+1073.1	+1051.5	+0.5	+2125.1
Other	-	-	-	-
Support	+339.6	-22.1	-6.5	+311.0
Subtotal	+1550.8	+6399.4	-7.4	+7942.8
Current Changes:				
Economic	+29.9	+126.3	-	+156.2
Quantity	-	-	-	-
Schedule	-	-6.7	-	-6.7
Engineering	-	-35.2	-	-35.2
Estimating	-177.1	-573.5	-	-750.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-147.2	-489.1	-	-636.3
Total Changes	+1403.6	+5910.3	-7.4	+7306.5
Current Estimate	2576.1	7029.8	7.3	9613.2

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

(U) Summary (FY 1979 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	967.6	623.4	8.4	1599.4
Previous Changes:				
Quantity	-	+1654.8	-	+1654.8
Schedule	+18.1	-18.4	-	-0.3
Engineering	+160.6	+239.0	-	+399.6
Estimating	+251.8	+474.9	+0.4	+727.1
Other	-	-	-	-
Support	+122.6	-33.6	-4.1	+84.9
Subtotal	+553.1	+2316.7	-3.7	+2866.1
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-12.9	-	-12.9
Estimating	-68.4	-187.8	-	-256.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-68.4	-200.7	-	-269.1
Total Changes	+484.7	+2116.0	-3.7	+2597.0
Current Estimate	1452.3	2739.4	4.7	4196.4

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices (Economic)	N/A	+16.2
Economic adjustment for negative program change (Economic)	N/A	+13.7
Adjustment for current and prior escalation (Estimating)	+0.1	+0.3
Reduction for future engineering change order estimates and Congressionally directed Air Force (AF) reductions (FY96-FY03) (Estimating)	-4.2	-10.1
Funds declared excess based on new Block IIF contract (FY98-FY03) (Estimating)	-48.6	-122.5
Reprogramming of funds for GPS ground segment modifications (FY98-FY99) (Estimating)	-3.3	-7.8
Funds added for Operational Control System contract (FY96) (Estimating)	+0.2	+0.4
Inflation decrease in AF data base (FY98-FY03) (Estimating)	-0.7	-1.7
Reprogramming funds for higher AF priorities - (FY02-FY03) (Estimating)	-6.8	-17.9
Denial of reprogramming of program funds for Bosnia (FY95-FY96) (Estimating)	0.0	+0.1

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
OSD directed realignment of funds (FY98-FY99) (Estimating)	-0.1	-0.1
Revised estimate to reflect change in AF economic assumptions (FY98-FY16) (Estimating)	-5.0	-17.8
RDT&E Subtotal	-68.4	-147.2
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	+73.9
Economic adjustment for negative program change (Economic)	N/A	+52.4
Reprofile of two satellites from fiscal year (FY) 02 and FY03 to FY00 and FY01 respectively (Schedule)	0.0	-6.7
Sensor & IIF Nuclear Detonation Detection System Integration (FY98-FY01) (Engineering)	-12.9	-35.2
Adjustment for current and prior escalation (Estimating)	+0.9	+2.2
Funds reprogrammed for higher priority AF requirements (FY94) (Estimating)	-1.6	-3.8
Reduced Government estimate based on actual contract award for Block IIF satellite (FY98-FY09) (Estimating)	-151.9	-456.6
Reduction for future engineering change order estimates and Congressionally directed AF reductions (FY98-FY03) (Estimating)	-4.2	-12.0
Reduction in System Engineering and Technical Assistance (SETA) for higher priority AF requirements (FY98-FY03) (Estimating)	-5.8	-16.4
Inflation decrease in AF data base (FY98-FY03) (Estimating)	-3.9	-10.8
Refinement of estimate based on decrease in AF data base (FY10-FY16) (Estimating)	-21.3	-76.1
Procurement Subtotal	-200.7	-489.1

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NAVSTAR GPS, December 31, 1996

13. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

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

	RDTEE	PROC	MILCON	O&M	TOTAL
Development Estimate	1383.7	3492.1	-	-	4875.8
Previous Changes:					
Economic	-38.3	-276.9	-	-8.9	-324.1
Quantity	-	-142.9	-	-20.0	-162.9
Schedule	+20.7	+452.1	-	-	+472.8
Engineering	-	-46.8	-	-	-46.8
Estimating	+438.6	+739.7	-	+105.1	+1283.4
Other	-	-	-	-	-
Support	-17.8	+504.4	-	+5.8	+492.4
Subtotal	+403.2	+1229.6	-	+82.0	+1714.8
Current Changes:					
Economic	-1.3	-37.0	-	-0.1	-38.4
Quantity	-	-204.6	-	-	-204.6
Schedule	-	+134.0	-	-	+134.0
Engineering	+83.2	-	-	-	+83.2
Estimating	+3.3	-171.0	-	+2.3	-165.4
Other	-	-	-	-	-
Support	-	+105.2	-	+3.2	+108.4
Subtotal	+85.2	-173.4	-	+5.4	-82.8
Total Changes	+488.4	+1056.2	-	+87.4	+1632.0
Current Estimate	1872.1	4548.3	-	87.4	6507.8

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NAVSTAR GPS, December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

(U) Summary (FY 1979 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	941.8	1613.1	-	-	2554.9
Previous Changes:					
Quantity	-	-147.8	-	-10.0	-157.8
Schedule	+10.6	+73.4	-	-	+84.0
Engineering	-	-21.3	-	-	-21.3
Estimating	+150.5	+329.7	-	+48.2	+528.4
Other	-	-	-	-	-
Support	-5.1	+151.6	-	+2.0	+148.5
Subtotal	+156.0	+385.6	-	+40.2	+581.8
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-95.4	-	-	-95.4
Schedule	-	+47.9	-	-	+47.9
Engineering	+38.1	-	-	-	+38.1
Estimating	+0.5	-55.8	-	+0.9	-54.4
Other	-	-	-	-	-
Support	-	+28.8	-	+1.4	+30.2
Subtotal	+38.6	-74.5	-	+2.3	-33.6
Total Changes	+194.6	+311.1	-	+42.5	+548.2
Current Estimate	1136.4	1924.2	-	42.5	3103.1

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices (Economic)	N/A	-1.2
Economic adjustment for negative program change (Economic)	N/A	-0.1
Revised requirements for development of Global Positioning System(GPS) enhancements (FY98-FY01) - Navy (Engineering)	-1.9	-4.1
Revised requirements for development of GPS enhancements (FY98-FY01) - Air Force (AF) (Engineering)	+40.0	+87.3
Adjustment for current and prior escalation (Estimating)	+0.5	+3.3
RDT&E Subtotal	+38.6	+85.2
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	+1.8
Economic adjustment for negative program change (Economic)	N/A	-38.8
Reduction of 41,817 handheld sets (200,497 to 158,680) (FY97-FY12) - Army (Quantity)	-53.5	-112.3

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13b. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Increase of 82 aircraft sets (from 3850 to 3932) (FY00-FY03) - Navy (Quantity)	+1.9	+4.3
Reduction of 294 aircraft sets (from 5566 to 5272) (FY95-FY02) - AF (Quantity)	-47.2	-103.4
Increase of 1580 handheld receivers (from 16822 to 18402) (FY99-FY03) - AF (Quantity)	+3.4	+6.8
Increase to recurring unit cost of handheld sets due to shift in schedule (FY97-FY12) - Army (Schedule)	+31.5	+84.6
Increase to recurring unit cost of aircraft sets due to shift in schedule FY00-FY03) - Navy (Schedule)	0.0	+0.1
Increase to recurring unit cost of aircraft sets due to schedule shift (FY99-FY03) - AF (Schedule)	+1.5	+4.2
Increase to recurring unit cost of aircraft sets due to schedule shift (FY99-FY03) - AF (Schedule)	+14.9	+45.1
Adjustment for current and prior year escalation (Estimating)	+1.7	+4.4
Revised estimates for Line Replaceable Units (LRU) average unit costs for ground and aircraft sets due to migration towards commercial hardware for Navigation Warfare (NAVWAR) (FY96-FY12) - A (Estimating)	-8.5	-34.3
Revised estimates for LRU average unit costs due to migration towards commercial hardware (FY94-FY03) - Navy (Estimating)	-1.2	-1.3
Revised estimates for LRU average unit costs due to migration towards commercial hardware (FY96-FY12) - AF (Estimating)	-47.8	-139.8
Revised estimates for program support of ground and aircraft sets (FY95-FY12) - Army (Support)	+33.8	+80.5
Revised estimates for program support (FY95-FY03) - Navy (Support)	+7.0	+26.5
Revised estimates for program support (FY95-FY08) - AF (Support)	-12.0	-1.8
Procurement Subtotal	-74.5	-173.4
(3) <u>O&M</u>		
Revised economic escalation indices (Economic)	N/A	-0.1
Adjustment for current and prior year escalation (Estimating)	+0.9	+2.3

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13b. (U) Cost Variance Analysis (Cont'd):
NAVSTAR GPS User Equip

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Increased estimate for UE support (FY02-FY03) - Navy (Support)	+1.1	+2.4
Increased estimate for UE support (FY98-FY03) - AF (Support)	+0.3	+0.8
O&M Subtotal	+2.3	+5.4

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):
NAVSTAR GPS Satellite

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
57.67	-6.75	+5.93	+5.24	+5.09	+11.65	--	+2.64	+23.80	81.47

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
39.98	-5.97	+19.63	+5.47	+2.91	+4.51	--	-0.21	+26.34	66.32

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	DEC 73	N/A	DEC 73
Milestone II	N/A	JUN 79	N/A	JUN 79
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	2306.7	N/A	9613.2
Total Quantity	N/A	40	N/A	118
Prog Acq Unit Cost	N/A	57.67	N/A	81.47

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14a. (U) Unit Cost and Other History (Cont'd):
NAVSTAR GPS User Equip

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.18	--	-0.16	--	--	+0.01	--	--	-0.15	0.03

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.13	--	-0.11	--	--	--	--	--	-0.11	0.02

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	DEC 73	N/A	DEC 73
Milestone II	N/A	JUN 79	N/A	JUN 79
Milestone III	N/A	MAR 89	N/A	JAN 92
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	4875.8	N/A	6507.8
Total Quantity	N/A	273339	N/A	194249
Prog Acq Unit Cost	N/A	0.02	N/A	0.03

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

a. RDT&E --

(U) OPERATIONAL CNTL SYS SPT:
LOCKHEED MARTIN FED SYST, GAITHERSBURG MD
F04701-95-D-0239, CPAP/FF/FFP/T&M
Award: July 21, 1995
Definitized: July 21, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$25.0	\$26.4	0

Current Contract Price		
Target	Ceiling	Qty
\$67.8	\$29.3	0

Estimated Price At Completion	
Contractor	Program Manager
\$70.5	\$72.1

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.5	\$-0.4
Cumulative Variances To Date (12/27/96)	<u>\$-1.0</u>	<u>\$-3.4</u>
Net Change	\$-1.5	\$-3.0

Explanation of Change:

(U) Note: Loral Federal Systems has changed its name to Lockheed Martin Federal Systems.

This contract includes effort under four different pricing arrangements: Cost-Plus-Award-Fee (CPAF), Cost-Plus-Fixed-Fee (CPFF), Time and Material (T&M), and Firm-Fixed-Price (FFP). The contractor's Cost Performance Report (CPR) reports on the CPAF and CPFF Contract Line Item Numbers (CLINs) only; therefore the data presented here reflects only the cost reimbursable work. The T&M and FFP CLINs represent another \$13.7M of work. The ceiling price is lower than the target price because it applies only to development of the software required for full-functionality of Block IIR and the Operational Control Segment (OCS) Re-Architecture development. The target price applies to all CLINs currently reported in the CPR.

Since the last Selected Acquisition Report (SAR), the cost variance has deteriorated by \$-1.5M. This variance is due to the System Development of the effort, as the contractor has had to use additional resources to complete the System Design Review (SDR). Furthermore, initial inexperience with object oriented design methodology, and increased management due to the number of subcontractors and contract financial structure has contributed to the cost variance.

Since the last SAR, the schedule variance has deteriorated by \$-3.0M. This variance is due to delays in lab purchases and the delivery of receivers from teammates. Because of the magnitude of the receiver delays, the Monitor Station Replacement Element (MSRE) schedule dates are currently being adjusted and are awaiting approval.

The current contract price \$67.8M, which reflects an increase from the original contract price, is due to the fiscal year (FY) 96 budget for software maintenance and configuration management, the CLIN 4AA replan (which occurred in May/June of last year), the Simulator effort, as well as, the Station Computer System Replacement (SCSR) effort, the SCSR Options one and two efforts, and the Familiarization training and hardware maintenance efforts.

A major replan is currently being considered for the System Development effort. The data reflected in this report does not take into account the possible impacts of this potential replan.

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

(U) BLK IIF SAT DEV/PROD.:
BOEING NORTH AMERICAN, SEAL BEACH CA
F04701-95-C-0025, FFP
Award: April 22, 1996
Definitized: April 22, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$382.4	N/A	6

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$385.5	N/A	6	\$385.5	\$385.5

Explanation of Change:

(U) This is the first time this contract is appearing in the Selected Acquisition Report.

The purpose of the GPS Block IIF contract is to develop and produce a system incorporating current technology to sustain the GPS utility for both military and commercial use. The basic requirement for the Block IIF is to sustain the GPS capability at an affordable cost. This effort will sustain the GPS signal beyond 2020.

Note: Cost and Schedule variance reporting is not required on this firm-fixed-price contract.

(U) OCS/MOSC DEVELOPMENT:
BOEING NORTH AMERICAN, DOWNEY, CA
F04701-96-C-0025, CPAF
Award: April 22, 1996
Definitized: April 22, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$11.5	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$11.5	N/A	0	\$11.5	\$11.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/16/96)	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) This is the first time the contract is appearing in the Selected Acquisition Report.

The purpose of this portion of the GPS Block IIF contract is to continue the modernization of the Operational Control System software.

There is no cost or schedule variance.

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

b. Procurement --		Initial Contract Price		
(U) <u>BLOCK IIR SATELLITE PROD:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LOCKHEED MARTIN ASTRO SP., VALLEY FORGE PA				
FO4071-89-C-0073, FFP		\$580.4	N/A	20
Award: June 1, 1989				
Definitized: October 31, 1990				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$670.2	N/A	21	\$713.9	\$736.5

Explanation of Change:

(U) Note: As directed by SAF/AQ, Cost and Schedule variance reporting has been discontinued on this firm-fixed-price contract.

The current contract price of \$670.2M reflects a \$6.6M increase from last year's SAR due to the incorporation of additional factory software testing of production baseline changes to mission processor software.

Note: Contract FO4701-90-C-0086 for SCI Technology is more than 90% complete and will no longer be reported.

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

Total Program

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

<u>Appropriation</u>	<u>Prior Years (FY74-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-16)</u>	<u>Total</u>
RDT&E	2864.4	182.5	202.6	1198.7	4448.2
Procurement	4822.1	521.0	464.9	5770.1	11578.1
MILCON	7.3	-	-	-	7.3
O&M	56.8	4.5	4.2	21.9	87.4
Total	7750.6	708.0	671.7	6990.7	16121.0

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS Satellite

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

<u>Appropriation</u>	<u>Prior Years (FY74-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-16)</u>	<u>Total</u>
RD&E	1396.8	97.8	89.4	992.1	2576.1
Procurement	2495.4	163.8	174.9	4195.7	7029.8
MILCON	7.3	-	-	-	7.3
O&M	-	-	-	-	-
Total	3899.5	261.6	264.3	5187.8	9613.2

NAVSTAR GPS User Equip

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

<u>Appropriation</u>	<u>Prior Years (FY74-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-12)</u>	<u>Total</u>
RD&E	1467.6	84.7	113.2	206.6	1872.1
Procurement	2326.7	357.2	290.0	1574.4	4548.3
MILCON	-	-	-	-	-
O&M	56.8	4.5	4.2	21.9	87.4
Total	3851.1	446.4	407.4	1802.9	6507.8

b. Annual Summary -- NAVSTAR GPS Satellite

Appropriation: 3600 Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY79 Dollars Nonrec</u>	<u>Flyaway FY79 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1974				9.4	6.4
1975				25.5	19.1
1976				72.2	58.9
1977				12.0	10.6
1977				56.3	50.2
1978				56.0	53.3
1979				53.9	56.0
1980				88.3	101.9
1981				78.8	100.7
1982				100.6	137.4
1983				67.3	96.2
1984				67.8	100.7
1985				49.0	75.2
1986				28.7	45.1
1987				21.3	35.0
1988				15.3	25.9

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

NAVSTAR GPS Satellite

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				25.7	45.4
1990				18.0	32.9
1991				24.8	46.9
1992				26.3	51.3
1993				28.3	56.2
1994				18.1	36.7
1995				17.1	35.2
1996				20.8	43.8
1997				35.3	75.8
1998				44.6	97.8
1999				39.9	89.4
2000				17.0	38.9
2001				14.3	33.5
2002				11.4	27.3
2003				10.0	24.5
2004				12.7	31.9
2005				12.6	32.3
2006				18.9	49.8
2007				27.2	73.7
2008				43.2	120.0
2009				38.3	109.1
2010				32.8	95.8
2011				32.2	96.7
2012				26.3	80.9
2013				15.2	47.9
2014				11.4	36.8
2015				10.8	36.0
2016				16.7	57.0
Subtotal	12			1452.3	2576.1

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982		0.7		13.2	20.1
1983				69.3	111.5
1984	1	0.6	25.2	152.7	256.0
1985	6	0.1	132.3	192.1	331.4
1986	9	2.0	203.4	112.6	203.4
1987	8		145.4	37.8	71.2
1988	4	2.4	119.1	53.5	104.5

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

NAVSTAR GPS Satellite

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989		2.5	30.6	33.1	67.5
1990		5.5	14.8	20.3	42.1
1991		8.8	26.5	73.7	157.5
1992	4	8.4	79.2	92.3	199.7
1993	4	9.3	79.2	85.8	189.6
1994	4	8.4	70.9	74.6	168.3
1995	5	9.2	88.4	91.8	209.6
1996	4	8.6	73.6	66.4	154.2
1997	3	7.3	78.5	83.4	197.9
1998	3	9.3	69.9	67.6	163.8
1999		9.2	30.3	70.7	174.9
2000	3	9.1	98.1	91.5	231.1
2001	3	8.7	70.8	77.2	199.4
2002	3	7.9	58.4	53.3	140.9
2003	3	7.2	44.7	51.9	140.6
2004	3	7.0	45.7	84.7	235.3
2005	3	6.8	87.9	70.9	202.1
2006	3	6.9	61.5	66.7	195.0
2007	3	7.1	58.9	61.1	183.3
2008	3	7.3	46.0	82.6	254.2
2009	3	7.4	117.1	108.8	343.5
2010	3	7.2	96.0	100.9	326.9
2011	3	6.9	96.4	91.1	302.8
2012	3	6.6	78.2	84.7	288.8
2013	3	6.3	45.1	82.6	289.1
2014	3	6.0	95.9	78.2	280.6
2015	3	5.8	74.0	78.2	287.9
2016	3	5.7	79.0	77.9	294.2
Subtotal	106	212.2	2521.0	2733.2	7018.9

(U) Note: Recurring dollars that are reflected in FYs 89, 90, 91, and 99 are due to Launch and On-Orbit support that cannot be identified to specific satellites.

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				1.5	2.6
1988				4.7	8.3
Subtotal				6.2	10.9

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS Satellite

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				4.7	7.3
Subtotal				4.7	7.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	118	212.2	2521.0	4196.4	9613.2

b. Annual Summary -- NAVSTAR GPS User Equip

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				0.1	0.2
1990				1.2	2.1
1991				0.2	0.4
1992				0.1	0.1
1993				0.2	0.3
1994				0.2	0.4
1995					
1996				3.2	6.7
1997				2.1	4.5
1998				1.8	3.9
1999				0.1	0.3
Subtotal				9.2	18.9

(U) Note: Appropriation 0400 Research Development Test and Evaluation (RDT&E), Defense Agencies is Marine Corps RDT&E - Program Element (PE) 0206626M-1319 Appropriation for fiscal years (FY) 89-FY94 and Department of Defense 0400 Research Development and Test for FY96-FY99.

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS User Equip

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1974				6.0	4.1
1975				8.7	6.5
1976				13.5	11.0
1977				1.8	1.6
1977				7.4	6.6
1978				3.8	3.6
1979				9.5	9.9
1980				8.8	10.1
1981				13.4	17.1
1982				22.0	30.0
1983				19.7	28.1
1984				39.9	59.3
1985				38.3	58.8
1986				35.8	56.2
1987				39.1	64.3
1988				29.3	49.4
1989				22.4	39.6
1990				23.1	42.2
1991				25.8	48.8
1992				25.3	49.2
1993				24.7	49.2
1994				24.3	49.2
1995				15.7	32.4
1996				14.0	29.5
1997				14.3	30.7
1998				15.5	34.1
1999				19.6	43.9
2000				2.5	5.8
Subtotal	89			524.2	871.2

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1974				1.8	1.2
1975				4.4	3.3
1976				7.8	6.4
1977				1.8	1.6
1977				8.4	7.5
1978				7.4	7.0
1979				9.3	9.7
1980				11.7	13.5

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS User Equip

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1981				13.8	17.7
1982				5.1	7.0
1983				7.5	10.7
1984				3.9	5.8
1985				7.6	11.6
1986				6.7	10.5
1987				2.7	4.5
1988				5.9	10.0
1989				5.0	8.9
1990				2.7	5.0
1991				3.3	6.3
1992					
1993					
1994				0.2	0.5
1995				0.2	0.5
1996				0.2	0.4
1997				0.2	0.4
1998				0.2	0.4
1999				0.2	0.4
2000				0.2	0.5
2001				0.2	0.5
Subtotal	13			118.4	151.8

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1974				1.5	1.0
1975				6.4	4.8
1976				19.5	15.9
1977				3.1	2.7
1978				15.5	13.8
1979				14.4	13.7
1980				18.9	19.6
1981				29.8	34.4
1982				19.2	24.5
1983				20.5	28.0
1984				18.1	25.9
1985				13.3	19.8
1986				13.5	20.7
1987				16.4	25.8

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS User Equip

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				17.2	28.3
1988				22.4	37.8
1989				21.7	38.3
1990				18.0	32.8
1991				6.7	12.6
1992				7.6	14.7
1993				10.2	20.3
1994				9.7	19.7
1995				7.2	14.9
1996				7.7	16.3
1997				13.6	29.2
1998				21.1	46.3
1999				30.6	68.6
2000				20.4	46.6
2001				9.9	23.1
2002				6.7	16.0
2003				6.8	16.5
2004				7.5	18.7
2005				7.4	19.1
2006				7.4	19.5
2007				7.4	19.9
2008				7.3	20.4
Subtotal	146			484.6	830.2

Appropriation: 1109 Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989	456		1.0	2.2	4.1
1990	504		0.7	0.8	1.6
1991					
1992					
1993	3304	0.1	2.7	2.9	5.8
1994	557		0.4	0.4	0.8
Subtotal	4821	0.1	4.8	6.3	12.3

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS User Equip

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988	42		2.0	2.2	4.3
1989	108		4.4	5.0	10.0
1990	121		3.9	4.6	9.6
1991	24		0.7	1.9	4.0
1992	215		10.8	17.3	38.0
1993	200		11.3	7.0	15.5
1994	537	0.5	10.7	17.4	39.5
1995	352	0.3	6.1	18.9	43.5
1996	522	0.3	8.8	18.6	43.8
1997	387	0.3	7.5	16.3	39.1
1998	539	0.3	10.1	25.9	63.6
1999	373	0.3	5.8	19.7	49.4
2000	151	0.3	0.9	7.4	18.9
2001	119	0.3	0.6	12.4	32.6
2002	121	0.4	0.9	9.8	26.2
2003	121	0.3	0.9	18.0	49.5
Subtotal	3932	3.3	85.4	202.4	487.5

(U) Note: FY03 Recurring Flyaway rounds to less than 0.1M.

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987	11		0.8	0.8	1.4
1988	6		0.5	0.5	1.0
1989	11		0.7	0.7	1.5
1990	17		0.8	1.1	2.3
1991	11		0.4	0.4	0.8
1992	11		0.5	0.8	1.8
1993	9		0.2	0.2	0.4
1994				0.1	0.3
1995				0.4	1.0
1996				1.3	3.0
1997				2.3	5.5
1998				2.2	5.5
1999				2.4	6.0
2000				1.6	4.0
Subtotal	76		3.9	14.8	34.5

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS User Equip

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986	62	5.7	5.8	12.1	20.0
1987	148	8.1	5.4	13.8	23.6
1988	188	1.3	5.8	7.4	13.2
1989	133	0.4	5.2	6.1	11.2
1990	79	0.6	2.8	3.8	7.2
1991	38	0.1	2.0	3.8	7.3
1992	130	0.1	6.6	8.5	16.9
1993	1840	0.1	4.1	4.4	8.9
1994				2.3	4.8
1995				7.4	15.7
1996				0.6	1.4
1997				2.2	4.8
1998				2.2	5.0
1999				4.3	9.9
2000				4.2	9.8
2001				4.4	10.6
2002				4.4	10.9
2003				4.4	11.1
Subtotal	2618	16.4	37.7	96.3	192.3

Appropriation: 2031 Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986	67	3.6	4.0	7.7	13.7
1987	133	1.3	3.8	6.3	11.6
Subtotal	200	4.9	7.8	14.0	25.3

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986	70	3.8	1.6	5.6	9.2
1987	60	1.3	1.2	3.1	5.3
1988	147	7.6	4.0	11.9	21.1
1989	175	4.3	3.1	7.6	13.9
1990	1092	5.0	5.2	10.6	20.0
1991	74	3.1	3.0	6.1	11.8
1992	37	9.3	1.3	13.6	27.1
1993	11014	4.3	8.2	13.5	27.4

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS User Equip

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994	14318	0.3	12.5	15.6	32.3
1995	15317	0.1	9.7	15.2	32.0
1996	19912	1.3	15.3	22.6	48.7
1997	9659	1.7	6.6	11.9	26.3
1998	932		0.4	3.0	6.8
1999	393		0.6	3.0	7.0
2000	380		0.6	2.9	6.9
2001	7000		10.3	13.9	33.3
2002	7100		10.2	13.8	34.0
2003	12500		17.6	20.7	52.0
2004	6500		8.9	12.8	33.0
2005	6500		8.6	12.1	32.0
2006	6500		8.5	11.8	32.0
2007	6500		8.3	11.5	32.0
2008	6500		8.0	11.2	32.0
2009	6500		7.8	10.9	32.0
2010	6500		7.7	10.6	32.0
2011	6500		7.4	10.4	32.0
2012	6500		7.3	10.1	32.0
Subtotal	158680	42.1	183.9	296.0	704.1

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985		3.2		4.7	8.0
1986	70	5.5	7.7	23.8	42.4
1987	299	4.5	20.6	40.3	74.8
1988	351	6.9	19.3	53.8	104.8
1989	327	23.3	15.8	58.6	117.8
1990	207	5.1	9.0	28.3	58.6
1991	36	4.1	8.0	12.8	27.6
1992	65	20.5	9.1	47.4	103.9
1993	207	16.3	4.6	41.7	92.9
1994	194	36.8	15.2	70.0	158.5
1995	262	33.3	28.9	78.1	180.2
1996	571	52.8	64.1	116.1	273.5
1997	801	16.1	113.5	117.6	283.0
1998	830	10.2	107.9	111.2	273.2
1999	617	6.7	71.9	85.2	213.6
2000	108	5.7	43.5	61.6	157.9
2001	165	2.7	19.4	43.5	114.0

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS User Equip

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	82		3.7	44.1	118.4
2003	80		1.1	54.2	149.4
2004				28.3	79.9
2005				28.2	81.7
2006				28.1	83.5
2007				28.0	85.3
2008				27.9	87.2
SubTotal	5272	253.7	563.3	1233.5	2970.1

(U) Note: Air Force aircraft procurement funding and quantities reflect requirements for aircraft installs (funds controlled within the Global Positioning System (GPS) program element, 0305164F), as well as planned GPS modifications to existing aircraft (funds controlled within each aircraft system program director's program element).

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986	87	1.1	2.3	6.2	10.3
1987	121	0.6	2.2	6.4	11.0
1988	757	0.1	3.8	8.3	14.7
1989	445	0.1	5.7	7.1	13.1
1990	179	0.1	4.3	5.7	10.7
1991					
1992	101		0.1	2.1	4.2
1993	2512		2.2	3.0	6.1
1994	1702		1.4	2.2	4.6
1995	795		0.7	1.8	3.7
1996	812		2.0	2.3	5.0
1997	900		0.5	1.5	3.3
1998	689		0.9	1.4	3.1
1999	1251		1.6	1.8	4.1
2000	1188		1.5	1.7	4.0
2001	1187		1.5	1.7	4.0
2002	1336		1.6	1.8	4.4
2003	1366		1.6	1.8	4.5
2004	594		0.7	0.9	2.2
2005	589		0.7	0.8	2.2
2006	620		0.7	0.8	2.3
2007	617		0.7	0.8	2.3
2008	554		0.6	0.8	2.4

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS User Equip

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	18402	2.0	37.3	60.9	122.2

Appropriation: 1804 Operation and Maintenance, Navy

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				1.7	2.8
1989				2.6	4.6
1990				6.8	12.5
1991				3.3	6.2
1992				3.4	6.7
1993				2.3	4.6
1994				1.6	3.3
1995				1.4	2.8
1996				1.7	3.5
1997				1.3	2.8
1998				1.5	3.2
1999				1.0	2.2
2000				1.0	2.3
2001				1.0	2.3
2002				1.0	2.4
2003				1.0	2.5
Subtotal				32.6	64.7

Appropriation: 3400 Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				0.3	0.5
1993				1.2	2.3
1994				0.6	1.3
1995				0.5	1.0
1996				0.5	1.0
1997				0.4	0.9
1998				0.6	1.3
1999				0.9	2.0
2000				0.6	1.4
2001				0.6	1.4
2002				0.6	1.4
2003				0.6	1.4

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NAVSTAR GPS, December 31, 1996

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

NAVSTAR GPS User Equip

Appropriation: 3400 Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				0.5	1.3
2005				0.5	1.3
2006				0.5	1.4
2007				0.5	1.4
2008				0.5	1.4
Subtotal				9.9	22.7

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				9.2	18.9
Navy	11536	19.8	131.8	876.6	1662.5
Army	158893	47.0	191.7	428.4	881.2
USAF	23820	255.7	600.6	1788.9	3945.2
Grand Total	194249	322.5	924.1	3103.1	6507.8

17. (U) Delivery/Expenditure Information:

NAVSTAR GPS Satellite

a. (U) Deliveries To Date	Plan	Actual
RDT&E	12	12
Procurement	30	30

(U) Percent Total Program Quantities Delivered: 35.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3224.7

(U) Percent Total Program Expended: 33.5%

NAVSTAR GPS User Equip

a. (U) Deliveries To Date	Plan	Actual
RDT&E	248	248
Procurement	82152	82152

(U) Percent Total Program Quantities Delivered: 42.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1009.7

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NAVSTAR GPS, December 31, 1996

17b. (U) Delivery/Expenditure Information (Cont'd):

NAVSTAR GPS User Equip

(U) Percent Total Program Expended: 15.5%

18. (U) Operating and Support Costs:

NAVSTAR GPS Satellite

a. (U) Assumptions and Ground Rules --

Operations and support costs include all costs of operating, maintaining, and supporting the NAVSTAR Global Positioning System (GPS) spacecraft from the dedicated Master Control Station (MCS) located at Falcon Air Force Base (AFB) CO. Also included are the costs for operating, maintaining, and supporting four dedicated GPS Ground Antennas (GAs) (located at Cape Canaveral Air Force Station (AFS) FL, Kwajalein Atoll, the Ascension Islands, and Diego Garcia); and five monitor stations (located at Falcon AFB, Maui, HI, Kwajalein Atoll, the Ascension Islands, and Diego Garcia). Satellite operations at the MCS include mission planning, mission payload operations, and monitoring of satellite state of health. GAs transmit navigation data uploads and commands to the GPS spacecraft and receive telemetry data from the spacecraft. Monitor stations receive mission payload data and transfer this data to the MCS to ensure spacecraft are operating as desired. These costs do not include the unallocated costs associated with the shared use of remote tracking stations which are programmed and borne by the Air Force Satellite Control Network and the Consolidated Space Operations Center program elements. Costs reflect updates for the fiscal year (FY) 97 President's Budget.

There is no applicable antecedent program.

b. (U) Costs -- (FY 1979 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per NAVSTAR GPS Sat	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	1.5	0.0
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	1.5	0.0

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NAVSTAR GPS, December 31, 1996

18a. (U) Operating and Support Costs (Cont'd):
NAVSTAR GPS User Equip

a. (U) Assumptions and Ground Rules --

(1) The operations and support costs are the direct costs to repair, replenish and support the Global Positioning System (GPS) user equipment. The maintenance cost includes the material and labor costs at the organizational and depot levels. The training costs are necessary to maintain the required quantity of maintenance and operations personnel. The software support costs include all costs to provide life cycle software engineering for GPS user equipment. The support equipment support cost includes the cost of all necessary support and maintenance of the GPS user equipment. The sustaining investment costs include the cost of replenishment spares of air, sea, and ground sets, including their respective batteries and support equipment. Costs reflect updates for the fiscal year (FY)97 President's Budget.

There is no applicable antecedent program.

Note: Current estimates for intermediate maintenance is less than \$50,000 and rounded down to zero (0.0).

b. (U) Costs -- (FY 1979 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per NAVSTAR GPS User	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	3.4	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.0	0.0
Indirect Costs	0.0	0.0
SUSTAINING INVESTMENT	20.9	0.0
SYSTEM/PROJECT MGT	3.9	0.0
Total	28.2	0.0

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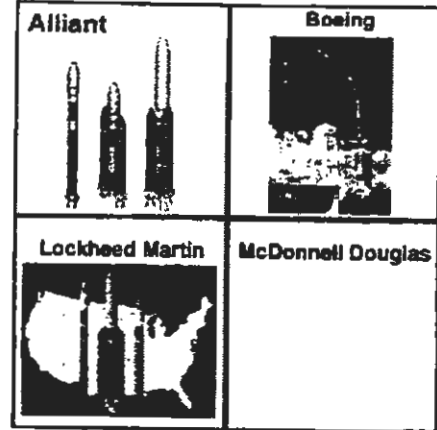
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: EELV

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Evolved Expendable Launch Vehicle

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

SMC/MV

2420 Vela Way, Suite 1467/A2

El Segundo, CA 90245-4659

Col Richard W. McKinney

Assigned: July 1, 1995

DSN 833-4614; COMM (310) 336-4614

mckinneyrw@post7.laafb.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 35953F

PE 63853F

PE 64853F

5. References:

SAR Baseline (Estimate):

DAE Approved Acquisition Program Baseline dated December 11, 1996.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated December 11, 1996.

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DEPARTMENT OF DEFENSE

SAF/PAS

97-0102

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97-5-0382

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EELV, December 31, 1996

6. Mission and Description:

The mission of the Evolved Expendable Launch Vehicle (EELV) program is to develop a family of launch vehicles that cost 25-50% less than current systems. The EELV system includes the launch vehicles, infrastructure, support systems, and interfaces. EELV will be a family of launch vehicles that will launch the government portion of the National Mission Model (NMM) currently serviced by Titan II, Delta II, Atlas II, and Titan IV. Evolved from current expendable launch systems or components thereof, EELV will support military, intelligence, and civil mission requirements. EELV is an ongoing competitive program using a rolling downselect acquisition strategy. Four initial contracts were awarded on 24 Aug 95 for the Low Cost Concept Validation (LCCV) phase. The Air Force downselected to two contractors on 20 Dec 96 to the Pre-Engineering & Manufacturing Development (Pre-EMD) phase. The final downselect will occur in Summer 1998, and the winning contractor will enter the Engineering & Manufacturing Development (EMD) phase. Once EMD is complete and EELV is operational, EELV will be available to launch the government portion of the NMM through 2020.

7. Executive Summary:

On 11 Dec 96, Milestone I approval was received for entry into the Pre-EMD phase. According to the Acquisition Decision Memorandum (ADM), the following Exit Criteria are to be accomplished prior to the Milestone II Decision:

1. Successful completion of Downselect Design Review (DDR)
2. Updated Life Cycle Cost Estimate (LCCE) with detailed cost risk analysis.
3. Perform independently reviewed economic investment analysis.

The ADM directed use of the Overarching Integrated Product Team (OIPT) process to further understand the cost differences that exist between the Air Force and the Cost Analysis Improvement Group (CAIG) estimates for both EMD and production. In addition, the OIPT will fully explore the sensitivities of these cost estimates stemming from changes to the National Mission Model (NMM) as well as to the cost impact of varying levels of demand for heavy lift in the commercial satellite sector and NASA.

This is an RDT&E only SAR. Limited reporting is permitted for a Pre-Milestone II program in accordance with Title 10 United States code, Section 2432. This is an initial SAR.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I	DEC 96	DEC 96	DEC 96
Milestone II	JUN 98	JUN 98	JUN 98
Tailored CDR	JUL 98	JUL 98	DEC 98 (Ch-1)
First System Test Flight (MLV)	DEC 00	DEC 00	JUN 01 (Ch-1)
MLV First Operational Flight	DEC 01	DEC 01	DEC 01
Second System Test Flight (HLV)	JUL 03	JUL 03	JUL 03
Milestone III	JUL 03	JUL 03	JUL 03
Initial Operational Capability	TBD	TBD	TBD

b. Current Change Explanations --

(Ch-1) The approved Acquisition Program Baseline (APB) reflects two threshold dates that should have been objective dates. The correct dates are:

	Objective	Threshold
Tailored Critical Design Review (TCDR)	Dec 98	Jun 99
First System Test Flight (MLV)	Jun 01	Dec 01

These are the dates the EELV program has always worked towards. We intend to have this error corrected in the next update to the Single Acquisition Management Plan (SAMP). The current estimate reflects the programs actual schedule.

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10. Performance Characteristics:

a. Performance --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Performance Mass to Orbit				
LEO: 100nm X 100nm 63.4 deg (lbs)	19,550 (15%)	19,550 / 17,000 (15%) /	TBD	17,000
POLAR 1: 450nm x 450nm, 98.2 deg (lbs)	5,060- 8,050 (15%)	5,060- / 4,400- 8,050 / 7,000 (15%) /	TBD	4,400- 7,000
POLAR 2: 100nm x 100nm, 90 deg (lbs)	43,050 (5%)	43,050 / 41,000 (5%) /	TBD	41,000
SEMI-SYNC: 10,998nm x 100nm, 38.8 deg (lbs)	2,875- 5,152 (15%)	2,875- / 2,500- 5,152 / 4,480 (15%) /	TBD	2,500- 4,480
GTO: 19,324nm x 90nm, 27 deg (lbs)	7,015- 9,775 (15%)	7,015- / 6,100- 9,775 / 8,500 (15%) /	TBD	6,100- 8,500
MOLNIYA: 21,150nm x 650nm, 63.4 deg (lbs)	8,050 (15%)	8,050 / 7,000 (15%) /	TBD	7,000
GEO: 19,323nm x 19,323nm, 0 deg (lbs)	14,175 (5%)	14,175 / 13,500 (5%) /	TBD	13,500
Vehicle Design Reliability (%)	>98	>98 / 98	TBD	98
Standardization Launch Pads	Standard ized and able to launch all configs of EELV for that site	Standard/ ized and/ able to / launch / launch all / configs / of / EELV for/ that / site	TBD	Standard - ized and able to launch all configs of EELV for that site

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10a. Performance Characteristics (Cont'd):

	<u>Planning</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Payload interfaces	One std payload inter- face	One std / Std payload / payload inter- / inter- face / face / for each / vehicle / class / (add'l / inter- / face / rqmts / met / by / payload / adapter)	TBD	Std payload interfac e for each vehicle class (add'l interfac e rqmts met by payload adapter)

b. Current Change Explanations --

The threshold values represented in Section 10 (Performance Characteristics) of the EELV SAR, are Key Performance Parameters (KPP) specified in the Air Force Space Command (AFSPC) Operational Requirements Document (ORD) and reflect the EELV program office current estimate.

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

a. Cost --	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1700.0	1700.0	1739.3
Procurement	0.0	N/A	
Total Flyaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 95 Base-Year \$	1700.0	1700.0	1739.3
Escalation	300.0	300.0	259.7
Development (RDT&E)	(300.0)	(300.0)	(259.7)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2000.0	2000.0	1999.0

Total FY95 Base-Year \$ reflects program cost revised using current inflation indices.

b. Quantity --

Development (RDT&E)	2	2	2
Procurement	N/A	N/A	N/A
Total	2	2	2

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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EELV, December 31, 1996

12. Unit Cost Summary:

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

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2000.0	-	-	2000.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.0	-	-	-1.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.0	-	-	-1.0
Total Changes	-1.0	-	-	-1.0
Current Estimate	1999.0	-	-	1999.0

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

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1700.0	-	-	1700.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+39.3	-	-	+39.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+39.3	-	-	+39.3
Total Changes	+39.3	-	-	+39.3
Current Estimate	1739.3	-	-	1739.3

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Total FY95 Base-Year \$ reflects program cost revised using current inflation indices. (Estimating)	+39.3	0.0
	Total Then-Year \$ difference due to rounding (Estimating)	0.0	-1.0
	RDT&E Subtotal	+39.3	-1.0

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

- a. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.
- b. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.
- c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	DEC 96	DEC 96	DEC 96	DEC 96
Milestone II	JUN 98	JUN 98	JUN 98	JUN 98
Milestone III	JUL 03	JUL 03	JUL 03	JUL 03
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	2000	N/A	N/A	1999
Total Quantity	2	N/A	N/A	2
Prog Acq Unit Cost	1000	N/A	N/A	999.5

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

Cost and schedule reporting is not required on this FFP contract.

a. RDT&E --
EELV Pre-EMD:
 Lockheed Martin Corp, Denver, CO CA
 F04701-97-C-0003, FFP
 Award: December 20, 1996
 Definitized: December 20, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$60.0	\$60.0	1

Current Contract Price		
Target	Ceiling	Qty
\$60.0	\$60.0	1

Estimated Price At Completion	
Contractor	Program Manager
\$60.0	\$60.0

Previous Cumulative Variances
 Cumulative Variances To Date
 Net Change

Cost Variance	Schedule Variance
\$	\$
\$	\$
\$	\$

Explanation of Change:

Cost and schedule reporting are not required on this FFP contract.

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15. Contract Information (Cont'd):

EELV Pre-EMD:
 McDonnell Douglas Corp, Huntington Beach CA
 F04701-97-C-0005, FFP
 Award: December 20, 1996
 Definitized: December 20, 1996

			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
	\$60.0	\$60.0	1		

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$60.0	\$60.0	1	\$60.0	\$60.0	

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

Cost and schedule reporting are not required on this FFP contract.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY95-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-04)	<u>Total</u>
RDT&E	196.6	98.7	297.3	1406.4	1999.0
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	196.6	98.7	297.3	1406.4	1999.0

b. Annual Summary -- EELV

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995		29.5		29.5	30.0
1996		105.2		105.2	109.2
1997		54.1		54.1	57.4
1998		91.0		91.0	98.7
1999		268.1		268.1	297.3
2000		289.7		289.8	328.3
2001		204.3		204.3	236.6

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

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002		219.0		218.9	259.2
2003		347.2		347.2	420.1
2004		131.2		131.2	162.2
Subtotal	2	1739.3		1739.3	1999.0

National User Funding Breakout (TY\$M) (Included in above)

FY96: 72.3

FY97: 15.1

FY98: 7.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2	1739.3		1739.3	1999.0

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 139.2

Percent Total Program Expended: 7.0%

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
 PROGRAM: TRIDENT II MISSILE

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AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Sea Launched
 Missile-UGM 133A TRIDENT II (D-5) Missile

AS AMENDED
 CLEARED
 FOR OPEN PUBLICATION

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

STRATEGIC SYSTEMS PROGRAMS
 DEPARTMENT OF THE NAVY
 WASHINGTON, DC 20376-5002

RADM GEORGE P. D'AMICO
 Assigned: June 3 1997
 DSN 327-0456; COMM
 DIRECTORATE FOR FREEDOM OF INFORMATION
 AND SECURITY REVIEW (OASD-PA)
 DEPARTMENT OF DEFENSE

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

RDT&E:

- (U) PE 0603371N Project J0951
 (U) PE 0604363N Project J0951

PROCUREMENT:

- (U) APPN 1507 ICN 1150 (Navy)

No Security Objection
 to Open Publication

AS AMENDED

97-C-0140

MAR 24 1997

Ann Z. Anderson
 Office of the Chief of
 Naval Operations
 Dept. of the Navy

Derived from:

Downgrade instructions: OPNAVINST S5513.5A - (27)

Declassify on: X2

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5. (U) References:

SAR Baseline (Production Estimate):

(U) UNSECDEF Memorandum for SECNAV of June 4, 1987, subject TRIDENT II (D-5) Missile Program.

UNSECNAV Memorandum for DIRSSP of December 1, 1987, subject TRIDENT (D-5) Navy Program Review.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated May 25, 1995.

6. (U) Mission and Description:

(U) The TRIDENT II (D-5) Strategic Weapons System program developed an improved Sea Launched Ballistic Missile (SLBM) with greater accuracy and payload capability at equivalent ranges as compared to the TRIDENT I (C-4) system. TRIDENT II enhances U.S. strategic deterrence by providing a survivable sea-based system capable of engaging the full spectrum of potential targets. It enhances the U.S. position in strategic arms negotiation by providing a weapon system with performance and payload flexibility that accommodates various treaty initiatives. TRIDENT II's increased payload allows the deterrent mission to be achieved with fewer submarines.

7. (U) Executive Summary:

(U) In March 1980 the Secretary of Defense described a Sea Launched Ballistic Missile Modernization Advanced Development Program to Congress. Subsequently, a FY 1983 Defense System Acquisition Review Council Milestone II decision selected a weapon system option to achieve specific performance objectives with an IOC of CY 1989. In October 1983, the Deputy Secretary of Defense authorized the Navy to proceed to full scale Engineering Development of the TRIDENT II (D-5) SWS and initial production, as necessary, to meet a December 1989 IOC. Flight testing from the flat pad at Cape Canaveral was completed in January 1989 with fifteen flight tests fully successful, one flight partially successful, two flights failing to meet test objectives, and one flight terminated by the range safety officer as a "no test." The first TRIDENT II (D-5) Performance Evaluation Missile (PEM) was launched from the SSBN 734 (USS TENNESSEE) on 21 March 1989. The missile experienced loss of control just after first stage (F/S) ignition and was subsequently auto-destructed by the onboard flight termination system (FTS). The second PEM launched on 2 August 1989 was fully successful while the third PEM launched on 15 August 1989 experienced a control loss early in first stage flight. After corrective actions were completed, PEM flight tests resumed in December 1989 with six fully successful tests and the PEM flight test program was completed in February 1990. The system achieved IOC in March of 1990 with the outload and deployment of the SSBN 734.

Beginning with the FY 1994 President's Budget, both the annual procurement rate of missiles and the missile inventory objective have been reduced. The maximum facilitated rate was reduced from 72 missiles per year to 24 per year. The annual procurement quantities have been reduced over time from a high of 66 per

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TRIDENT II MISSILE, December 31, 1996

7. (U) Executive Summary (Cont'd):

year in FY 1988 and FY 1989 to the new facilitated rate of 24 missiles per year in FY 1994, to a planned 12 per year in FY 2000 and thereafter. The inventory objective of TRIDENT II (D-5) missiles has changed as a result of reductions in flight test program requirements and force structure. The current force structure is based on the outcome of the Department of Defense's Nuclear Posture Review and assumes four TRIDENT I (C-4) configured submarines will be backfit to the TRIDENT II (D-5) configuration for a total force structure of 14 TRIDENT II (D-5) SSBNs. The inventory objective for the 14 SSBN program is 434 missiles.

Because of the low annual procurement quantities the Navy began looking at ways to preserve the industrial base in a cost-effective manner. The acquisition strategy adopted for the FY 1996 and subsequent President's budgets is based on affordable low rate production augmented by critical component production continuity quantities as required to ensure quality, reliability and safety. This approach minimizes annual funding requirements and minimizes the program risk associated with supplier base instability.

Funding to support this acquisition strategy has been modified slightly since last year. The annual procurement quantities of D-5 critical components have been increased in FY 1998 and FY 1999 to reduce the risk of supplier-base erosion associated with low annual production rates.

Since last year the SSBN 741 has completed strategic loadout and has deployed. The other TRIDENT II (D-5) submarines which have completed strategic loadout and deployed are: the SSBN 734 in March 1990, the SSBN 735 in October 1990, the SSBN 736 in September 1991, the SSBN 737 in June 1992, the SSBN 738 in May 1993 the SSBN 739 in May 1994 and the SSBN 740 in June 1995.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

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8. (U) Threshold Breaches (Cont'd):
b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I (Initiate Concept Definition)	OCT 77	OCT 77	OCT 77
Commence Advanced Dev Phase	OCT 80	OCT 80	OCT 80
Milestone II (Commence FSD)	OCT 83	OCT 83	OCT 83
First Development Flight Test	JAN 87	JAN 87	JAN 87
Milestone III (Production Approval)/ Award Initial Missile Production Contract	APR 87	APR 87	APR 87
IOC (may be less than full msl outload)	DEC 89	DEC 89	MAR 90

b. Current Change Explanations -- None.

10. (U) Performance Characteristics:

a. Performance --	Production Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
-------------------	------------------------------	--	---------------------------	---------------------

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

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TRIDENT II MISSILE, December 31, 1996

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	8434.9	8420.5	8414.8
Procurement	17588.5	12098.9	11985.6
Flyaway	(14471.2)		(8821.5)
Other weapon systems	(3082.9)		(3029.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(34.4)		(135.1)
Construction (MILCON)	532.9	363.2	361.4
Acquisition O&M	0.0	0.0	0.0
Total FY 83 Base-Year \$	26556.3	20882.6	20761.8
Escalation	8962.2	7286.9	6786.8
Development (RDT&E)	(1018.3)	(998.9)	(996.5)
Procurement	(7808.4)	(6221.4)	(5722.8)
Construction (MILCON)	(135.5)	(66.6)	(67.5)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	35518.5	28169.5	27548.6

b. (U) Quantity --

Development (RDT&E)	30	28	28
Procurement	815	434	434
Total	845	462	462

c. Foreign Military Sales -- None.

d. (U) Nuclear Costs
Department of Energy cos (b)(1) (Then-Year \$).

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TRIDENT II MISSILE, December 31, 1996

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAY 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 83 BY\$)	20761.8	20882.6	
(2) Quantity	462	462	
(3) Unit Cost	44.939	45.200	-0.58
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 83 BY\$)	11985.6	12098.9	
(2) Quantity	434	434	
(3) Unit Cost	27.617	27.878	-0.94

13. (U) Cost Variance Analysis:

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

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	9453.2	25396.9	668.4	35518.5
Previous Changes:				
Economic	-21.5	-104.8	-11.3	-137.6
Quantity	-48.0	-9776.2	-	-9824.2
Schedule	-	+1568.9	+25.6	+1594.5
Engineering	-	-	-	-
Estimating	+27.6	+298.0	-246.8	+78.8
Other	-	-	-	-
Support	-	+472.5	-	+472.5
Subtotal	-41.9	-7541.6	-232.5	-7816.0
Current Changes:				
Economic	-	-10.4	+0.5	-9.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+18.8	-7.5	+11.3
Other	-	-	-	-
Support	-	-155.3	-	-155.3
Subtotal	-	-146.9	-7.0	-153.9
Total Changes	-41.9	-7688.5	-239.5	-7969.9
Current Estimate	9411.3	17708.4	428.9	27548.6

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TRIDENT II MISSILE, December 31, 1996

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

(U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	8434.9	17588.5	532.9	26556.3
Previous Changes:				
Quantity	-40.0	-5486.1	-	-5526.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.9	-169.8	-167.5	-317.4
Other	-	-	-	-
Support	-	+124.2	-	+124.2
Subtotal	-20.1	-5531.7	-167.5	-5719.3
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+6.2	-4.0	+2.2
Other	-	-	-	-
Support	-	-77.4	-	-77.4
Subtotal	-	-71.2	-4.0	-75.2
Total Changes	-20.1	-5602.9	-171.5	-5794.5
Current Estimate	8414.8	11985.6	361.4	20761.8

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-11.9
Economic adjustment for negative program change. (Economic)	N/A	+1.5
Adjustment for Current and Prior Inflation. (Estimating)	+2.3	+3.4
Revised estimates based on contract experience. (Estimating)	+3.9	+15.4
Adjustment for Current and Prior Inflation. (Support)	+1.0	+1.7
Change in Initial Spares. (Support)	-1.4	-2.7
Revision of estimates associated with production support and end of production requirements. (Support)	-77.0	-154.3
Procurement Subtotal	-71.2	-146.9
(2) <u>MILCON</u>		
Economic adjustment for negative program change. (Economic)	N/A	+0.5
Exclusion of costs associated with TRIDENT I (C-4) motor storage. (Estimating)	-5.4	-9.6

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

b. (U) Current Change Explanations --

	(Dollars in Millions)
	<u>Base-Year</u> <u>Then-Year</u>
Revised construction estimates. (Estimating)	+1.4 +2.1
MILCON Subtotal	-4.0 -7.0

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
42.03	-0.32	+13.58	+3.45	--	+0.20	--	+0.69	+17.60	59.63

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
31.16	-0.27	+4.84	+3.61	--	+0.73	--	+0.73	+9.64	40.80

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	OCT 77	OCT 77	OCT 77
Milestone II	N/A	OCT 83	OCT 83	OCT 83
Milestone III	N/A	MAR 87	APR 87	APR 87
FUE/IOC	N/A	DEC 89	DEC 89	MAR 90
Total Cost	N/A	37645.1	35518.5	27548.6
Total Quantity	N/A	740	845	462
Prog Acq Unit Cost	N/A	50.87	42.03	59.63

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

a. Procurement --
 (U) MISSILE FOLLOW-ON PROD:
 LOCKHEED MARTIN, SUNNYVALE, CA
 N00030-93-C-0093, CPIFF/FF
 Award: October 1, 1992
 Definitized: October 1, 1992

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1118.7	N/A	39

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1114.9	N/A	39	\$1092.2	\$1082.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$8.7	\$-2.3
Cumulative Variances To Date (06/30/96)	\$12.9	\$-2.0
Net Change	\$4.2	\$0.3

Explanation of Change:

(U) The cumulative to date cost variance has improved \$4.2 million. The change is driven primarily by efficiencies at the Joint Venture rocket motor manufacturer. The \$0.3 million change in schedule variance is not significant.

This contract includes funding for 18 (D-5) missiles for the United Kingdom.

This will be the last report on this contract.

(U) MISSILE FOLLOW-ON PROD:
 LOCKHEED MARTIN, SUNNYVALE, CA
 N00030-94-C-0094, CPIFF/FF
 Award: October 1, 1993
 Definitized: October 20, 1993

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$832.1	N/A	24

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$927.4	N/A	24	\$911.1	\$920.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.2	\$-2.4
Cumulative Variances To Date (11/27/96)	\$2.6	\$-7.3
Net Change	\$-0.6	\$-4.9

Explanation of Change:

(U) The (\$.6) million change in cost variance is attributable to the cleanup and close down process at the Joint Venture rocket motor manufacturer.

The unfavorable (\$4.9) million change in schedule variance is due to delays

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

in subcontractor billings and disbursements. There is no program impact foreseen.

(U) MISSILE FOLLOW-ON PROD:			Initial Contract Price		
LOCKHEED MARTIN, SUNNYVALE, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00030-95-C-0095, CPIF/FF			\$827.7	N/A	18
Award: November 3, 1994					
Definitized: September 29, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$839.0	N/A	18	\$823.8	\$820.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$0.4	-\$1.7	
Cumulative Variances To Date (11/27/96)			\$13.9	-\$4.5	
Net Change			\$13.5	-\$2.8	

Explanation of Change:

(U) The \$13.5 million improvement in cost is a result of: favorable labor rates in Sunnyvale; efficiencies at the Joint Venture rocket motor manufacturer; fewer repair inductions; and less production support.

The unfavorable (2.8) million change in schedule variance is due to delays at the Joint Venture rocket motor manufacturer resulting from prioritizing the qualification of motors and delays in third stage nozzle and igniter production.

(U) MISSILE FOLLOW-ON PRODUC:			Initial Contract Price		
LOCKHEED MARTIN, SUNNYVALE, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00030-96-C-0096, CPIF/FF			\$634.0	N/A	6
Award: October 1, 1995					
Definitized: November 30, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$642.4	N/A	6	\$640.0	\$640.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$	\$	
Cumulative Variances To Date (11/27/96)			\$1.0	-\$0.1	
Net Change			\$1.0	-\$0.1	

Explanation of Change:

None.

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

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

<u>Appropriation</u>	<u>Prior Years (FY78-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	9411.3	-	-	-	9411.3
Procurement	13476.5	342.0	325.1	3564.8	17708.4
MILCON	420.6	-	-	8.3	428.9
O&M	-	-	-	-	-
Total	23308.4	342.0	325.1	3573.1	27548.6

b. Annual Summary -- TRIDENT II (D-5) MISSILE

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1978				5.0	5.0
1979				5.0	5.0
1980				25.6	25.6
1981				96.7	96.7
1982				198.4	198.4
1983				343.9	351.0
1984				1368.5	1447.3
1985				1818.1	1982.6
1986				1731.3	1942.3
1987				1355.1	1565.3
1988				862.5	1029.7
1989				439.3	546.5
1990				130.9	169.5
1991				32.1	43.0
1992				1.6	2.2
1993				0.3	0.4
1994					
1995				0.3	0.5
1996				0.2	0.3
Subtotal	28			8414.8	9411.3

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985				137.7	160.8
1986				420.7	508.4

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

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987	21		839.8	1075.6	1346.9
1988	66		1314.1	1562.7	2033.5
1989	66		1173.2	1359.8	1839.0
1990	41		796.4	1001.1	1400.6
1991	52		866.4	1054.4	1512.6
1992	28		555.8	745.7	1096.9
1993	21		480.3	652.7	978.1
1994	24		646.2	718.9	1100.7
1995	18		388.7	430.2	671.3
1996	6		117.0	320.2	510.1
1997	7		129.3	195.3	317.6
1998	7		131.3	206.0	342.0
1999	7		133.2	191.7	325.1
2000	12		191.0	294.4	509.9
2001	12		187.4	284.7	503.9
2002	12		261.0	290.5	526.5
2003	12		253.4	298.7	555.0
2004	12		169.8	260.7	497.0
2005	10		187.2	203.1	397.2
2006				53.5	107.4
2007				227.3	467.9
Subtotal	434		8821.5	11985.6	17708.4

(U) Procurement costs in FY 2007 include cost to complete funding through FY 2027.

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				72.8	79.3
1985				73.4	82.4
1986				109.3	126.3
1987				17.6	21.0
1988				14.6	18.1
1989				12.0	15.4
1990				5.7	7.6
1991				51.3	70.5
1992					
1993					
1994					
1995					
1996					

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

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997					
1998					
1999					
2000				2.3	3.9
2001				0.5	0.9
2002				0.7	1.2
2003					
2004					
2005				0.4	0.7
2006				0.8	1.6
Subtotal				361.4	428.9

(U) MILCON costs in FY 2000 through FY 2006 are necessary to upgrade facilities at Bangor, Washington in order to support limited TRIDENT II missile processing capability.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	462		8821.5	20761.8	27548.6

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	28	28
Procurement	317	317

(U) Percent Total Program Quantities Delivered: 74.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 21777.6

(U) Percent Total Program Expended: 79.1%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The Cost Elements are those included for Milestone II providing the Strategic Weapon System (SWS) subsystems' (launcher, fire control, navigation, test instrumentation, missile checkout, missile and guidance) average annual support costs through FY 2027. The source of the costs displayed is the Program Manager's estimate as reflected in the FY 1998 President's Budget through FY 2003 and extended through FY 2027. The intermediate maintenance

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

costs are for operating the Strategic Weapons Facilities. Depot maintenance costs are for repair of SWS equipments at contractors facilities. Sustaining support costs are for sustaining engineering and acquisition of replacement support equipment and modification kits. Indirect costs are for base operating support. O&S costs and assumptions for the antecedent system TRIDENT I (C-4) have not previously been developed.

b. (U) Costs -- (FY 1983 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost for TRIDENT II Weapon System	N/A
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	57.9	0.0
Depot Maintenance	63.7	0.0
Contractor Support	N/A	N/A
Sustaining Support	322.4	N/A
Indirect Costs	20.2	N/A
Total	464.2	0.0

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N-8 DDG 51

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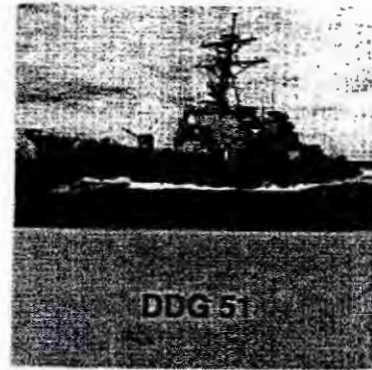
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: DDG 51 DESTROYER

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AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): DDG 51 Guided Missile Destroyer; ARLEIGH BURKE CLASS
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
PEO SURFACE COMBATANTS/AEGIS PROGRAM RADM G.A. HUCHTING, USN
2531 JEFFERSON DAVIS HIGHWAY Assigned: August 2, 1991
ARLINGTON, VA 22242-5165 DSN 332-7396; COMM (703) 602-7396
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0604307N
PROCUREMENT:
(U) APPN 1611 ICN 24222N (Navy)
MILCON:
(U) PE P-261
(U) PE P-263

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

97-C-0282
MAR 26 1997
The Honorable
Chairman, Committee on
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5. (U) References:

SAR Baseline (Production Estimate):

(U) DCP #1337 Rev 1, Change 1 of 22 August 1986.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated June 2, 1995.

6. (U) Mission and Description:

(U) - The DDG 51 is a multi-mission guided missile destroyer designed to operate offensively and defensively, independently, or as units of Carrier Battle Groups and Surface Action Groups, in support of Underway Replenishment Groups and the Marine Amphibious Task Forces in multi-threat environments that include air, surface, and subsurface threats. These ships will respond to Low Intensity Conflict/Coastal and Littoral Offshore Warfare (LIC/CALOW) scenarios as well as open ocean conflict providing or augmenting power projection and forward presence requirements.

- The DDG 51 Class ships provide outstanding combat capability and survivability characteristics while considering procurement and lifetime support costs. They feature extraordinary seakeeping and low observability characteristics.

- The DDG 51 features the AEGIS Weapon System (AWS), which has quick reaction time, high firepower, and improved Electronic Countermeasures (ECM) capability in Anti-Air Warfare (AAW). The ships' Anti-Submarine Warfare (ASW) System provides superior long range multi-target detection and engagement capability with two embarked LAMPS MK-III helicopters (Flight IIA, DDG 79 and follow). Their Tomahawk, Harpoon, and MK-45 gun weapon systems provide excellent strike and Anti-Surface (ASU) warfare capability. The AWS is the heart of an integrated combat system that provides area coverage and command/control focus in all dimensions of Naval Warfighting and Joint Military Operations: AAW, ASW, ASU, Command, Control, Communications & Intelligence (C3I), and Strike Warfare (STW).

- Structural features are an all steel hull and deckhouse with vital spaces protected and located within the hull. The ship employs a gas turbine propulsion system with Controllable Pitch propellers similar to the CG 47 class.

- The DDG 51 Destroyer is being produced to fulfill a surface combatant requirement to provide air dominance, maritime dominance and land attack capability including future Theatre Ballistic Missile Defense (TBMD).

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7. (U) Executive Summary:

(U) Funding for the lead ship, ARLEIGH BURKE, was provided in FY 1985 with the lead ship construction contract awarded, as the result of full and open competition, to Bath Iron Works (BIW), Bath, Maine in April 1985. The Navy established Ingalls Shipbuilding Incorporated (ISI) as the second source for DDG 51 Class construction by awarding ISI, as the result of full and open competition, the DDG 52 construction contract in May 1987. Milestone IIIA which granted limited production approval through FY 1989 was approved in October 1986. Approval for limited production was amended annually through the FY93 ship construction contract awards.

SECDEF's Major Warship Review in 1991 validated the Navy requirement for the ARLEIGH BURKE Class and approved the introduction of Flight upgrades. Flight II was incorporated in the last ship in FY 1992 (DDG 72).

DDG 51 was commissioned USS ARLEIGH BURKE on 4 July 1991 and deployed with 6th Fleet forces in the Mediterranean. SCN funding for ARLEIGH BURKE completed in February 1993 at a cost of \$1100M (FY 83\$), meeting the threshold for the lead ship established by SECNAV in February 1983. Ships 6-10 are estimated to be \$121M (FY 83\$) below the \$700M (FY 83\$) SECNAV unit cost threshold.

The Navy, in conjunction with the shipbuilders and prime equipment contractors, has successfully identified and developed affordability and acquisition reform initiatives that have reduced the cost of this class while ensuring critical operational performance is maintained. The budget estimates reflect this cost reduction.

An Acquisition Decision Memorandum (ADM) was signed on 2 February 1994 approving Flight IIA introduction in FY 94 and a continuation of the program at a 3 ship per year profile for a total program of 57 ships. BIW was awarded the first Flight IIA ship, the last ship in FY 94, and ISI was awarded the second, the first FY95 ship. Each yard has achieved the start construction milestone ahead of contract schedule. The Under Secretary of Defense (Acquisition and Technology) redesignated the DDG 51 Destroyer program from an ACAT 1D to ACAT 1C program in July 95.

In FY94/95 ASN(RD&A) decided to allocate three DDG 51 Class Destroyers to BIW and three to Ingalls pursuant to the authority of Title 10 U.S.C. 2304 (c)(3). Simultaneously, the Navy also conducted a study to determine the best approach to procure the remaining 25 ships. Recommendations included: (1) maintain two shipbuilders for the foreseeable future; (2) continue current AEGIS initiatives in value engineering, cost control and cost avoidance; and (3) develop innovative contracting and business practices to incentivize shipbuilders and vendors to reduce costs. The method adopted is the PRO concept (Profit Related to Offers) competition.

The Shock Trial on the USS JOHN PAUL JONES (DDG 53) was successfully completed in June 1994. The ship's performance under shock was outstanding. Warfighting and Full Power capability were maintained or quickly regained after each detonation.

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7. (U) Executive Summary (Cont'd):

BIW and Ingalls were each awarded contracts, on 20 June 96, for a single ship in FY96 with priced options for two FY97 ships. The FY97 options were awarded on 13 December 96. These contracts were awarded based upon the first time use of the Profit Related to Offers (PRO) concept, whereby work is allocated between the shipbuilders but competitive pressure is maintained to achieve realistic pricing. Savings achieved from these awards will be applied to fund Economic Order Quantity purchases to support the Congressionally approved 12 ship multiyear procurement (FY 98-01). To date, 21 DDG 51 Class ships have been awarded to BIW and 17 ISI.

Congress provided authority to the DDG 51 Program, in the FY97 Appropriations Act, to enter into multiyear procurement (MYP) contracts at a rate of three ships per year (FY98-FY01) using FY96/97 funds. Congress also appropriated \$234M of FY97 advance procurements funds to support the MYPs. The MYP has two primary goals: Stabilize the DDG 51 industrial base and achieve significant savings within the FYDP. The long term commitment provided under this MYP provides a stable, predictable business base for both shipbuilders and hundreds of equipment manufacturers that provide critical systems to the program. MYP cost savings of approximately \$788M are realized. In addition to the MYP savings, adding an additional (twelfth) ship to the FY97 President's budget (FY 98-01) projects \$420M savings due to lower average unit cost. The DDG 51 Program has projected over \$1.2B of savings since the FY97 President's Budget Submission.

DDG 51 Class construction has achieved numerous production milestones since the last report. The more significant are the following:

DDG 70 (HOPPER) launched 6 January 1996
DDG 78 (PORTER) started fabrication 19 February 1996
DDG 77 (O'KANE) started fabrication 17 March 1996
DDG 71 (ROSS) launched 22 March 1996
USS BENFOLD (DDG 65) commissioned 30 March 1996
USS CARNEY (DDG 64) commissioned 13 April 1996
USS COLE (DDG 67) commissioned 8 June 1996
DDG 72 (MAHAN) launched 29 June 1996
DDG 79 (OSCAR AUSTIN) started fabrication 22 September 1996
USS GONZALEZ (DDG 66) commissioned 12 October 1996
DDG 73 (DECATUR) launched 10 November 1996
DDG 68 (THE SULLIVANS) ship custody transfer occurred 22 November 1996
USS MILIUS (DDG 69) commissioned 23 November 1996
DDG 74 (McFAUL) launched 17 January 1997

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	Yes
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

The DDG 51 Class Acquisition Program Baseline (APB) of 2 June 1995 identifies DEC 96 as the scheduled introduction of Propulsion Engine Pre-planned Product Improvement, Intercooled Recuperative (ICR) Gas Turbine Engines. The initial ICR Ship Installation and Engine Support Capability dates have been rescheduled due to FY98/99 OSD/OMB funding constraints. FY98 MILCON requirement is to fund facility additions at the AEGIS Computer Center Building and Operations and Maintenance Training Facility to support new warfighting capabilities. A revised Program Deviation Report (PDR) and an APB Change Request has been submitted to reflect revised ICR and MILCON Milestones.

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Complete Concept Design	N/A	DEC 80	DEC 80
DNSARC I	JUN 81	JUN 81	JUN 81
Complete Preliminary Design	N/A	MAR 83	MAR 83
DSARC II	DEC 83	DEC 83	DEC 83
Complete Contract Design	N/A	JUN 84	JUN 84
DDG 51 Contract Award	APR 85	APR 85	APR 85
Milestone IIIA	OCT 86	OCT 86	OCT 86
DDG 52 Contract Award	JAN 87	MAY 87	MAY 87
DDG 53 Contract Award	N/A	SEP 87	SEP 87
Lay Keel DDG 51	N/A	DEC 88	DEC 88
Launch DDG 51	N/A	SEP 89	SEP 89
DDG 51 Delivery	N/A	APR 91	APR 91
Launch DDG 52	N/A	MAR 91	MAY 91
Organic Support Available	N/A	JUL 91	JUL 91

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Depot Support Available	N/A	JUL 91	JUL 91
OPEVAL	N/A	FEB 92	FEB 92
DDG 52 Delivery	N/A	MAY 92	OCT 92
DDG 51 IOC	OCT 90	FEB 93	FEB 93
DDG 53 Delivery	N/A	FEB 93	AUG 93
Milestone IV	N/A	APR 93	OCT 93
DDG 51 Flight IIA Contract Award	N/A	MAR 94	MAR 94
Complete ESSM COEA	N/A	NOV 94	NOV 94
ESSM Milestone IV	N/A	NOV 94	NOV 94
Propulsion Engine P3I Initial ship installation	N/A	DEC 96	MAR 02 (Ch-1)
SH-60B Hellfire IOC	N/A	DEC 97	DEC 97
DDG 51 Flight IIA Delivery	N/A	SEP 99	SEP 99
DDG 51 Flight IIA IOC	N/A	OCT 00	OCT 00
Propulsion Engine P3I Engine support Capability Date	N/A	DEC 01	MAR 07 (Ch-1)
ESSM IOC	N/A	AUG 02	AUG 02

b. (U) Current Change Explanations --

The DDG 51 Class schedule adjustments are as follows:

(CH-1)

	FROM	TO
Propulsion Engine P3I Initial Ship Installation	Mar 01	Mar 02
Propulsion Engine P3I Engine Support Capability Date	Mar 06	Mar 07

The DDG 51 Class Acquisition Program Baseline (APB) of 2 June 1995 identifies DEC 96 as the scheduled introduction of Propulsion Engine Pre-planned Product Improvement, Intercooled Recuperative (ICR) Gas Turbine Engines. The initial ICR Ship Installation and Engine Support Capability dates have been rescheduled due to FY98/99 OSD/OMB funding constraints. A revised Program Deviation Report (PDR) and an APB Change Request has been submitted to reflect revised ICR Milestones.

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10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
SHIP:					
Length (ft)	466	N/A	/ N/A	TBD	471
Beam (ft)	59	N/A	/ N/A	TBD	59
Navigational Draft (ft)	30.6	N/A	/ N/A	TBD	31.7
Displacement (long tons)	8300	N/A	/ N/A	TBD	9300
Propulsion LM (Gas Turbine)	2500	N/A	/ N/A	TBD	2500
Accommodations	341	N/A	/ N/A	TBD	380
MOBILITY:					
Speed (knots)	30	30	/ 30	TBD	30

(b)(1)

**ANTI-AIR WARFARE:
CONDUCT SUCCESSFUL AAW
ENGAGEMENT:**

Probability of Successful Engage- ment-ESSM	N/A	TBD	/ 0.75	TBD	0.75
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(b)(1)

MINE WARFARE:

Detection Range of Moored/Floating Mine (YDS)	N/A	1000	/ 800	TBD	800
---	-----	------	-------	-----	-----

(b)(1)

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

	Production Estimate (SAR)	Approved Program (APB) Obt/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Armament				
Anti-Submarine Warfare				
ASW System	AN/SQQ-89	N/A / N/A	TBD	AN/SQQ-89 (V) 10
ASROC	VLA	N/A / N/A	TBD	VLA
Helo	SEAHAWK; LAMPS	2 / 2 EMBARKED/ HELOS / HELOS	TBD	2 EMBARKED HELOS
Anti-Air Warfare				
Launchers	MK 41 VLS	N/A / N/A	TBD	MK 41 VLS
Missiles	SM-2 MR	N/A / N/A	TBD	SM-2 MR
Missile Fire	3 MK 99	N/A / N/A	TBD	3 MK 99
Control System				
Guns	2 PHALANX	N/A / N/A	TBD	2 PHALANX/ ESSM
Anti-Surface/Strike Warfare				
Guns	1 5"/54	N/A / N/A	TBD	1 5"54
Gunfire Control System	MK 160	N/A / N/A	TBD	MK 160
Anti-Ship Cruise Missile	HARPOON	N/A / N/A	TBD	N/A
Cruise Missile	TOMAHAWK	N/A / N/A	TBD	TOMAHAWK
Electronic Warfare	SLQ-32 SRBOC	N/A / N/A	TBD	SLQ-32 (V) 3, SRBOC, Combat DF
Radars				
Surface	SPS-67	N/A / N/A	TBD	SPS-67
3D	SPY-1D	N/A / N/A	TBD	SPY-1D

(U) */ General Note: Approved Program, Demonstrated Performance, and Current Estimate are for the Flight IIA configuration.

1/ There are three types of missiles (SM-2, TOMAHAWK, and VLA) which are shot from 96 tubes.

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

- 2/ DBM reduction from conventionally constructed ships of similar displacement, e.g. CG 47 Class ship.
- 3/ For structure and developmental systems.

b. Current Change Explanations -- None.

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	979.8	1905.8	2138.3
Procurement	15948.3	39092.2	39337.2
Basic Ship Costs	(5383.6)		(16849.5)
HM&E and Combat Systems	(9427.9)		(20249.8)
Other Costs	(621.9)		(801.7)
OF/PD	(514.9)		(1436.2)
Total Sailaway	(15948.3)		(39337.2)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	25.6	25.5	34.8
Acquisition O&M	0.0	0.0	0.0
Total FY 87 Base-Year \$	16953.7	41023.5	41510.3
Escalation	3163.8	15776.4	15005.5
Development (RDT&E)	(-63.2)	(335.4)	(398.5)
Procurement	(3224.8)	(15438.7)	(14610.8)
Construction (MILCON)	(2.2)	(2.3)	(6.2)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	20117.5	56799.9	56515.8

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	23	57	57
Total	23	57	57

c. (U) Foreign Military Sales --

There are 28 Japanese AEGIS Weapon System FMS cases totaling \$2.2B. There is also one Spanish AEGIS Weapon System FMS case totaling \$0.7B.

d. (U) Nuclear Costs --

None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUN 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 87 BY\$)	41510.3	41023.5	
(2) Quantity	57	57	
(3) Unit Cost	728.251	719.711	+1.19
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 87 BY\$)	39337.2	39092.2	
(2) Quantity	57	57	
(3) Unit Cost	690.126	685.828	+0.63

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	916.6	19173.1	27.8	20117.5
Previous Changes:				
Economic	-64.4	-2721.1	+0.2	-2785.3
Quantity	-	+31714.7	-	+31714.7
Schedule	-	+1160.7	-	+1160.7
Engineering	-	+1965.7	-	+1965.7
Estimating	+1577.9	+3344.2	-	+4922.1
Other	-	-	-	-
Support	-	-	-0.2	-0.2
Subtotal	+1513.5	+35464.2	+0.0	+36977.7
Current Changes:				
Economic	-1.9	-227.9	-	-229.8
Quantity	-	-	-	-
Schedule	+98.6	+18.5	-	+117.1
Engineering	-	-	-	-
Estimating	-	-479.9	-	-479.9
Other	-	-	-	-
Support	-	-	+13.2	+13.2
Subtotal	+96.7	-689.3	+13.2	-579.4
Total Changes	+1610.2	+34774.9	+13.2	+36398.3
Current Estimate	2526.8	53948.0	41.0	56515.8

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

(U) Summary (FY 1987 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Production Estimate	979.8	15948.3	25.6	16953.7
Previous Changes:				
Quantity	-	+21363.6	-	+21363.6
Schedule	-	-	-	-
Engineering	-	+1293.2	-	+1293.2
Estimating	+1096.8	+1241.0	-	+2337.8
Other	-	-	-	-
Support	-	-	-0.1	-0.1
Subtotal	+1096.8	+23897.8	-0.1	+24994.5
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	+61.7	-	-	+61.7
Engineering	-	-	-	-
Estimating	-	-508.9	-	-508.9
Other	-	-	-	-
Support	-	-	+9.3	+9.3
Subtotal	+61.7	-508.9	+9.3	-437.9
Total Changes	+1158.5	+23388.9	+9.2	+24556.6
Current Estimate	2138.3	39337.2	34.8	41510.3

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDTE</u>		
	Revised escalation rates (Economic)	N/A	-1.9
	Revised program funding estimates resulting from procurement profile changes (Schedule)	+61.7	+98.6
	RDTE Subtotal	+61.7	+96.7
(2)	<u>Procurement</u>		
	Revised escalation rates (Economic)	N/A	-227.9
	Change in profile for the 57 ships previously submitted from 2,3,3,3,3,2,3 (FY 98-04) to 3,3,3,3,1,2,2,2 (FY 98-05) (Schedule)	N/A	+18.5
	Revised ship construction and GFE estimates resulting from the MYP acquisition strategy. (Estimating)	-586.5	-569.3
	Revisions to current (FY96) and prior year (FY85 - FY95) program due to (BY 87\$) cost adjustments for escalation and estimating (Estimating)	+77.6	+89.4
	Procurement Subtotal	-508.9	-689.3

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(3) MILCON		
To fund facility additions to support new warfighting capabilities (Support)	+9.3	+13.2
MILCON Subtotal	+9.3	+13.2

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1217.10	-233.23	-263.20	+15.10	-25.10	+145.80	--	+18.20	-342.43	874.67

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
874.67	-52.90	+34.67	+22.42	+34.49	+77.93	--	+0.23	+116.84	991.51

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1119.26	-205.16	-197.71	+13.94	+61.66	+27.38	--	+14.24	-285.65	833.61

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
833.61	-51.74	+59.16	+20.69	+34.49	+50.25	--	--	+112.85	946.46

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JUN 81	JUN 81	JUN 81	JUN 81
Milestone II	MAY 83	DEC 83	DEC 83	DEC 83
Milestone III	AUG 86	AUG 86	OCT 86	OCT 86
FUE/IOC	N/A	N/A	OCT 90	FEB 93
Total Cost	10953.5	14910.6	20117.5	56515.8
Total Quantity	9	14	23	57
Prog Acq Unit Cost	1217.06	1065.04	874.67	991.51

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

a. Procurement --

(U) DDG-68,70,72 CONSTRUCTIO:
BATH IRON WORKS, BATH, ME
N00024-92-C-2805, FPI
Award: April 8, 1992
Definitized: April 8, 1992

Initial Contract Price		
Target	Ceiling	Qty
\$784.3	\$904.6	3

Current Contract Price		
Target	Ceiling	Qty
\$845.4	\$974.5	3

Estimated Price At Completion	
Contractor	Program Manager
\$894.6	\$931.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-6.9	\$-5.8
Cumulative Variances To Date	\$-2.5	\$1.2
Net Change	\$4.4	\$7.0

Explanation of Change:

(U) Cost and Schedule improvements are driven by labor and overhead performance.

(U) Contract Comments:

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$149.7M).

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

(U) DDG 73,75,76 CONSTRUCTION:
BATH IRON WORKS, BATH, ME
N00024-93-C-2800, FPI
Award: January 19, 1993
Definitized: January 19, 1993

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$780.5	\$869.5	3	\$859.2	\$869.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.2	\$-6.1
Cumulative Variances To Date	\$3.8	\$-3.1
Net Change	\$5.0	\$3.0

Explanation of Change:

(U) Cost improvement is driven by labor and overhead performance. Schedule improvement is due to material.

(U) Contract Comments:

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$169.6M).

(U) DDG 77,79,81 CONSTRUCTION:
BATH IRON WORKS, BATH, ME
N00024-94-C-2808, FPI
Award: July 20, 1994
Definitized: January 4, 1995

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$999.5	\$1114.7	3	\$1057.3	\$1067.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.2	\$-7.5
Cumulative Variances To Date	\$-10.5	\$1.2
Net Change	\$-6.3	\$8.7

Explanation of Change:

(U) Cost variance is driven by labor and overhead performance. Schedule improvement is due to material.

(U) Contract Comments:

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements,

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

future changes estimates, nor escalation compensation commitments (\$175.2M).

(U) DDG 78,80,82 CONSTRUCTION:	Initial Contract Price		
INGALLS SHIPBUILDING, INC., PASCAGOULA MS	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-94-C-2800, FPI	\$993.8	\$1107.5	3
Award: July 20, 1994			
Definitized: January 4, 1995			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1020.4	\$1137.7	3	\$1060.4	\$1061.7

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date	\$-2.8	\$27.5
Net Change	\$-17.9	\$31.9
	\$-15.1	\$4.4

Explanation of Change:

(U) Cost and schedule variances are driven by material.

(U) Contract Comments:

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future change estimates, nor escalation compensation commitments (\$144.0M).

(U) DDG 84,86,88 CONSTRUCTION:	Initial Contract Price		
INGALLS SHIPBUILDING, INC., PASCAGOULA MS	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-96-C-2304, FPI	\$1034.9	\$1165.8	3
Award: June 20, 1996			
Definitized: December 13, 1996			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1034.9	\$1165.8	3	\$1036.7	\$1094.5

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date	N/A	N/A
Net Change	\$0.1	\$-3.8
	\$0.1	\$-3.8

Explanation of Change:

(U) Cost and Schedule variances are insignificant at this stage of construction.

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

(U) Contract Comments:

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$64.5M). This contract is forward priced, incorporates escalation in the basic contract.

			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) DDG 83,85,87 CONSTRUCT:					
BATH IRON WORKS, BATH, ME					
N00024-96-C-2305, FPI			\$1071.3	\$1219.7	3
Award: June 20, 1996					
Definitized: December 13, 1996					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1072.9	\$1221.3	3	\$1072.6	\$1102.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$2.2	\$0.7
Net Change	\$2.2	\$0.7

Explanation of Change:

(U) Cost and Schedule variances are insignificant at this stage of construction.

(U) Contract Comments:

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$64.6M). This contract is forward priced, incorporates escalation in the basic contract.

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

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

<u>Appropriation</u>	<u>Prior Years (FY80-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-10)</u>	<u>Total</u>
RDT&E	1590.3	86.9	110.0	739.6	2526.8
Procurement	32396.7	2871.8	2766.8	15912.7	53948.0
MILCON	27.8	13.2	-	-	41.0
O&M	-	-	-	-	-
Total	34014.8	2971.9	2876.8	16652.3	56515.8

b. Annual Summary -- DDG 51 Destroyer

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY87 Dollars Nonrec</u>	<u>Flyaway FY87 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1980				14.9	10.5
1981				45.1	35.3
1982				121.2	102.0
1983				170.8	150.7
1984				132.2	121.1
1985				146.5	138.8
1986				96.0	93.5
1987				100.4	100.4
1988				90.7	93.4
1989				48.7	52.3
1990				36.1	41.2
1991				73.9	87.5
1992				71.6	87.2
1993				88.7	110.6
1994				80.8	102.7
1995				69.1	89.6
1996				66.5	88.0
1997				63.3	85.5
1998				63.0	86.9
1999				78.1	110.0
2000				97.3	139.8
2001				66.6	97.8
2002				66.7	100.0
2003				66.6	102.2
2004				54.9	86.5
2005				54.9	88.7
2006				37.3	61.9
2007				21.8	37.0
2008				10.5	18.4

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

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY87 Dollars Nonrec	Flyaway FY87 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2009				4.1	7.3
Subtotal				2138.3	2526.8

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY87 Dollars Nonrec	Flyaway FY87 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984					78.5
1985	1	307.6	896.2	1177.8	1145.8
1986					98.1
1987	3	143.6	2180.4	2255.8	2485.5
1988				3.8	9.4
1989	4		2572.4	2477.6	2876.7
1990	5	11.2	3109.9	3013.7	3622.7
1991	4	2.9	2579.9	2520.5	3159.6
1992	5	29.6	3159.6	3116.1	4056.9
1993	4	6.1	2562.5	2582.9	3376.1
1994	3	64.0	2043.4	2129.0	2804.8
1995	3	9.3	1981.5	1988.7	2734.9
1996	2	40.8	1471.4	1550.9	2339.8
1997	4	24.6	2463.1	2434.0	3607.9
1998	3	68.4	1949.1	1974.9	2871.8
1999	3		2014.7	1996.7	2766.8
2000	3	3.5	2014.6	2017.3	2913.4
2001	3	20.7	1940.2	1966.2	2903.5
2002	1	36.1	682.3	755.2	1192.8
2003	2	9.2	1534.8	1551.2	2508.8
2004	2		1697.0	1733.7	2865.4
2005	2		1706.6	1749.6	2965.5
2006				86.2	136.2
2007				81.1	131.6
2008				74.9	124.6
2009				65.9	111.6
2010				33.9	59.3
Subtotal	57	777.6	38559.6	39337.2	53948.0

(U) FY 84 and FY 86 Then Year figures are for advanced procurement for FY 85 and FY 87, respectively. The associated Base Year amounts are reflected in the year of the end item procurement.

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

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY87 Dollars Nonrec	Flyaway FY87 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986				4.5	4.6
1988				13.5	14.7
1989				7.5	8.5
1990					
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998				9.3	13.2
Subtotal				34.8	41.0

(U) FY98 MILCON requirement is to fund facility additions at the AEGIS Computer Center Building and Operations and Maintenance Training Facility to support new warfighting capabilities.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	57	777.6	38559.6	41510.3	56515.8

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	19	19

(U) Percent Total Program Quantities Delivered: 33.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 21658.3

(U) Percent Total Program Expended: 38.3%

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The O&S estimate projects costs for a 57 ship buy and encompasses the Flight I, II, and IIA designs. The Flight IIA design begins with the last ship in fiscal year 1994. There currently is no planned mid-life capability upgrade for the DDG-51 Class over the service life. There are 22 Officers for Flight I, II, and IIA ships. There are 324 Enlisted personnel for Flight I ships, 330 Enlisted for Flight II ships, and 323 Enlisted for Flight IIA ships. The steaming hours are estimated as 4800 hours annually. The average annual cost per ship for Operating and Support costs, over the 40 year projected service life, is estimated at \$38.2M in FY87 dollars. The Operating and Support Cost estimates were prepared in February 97. These estimates were made in accordance with DoD 5000.4M Department of Defense Cost Analysis Guidance and Procedures (Dec 92) and the Office of the Secretary of Defense Cost Analysis Improvement Group, Operating and Support Cost Estimating Guide (May 92).

b. (U) Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Average Annual Cost Per Ship	Average Annual Cost Per Ship
Mission Pay & Allowances	10.0	N/A
Unit Level Consumption	8.9	0.0
Intermediate Maintenance	0.2	0.0
Depot Maintenance	9.4	0.0
Contractor Support	0.0	0.0
Sustaining Support	8.6	0.0
Indirect Costs	0.8	0.0
AEGIS Other Depot	0.1	0.0
Total	38.2	0.0

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: AMRAAM (AIM-120)

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM)

2. (U) DoD Component: USAF

Joint Participants:
 USAF/USN

3. (U) Responsible Office and Telephone Number:

System Program Director	COL RICHARD L. DICKSON
Air-to-Air Joint Systems Program	Assigned: September 20, 1993
Office (ASC/YA)	DSN 872-3531; COMM (904) 882-3531
EGLIN AFB, FL 32542-6844	

(U) Navy Program Director	MARKAM F. STENGER
Air-to-Air Joint Systems Program	Assigned: June 12, 1994
Office (ASC/YA)	AV 872-2412 COMM (904) 882-2412
EGLIN AFB, FL 32542-6844	

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

RDT&E:

(U)	PE 0207163F	
(U)	PE 0207163N (Shared)	Project E0981
(U)	PE 0603316F	
(U)	PE 0603370F	
(U)	PE 0603370N	Project W0981

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AMRAAM (AIM-120), December 31, 1996

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

(U) PE 0604314F

(U) PE 0604314N (Shared) Project E0981

PROCUREMENT:

(U) APPN 1507 ICN 2206 (Navy)

(U) APPN 3020 ICN MAMRAO (Air Force)

5. (U) References:

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated January 17, 1992.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated September 27, 1996.

6. (U) Mission and Description:

(U) The AMRAAM program provides for the acquisition of the most advanced all-weather, all-environment medium range air-to-air missile system in response to USAF, USN, NATO, and other allied operational requirements for the 1989-2007 time period. The system is an active radar guided intercept missile with inherent Electronic Countermeasures (ECM) capabilities for air-to-air applications against massed penetration aircraft and is designed to augment the AIM-7 Sparrow.

7. (U) Executive Summary:

(U) In January 1979 Defense Systems Acquisition Review Council (DSARC) Milestone I validated the requirement for AMRAAM. The Full-Scale Development contract was competitively awarded to Hughes Aircraft Company in December 1981. Raytheon Company was selected as the follower contractor for competitive production of AMRAAM in July 1982.

In January 1989 Hughes completed flight testing and Raytheon completed second-source qualification testing. The live fire test program successfully ended in August 1989. In May 1991 the DAB Milestone IIIB authorized the program to continue low-rate production through FY92 (Lot VI). AMRAAM Initial Operational Capability on the F-15 occurred in September 1991, and the first F-16 unit established Full Operational Capability in January 1992. In Apr 1992 a follow-up DAB Program Review full-rate production for the FY93 procurement. Successful completion of the Navy Operational Evaluation occurred in March 1994.

In support of the United Nations an AMRAAM downed an Iraqi Air Force MIG under combat conditions in December 1992 and another in January 1993. In February 1994 an AMRAAM shot down an aircraft in a combat situation in Bosnia.

The first production contract award occurred in FY87.

The Lot X production option was exercised on 29 January 1996. Hughes Missile Systems Company (HMSC) is 2 missile deliveries ahead of contract from January

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AMRAAM (AIM-120), December 31, 1996

7. (U) Executive Summary (Cont'd):

1996 through December 1996, while Raytheon Corporation is 87 missiles behind contract. The Raytheon Lot VII/VIII/IX schedules were rebaselined with the government receiving in excess of \$1M in contractual consideration. Production Lot XI was awarded on 28 January 1997.

Marvin Engineering Company (MEC) delivered 1132 Missile Rail Launchers (MRLs) since contract award and is a very responsive small business company. HMSC completed their deliveries of launchers on the Lot VI-A contract, which yielded 1485 MRLs.

Phase I of the AMRAAM Pre-Planned Product Improvement (P3I), which included the compressed carriage for the F-22, was completed in September 1996 for incorporation into production Lot VIII. On the P3I Phase 2 contract, AMRAAM Captive Carry Equipment (ACE) developmental flight tests for Tape 7A began in January 1996. A successful Tape 7B Preliminary Design Review was completed in February 1996. In April, the AMRAAM Joint Systems Program Office decided to not exercise the Electronic Safe Arm Device (ESAD) post-Critical Design Review (CDR) development contract option due to unacceptable risk of cost growth.

Cost and schedule variances for the Tape 7A and the concurrently developed Tape 7B (which includes the new warhead and the +5 inch rocket motor efforts) have shown negative trends. The negative trends are primarily due to the continuing impacts of Hughes' computer network shutdown in April 1996, as well as the Tape 7A software integration and qualification test challenges. The Tape 7A software Formal Qualification Test began on 21 October 1996. The first Tape 7A launch conducted in late November 1996 was a direct hit. Tape 7A delivery will be in late March or early April 1997, approximately 3 months later than originally planned. Current plans are for Tape 7B implementation in production Lot XI with the new warhead and +5 inch rocket motor implemented in Lot XII.

The AMRAAM program accomplished 136 AIM-120 launches from January 1996 through December 1996. The preliminary results for this period were 82 successful, 11 missile failures, 9 aircraft failures, 23 no-test (for no target, early destruction of missile, target destruction from previous missile, etc.), and 11 are awaiting data analysis.

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AMRAAM (AIM-120), December 31, 1996

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I (DSARC)	NOV 78	NOV 78	NOV 78
Milestone II (DSARC)	SEP 82	SEP 82	SEP 82
Start DT&E/IOT&E	OCT 83	N/A	OCT 83
Certification	FEB 86	FEB 86	FEB 86
Milestone IIIA (DAB)	JUN 87	JUN 87	JUN 87
DAE Program Review	MAY 88	MAY 88	MAY 88
Start Production Deliveries	SEP 88	SEP 88	SEP 88
Complete D/IOT&E (Air Force)	JAN 89	JAN 89	JAN 89
Complete IOT&E/Captive Carry	JUN 90	JUN 90	JUN 90
Reliability Program w/Lot 1 Assets (Air Force)			
Initial Equipment	DEC 90	DEC 90	DEC 90
Initial Operational Capability (IOC)	MAR 91	MAR 91	SEP 91
Air Force			
Milestone IIIB (DAB) (Lot IV Full Go-Ahead Rate Production)	APR 91	APR 91	MAY 91
DAB Program Review Full Rate Production Approval	MAR 92	MAR 92	APR 92
Full Operational Capability (FOC) 1st F-16 Unit Fully Operational w/AMRAAMs	MAR 92	MAR 92	JAN 92
Complete FOT&E (OPEVAL) (Navy)	MAR 92	JAN 94	MAR 94
Complete AF FOT&E Phase I	MAR 92	FEB 93	APR 93
P3I Phase 1 CDR Complete	OCT 92	OCT 92	JAN 93
Initial Operational Capability (IOC) (Navy)	SEP 92	SEP 93	SEP 93

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Joint Depot Activated	SEP 94	JUL 99	JUL 99
P3I Phase 1 Flight Test Completed	DEC 94	DEC 94	APR 95
Last Delivery	SEP 01	N/A	NOV 09

b. Current Change Explanations -- None.

10. (U) Performance Characteristics:

a. Performance --

	Production	Approved Program (APB)	Demon- strated	Current
(b)(1)				
Reliability				
Ready Storage (hrs) (mature msl - 90K operational flight hours)	60000	60000 / 45000	N/A	45000
Availability (%)	86	86 / 82	N/A	96
Captive-Carry (MTBM- Type I) (hrs)	600	600 / 450	282	750
On Alert Storage MTBM	30000	30000 / 22500	N/A	30000
Aircraft Configure/ Load - 3 Man Load Crew				
Install 4 Rail Launchers (mins)	20	20 / 25	21	21
Load 4 Missiles from trailer (mins)	15	15 / 20	18	18
Load 4 Missiles from container (mins)	20	20 / 30	22	22
Missile checks (mins)	1	1 / 5	1	1
All Weather Capability	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds

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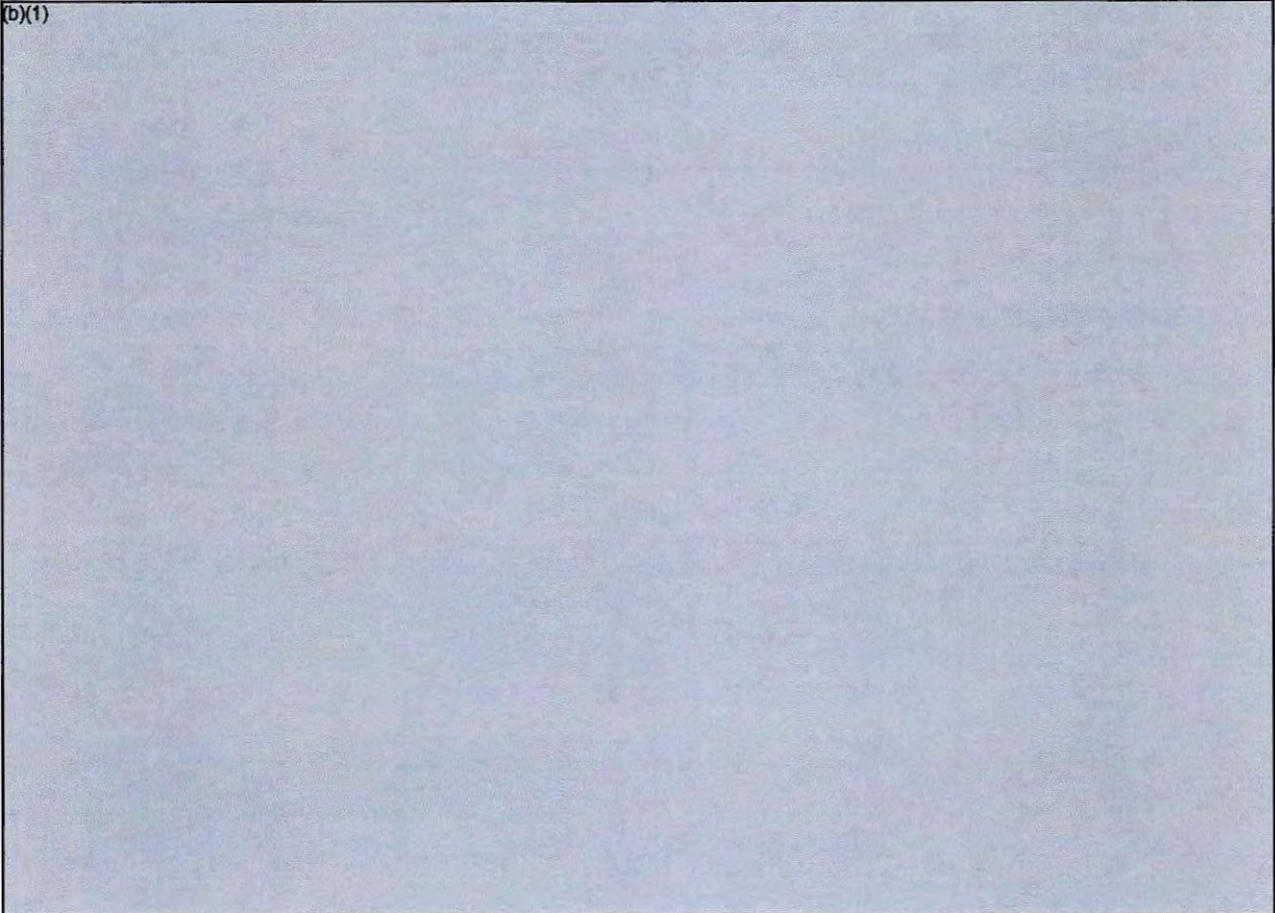
AMRAAM (AIM-120), December 31, 1996

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

	Production Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

		/ Capabili-		
		/ ity		
Aircraft	F-15,	F-15, / F-15,	F-15,	F-15,
Compatibility	F-16,	F-16, / F-16,	F-16,	F-16,
	F-14,	F-14, / F-14,	F/A-18	F-14,
	F/A-18	F/A-18 / F/A-18		F/A-18
All-Up Round	Control	Control / Control	Control	Control
	Surfaces	Surfaces/ Surfaces	Surfaces	Surfaces
	field	field / field	field	field
	in-	in- / in-	in-	in-
	stalled	stalled / stalled	stalled	stalled

(b)(1)



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

(U) Demonstrated captive carry Mean Time Between Maintenance (MTBM) hours in Production Reliability Acceptance Test (PRAT).

F-Pole - The distance between the shooter and the target when the missile intercepts the target.

A-Pole - The distance between the shooter and the target when the missile goes active.

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

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	1725.7	2097.2	2146.4
Procurement	10552.5	10205.7	8532.0
Flyaway	(10038.5)		(8063.6)
Other Weapon Cost	(378.0)		(0.0)
Peculiar Support	(0.0)		(359.0)
Initial Spares	(136.0)		(109.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 92 Base-Year \$	12278.2	12302.9	10678.4
Escalation	834.2	1025.0	369.9
Development (RDT&E)	(-375.1)	(-275.7)	(-268.3)
Procurement	(1209.3)	(1300.7)	(638.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	13112.4	13327.9	11048.3

(U) Note: Other Weapon Cost has been recategorized as Peculiar Support to track to the program office estimate.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	15450	13038	10917
Total	15450	13038	10917

(U) Excludes 169 non-fully configured RDT&E missiles in the development estimate and 111 in the current estimate. The original plan was to procure 810 LRIP missiles or 3.3% of the total planned quantity of 24,320. However, LRIP was extended from FY87 through FY92 with a quantity of 4,159 missiles (27% of the production estimate total quantity). This resulted from two actions: (1) the planned total procurement decreased from 24,320 missiles at Milestone IIA to 15,450 missiles at Milestone IIIB, and (2) Milestone IIIB authorized the program to continue LRIP through FY92, adding 3,349 missiles to the LRIP quantities.

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

c. ~~Foreign~~ Foreign Military Sales --

- (U) BELGIUM (BE-D-YDR) Case signed 29 December 1995
\$30.6M PURPOSE: 72 AMRAAMs (Lot XI)
- (U) DENMARK (DE-D-YAS) Case signed 8 December 1994
\$63.1M PURPOSE: 150 AMRAAMs (Lots IX,X) and support
- (U) FINLAND (FI-P-YAA) Case signed 4 November 1994
\$118.0M PURPOSE: 240 AMRAAMs (Lots X,XI,XII). Missile
procurement will be FMS administered direct commercial sales
- (U) GERMANY (GY-D-YEK) Case signed 28 June 1995
\$47.4M PURPOSE: 96 AMRAAMs (Lots VII,X) and support
- (U) GREECE (GR-D-YDR) Case signed 30 June 1995
\$37.3M PURPOSE: 100 AMRAAMs (Lot X) and support
- (U) GREECE (GR-D-SBD) Case signed 26 September 1996
\$19.5M PURPOSE: 50 AMRAAMs (Lot XI)
- (U) NATO EUROPEAN FIGHTER MANAGEMENT AGENCY (NEFMA) (M1-D-YAA)
Case signed 5 November 1991
\$9.0M PURPOSE: 6 AMRAAMs (Lot VII)
- (U) NETHERLANDS (NE-D-YME) Case signed 29 September 1995
\$87.1M PURPOSE: 200 AMRAAMs (Lots X,XI) and support
- (U) NORWAY (NO-D-ICY) Case signed 7 October 1992
\$60.0M PURPOSE: 100 AMRAAMs (Lots VIII,IX), 132 Missile Rail
Launchers (MRLs), and support
- (U) NORWAY (NO-D-YCZ) Case signed 31 August 1994
\$79.8M PURPOSE: 228 AMRAAMs (Lots IX,X), 228 MRLs, and support
- (U) NORWAY (NO-D-YDA) Case signed 1 April 1996
\$224.0M PURPOSE: 500 AMRAAMs (Lots XI,XII)
- (U) SOUTH KOREA (KS-D-YGL) Case signed 24 October 1991
\$70.5M PURPOSE: 96 AMRAAMs (Lot VII), 560 MRLs and support
- (U) SOUTH KOREA (KS-D-YGN) Case signed 27 December 1993
\$133.3M PURPOSE: 190 AMRAAMs (Lot IX) and support
- (U) SOUTH KOREA (KS-D-YGP) Case signed 28 August 1995
\$38.4M PURPOSE: 100 AMRAAMs (Lot X). Missile procurement
will be FMS administered direct commercial sales
- (U) SPAIN (SP-D-YDH) Case signed 11 July 1996
\$13.0M PURPOSE: 32 AMRAAMs (Lot XI) and support

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

(U) SWEDEN (SW-D-YCC) Case signed 1 September 1994
\$2.6M PURPOSE: 7 AMRAAMs (Lot X) and support. Missile
procurement will be FMS administered direct commercial sales

(U) SWEDEN (SW-D-YCD) Case signed 1 September 1994
\$26.7M PURPOSE: 100 AMRAAMs (Lot X) and support. Missile
procurement will be FMS administered direct commercial sales

(b)(1)



(U) TURKEY (TK-D-YDO) Case signed 14 May 1991
\$61.1M PURPOSE: 96 AMRAAMs (Lots VII,VIII), 96 (MRLs) and
associated equipment

(U) TURKEY (TK-D-YDS) Case signed 17 December 1992
\$12.7M PURPOSE: 20 AMRAAMs (Lot VIII)

(U) TURKEY (TK-D-YDT) Case signed 25 October 1993
\$22.6M PURPOSE: 60 AMRAAMs (Lot IX)

(U) TURKEY (TK-D-YDU) Case signed 1 December 1994
\$33.2M PURPOSE: 80 AMRAAMs (Lot X) and support

(U) UNITED KINGDOM (UK-D-YDR) Case signed 13 March 1992
\$104.9M PURPOSE: 210 AMRAAMs (Lots VII,VIII) and support

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (Sep 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BY\$)	10678.4	12302.9	
(2) Quantity	10917	13038	
(3) Unit Cost	0.978	0.944	+3.60
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BY\$)	8532.0	10205.7	
(2) Quantity	10917	13038	
(3) Unit Cost	0.782	0.783	-0.13

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1350.6	11761.8	-	13112.4
Previous Changes:				
Economic	-28.9	-397.5	-	-426.4
Quantity	-	-2907.3	-	-2907.3
Schedule	-18.3	+1793.1	-	+1774.8
Engineering	+440.0	+108.4	-	+548.4
Estimating	+146.8	-942.5	-	-795.7
Other	-	-	-	-
Support	-	+56.3	-	+56.3
Subtotal	+539.6	-2289.5	-	-1749.9
Current Changes:				
Economic	-1.4	+81.2	-	+79.8
Quantity	-	-69.8	-	-69.8
Schedule	-	-43.0	-	-43.0
Engineering	-	-22.0	-	-22.0
Estimating	-10.7	-180.6	-	-191.3
Other	-	-	-	-
Support	-	-67.9	-	-67.9
Subtotal	-12.1	-302.1	-	-314.2
Total Changes	+527.5	-2591.6	-	-2064.1
Current Estimate	1878.1	9170.2	-	11048.3

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

(U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1725.7	10552.5	-	12278.2
Previous Changes:				
Quantity	-	-1926.9	-	-1926.9
Schedule	-16.8	+789.9	-	+773.1
Engineering	+357.2	+71.7	-	+428.9
Estimating	+91.3	-739.0	-	-647.7
Other	-	-	-	-
Support	-	+0.2	-	+0.2
Subtotal	+431.7	-1804.1	-	-1372.4
Current Changes:				
Economic	-	-	-	-
Quantity	-	-38.2	-	-38.2
Schedule	-	+2.0	-	+2.0
Engineering	-	-15.0	-	-15.0
Estimating	-11.0	-119.4	-	-130.4
Other	-	-	-	-
Support	-	-45.8	-	-45.8
Subtotal	-11.0	-216.4	-	-227.4
Total Changes	+420.7	-2020.5	-	-1599.8
Current Estimate	2146.4	8532.0	-	10678.4

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RDT&E

ECONOMIC CHANGES

Revised escalation indices. (Economic) N/A -1.2

Economic adjustment for negative program change. (Economic) N/A -0.2

ESTIMATING CHANGES

Adjustment for Current and Prior Inflation. +0.3 +0.3
(Estimating)

Funds were adjusted to align funding with P3I Phase 3 program execution. (Estimating) -15.9 -18.0

Increase of program management administration funding due to realignment from production. (Estimating) +4.6 +7.0

RDT&E Subtotal -11.0 -12.1

(2) Procurement

ECONOMIC CHANGES

Revised escalation indices. (Economic) N/A -5.4

Economic adjustment for negative program change. (Economic) N/A +86.6

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
QUANTITY CHANGES		
Quantity variance associated with decreasing the program from 11,019 to 10,917 (decrease of 102 units). (Quantity)	-38.2	-69.8
SCHEDULE CHANGES		
Allocation to schedule variance resulting from quantity decrease. (Schedule)	+2.0	+4.4
Acceleration of annual procurement buy profile. (Schedule)	0.0	-47.4
ENGINEERING CHANGES		
Allocation to engineering variance resulting from quantity decrease. (Engineering)	+0.2	+0.3
Realignment of value engineering project investments. (Engineering)	+1.1	+1.0
Cancellation of Telemetry upgrade. (Engineering)	-16.3	-23.3
ESTIMATING CHANGES		
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+2.4
Allocation to estimating variance resulting from quantity decrease. (Estimating)	+2.3	+2.3
Adjustment for actual obligation authority. (Estimating)	-9.5	-11.3
Unit cost decrease due to increase in FMS quantity. (Estimating)	-34.1	-48.2
Cost decrease due to Lot X competition and rate change. (Estimating)	-74.7	-115.5
Increase in estimate for production test to support Navy program requirements. (Estimating)	+23.9	+31.9
Realignment of software planned upgrades and maintenance with planned tape updates. (Estimating)	-4.2	-7.3
Reduction of contractor support due to downsizing. (Estimating)	-10.7	-16.3
Reduction of program management administration funding due to realignment under R&D. (Estimating)	-4.6	-7.0
Reduction in estimate of program management administration. (Estimating)	-4.6	-7.1

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Replanning of testing efforts. (Estimating)	-3.6	-4.5
SUPPORT CHANGES		
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Decrease in Initial Spares to support program requirements. (Support)	-19.1	-29.0
Decrease in Peculiar Support, including the removal of the software support facility requirement. (Support)	-26.9	-39.1
Procurement Subtotal	-216.4	-302.1

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.48	-0.06	+0.14	+0.12	+0.02	+0.19	--	-0.04	+0.37	0.85

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.85	-0.03	+0.07	+0.16	+0.05	-0.09	--	--	+0.16	1.01

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.43	-0.06	+0.12	+0.12	+0.01	+0.18	--	-0.04	+0.33	0.76

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14b. (U) Unit Cost and Other History (Cont'd):

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.76	-0.03	+0.04	+0.16	+0.01	-0.10	--	--	+0.08	0.84

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	NOV 78	NOV 78
Milestone II	N/A	NOV 82	SEP 82	SEP 82
Milestone III	N/A	N/A	JUN 87	JUN 87
FUE/IOC	N/A	SEP 86	MAR 91	SEP 91
Total Cost	N/A	11591.6	13112.4	11048.3
Total Quantity	N/A	24335	15450	10917
Prog Acq Unit Cost	N/A	0.48	0.85	1.01

(U) The SAR Development Estimate data is for the Air Force only and does not include Navy data.

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

a. RDT&E --

(U) HUGHES P3I PHASE 2:

HUGHES MISSILE SYSTEM CO., TUCSON AZ

F08626-93-C-0044, CPAF/CPFF

Award: June 30, 1994

Definitized: June 30, 1994

Initial Contract Price

Target Ceiling Qty

\$89.6 N/A 0

Current Contract Price

Target Ceiling Qty
\$110.2 N/A 0

Estimated Price At Completion

Contractor Program Manager
\$103.1 \$110.5

Cost Variance Schedule Variance

Previous Cumulative Variances

\$1.0 \$-1.4

Cumulative Variances To Date (11/22/96)

\$-3.0 \$-5.4

Net Change

\$-4.0 \$-4.0

Explanation of Change:

(U) The net change in current target price from initial contract target price is due to the award of the +5" Rocket Motor contract, award fee for periods one and two, and the exercise of options.

(U) Contract Comments:

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AMRAAM (AIM-120), December 31, 1996

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

The negative cost and schedule variances are primarily due to software complexities, test challenges, and a computer network shutdown at the contractor's facility in Apr 96.

The Program Manager's estimate at completion assumes a 90 percent efficiency for the remainder of the contract, while the contractor assumes a 124 percent efficiency.

b. Procurement --

(U) HUGHES LOTS VII/VIII:
HUGHES AIRCRAFT COMPANY, TUCSON AZ
FO8626-93-C-0007, FFP
Award: February 22, 1993
Definitized: February 22, 1993

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$333.2	N/A	849

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$611.8	N/A	1362

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$611.8	\$611.8

Explanation of Change:

(U) Cost and schedule variance reporting are not required on FFP contracts.

The net change in current target price from initial contract target price is due to the addition of contract modifications and exercising the Lot VIII option.

(U) RAYTHEON LOTS VII/VIII:
RAYTHEON COMPANY, BEDFORD, MA
FO8626-93-C-0008, FFP
Award: February 22, 1993
Definitized: February 22, 1993

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$294.3	N/A	614

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$548.9	N/A	1383

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$548.9	\$548.9

Explanation of Change:

(U) Cost and schedule variance reporting are not required on FFP contracts.

The net change in current target price from initial contract target price is due to the addition of contract modifications and exercising the Lot VIII option.

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AMRAAM (AIM-120), December 31, 1996

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

(U) <u>HUGHES LOTS IX/X:</u> HUGHES AIRCRAFT COMPANY, TUCSON AZ FO8626-94-C-0029, FFP Award: March 7, 1995 Definitized: March 7, 1995	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$129.0	N/A	456

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$350.1	N/A	1161	\$350.1	\$350.1

Explanation of Change:

(U) Cost and schedule variance reporting are not required on FFP contracts.

The net change in current target price from initial contract target price is due to the addition of contract modifications and exercising the Lot X option.

c. MILCON -- (U) <u>RAYTHEON LOTS IX/X:</u> RAYTHEON COMPANY, BEDFORD, MA FO8626-94-C-0030, FFP Award: March 7, 1995 Definitized: March 7, 1995	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$141.8	N/A	604

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$291.1	N/A	1268	\$291.1	\$291.1

Explanation of Change:

(U) Cost and schedule variance reporting are not required on FFP contracts.

The net change in current target price from initial contract target price is due to the addition of contract modifications and exercising the Lot X option.

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AMRAAM (AIM-120), December 31, 1996

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

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

<u>Appropriation</u>	<u>Prior Years (FY77-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	1456.0	56.5	50.9	314.7	1878.1
Procurement	6734.0	176.3	194.0	2065.9	9170.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	8190.0	232.8	244.9	2380.6	11048.3

b. Annual Summary -- AMRAAM (AIM-120)

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY92 Dollars Nonrec</u>	<u>Flyaway FY92 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1978				11.9	6.0
1979				33.5	18.3
1980				45.0	27.3
1981				36.0	24.2
1982				4.6	3.3
1983				5.7	4.3
1984				9.3	7.3
1985				9.7	7.8
1986				5.1	4.2
1987				5.8	5.0
1988				25.1	22.3
1989				13.3	12.4
1990				7.2	6.9
1991				3.5	3.5
1992				2.4	2.5
1993				3.0	3.1
1994					
1995				7.2	7.8
1996				3.9	4.3
1997				1.9	2.1
1998				4.9	5.7
1999				4.2	4.9
2000				3.8	4.6
2001				3.6	4.4
2002				3.5	4.4
2003				3.5	4.5
Subtotal				257.6	201.1

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AMRAAM (AIM-120), December 31, 1996

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

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1977				10.3	4.8
1978				13.2	6.7
1979				29.5	16.1
1980				43.2	26.2
1981				34.1	22.9
1982				192.1	137.9
1983				283.1	212.9
1984				252.6	197.3
1985				256.0	206.6
1986				110.2	91.1
1987				43.6	37.7
1988				30.1	26.7
1989					
1990				12.4	11.9
1991				18.0	17.9
1992				29.6	30.3
1993				37.2	38.9
1994				60.9	64.8
1995				58.9	63.8
1996				40.0	44.2
1997				21.9	24.7
1998				44.1	50.8
1999				39.1	46.0
2000				38.0	45.7
2001				34.8	42.7
2002				29.4	36.9
2003				21.8	28.0
2004				26.0	34.3
2005				26.1	35.3
2006				26.2	36.4
2007				26.4	37.5
Subtotal				1888.8	1677.0

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989	26	2.7	26.2	31.6	31.1
1990	85	18.6	61.4	84.8	85.1
1991	300	51.2	185.4	253.6	262.0
1992	191	36.3	109.9	185.9	194.5
1993	165	19.0	67.8	98.4	105.1

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AMRAAM (AIM-120), December 31, 1996

16b. (U) Program Funding Summary (Cont'd):
Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994	75	19.8	24.4	52.1	56.8
1995	106	22.4	36.6	68.0	75.0
1996	115	22.2	31.2	62.2	69.9
1997	100	13.5	32.5	51.2	58.7
1998	100	13.1	28.4	49.0	57.4
1999	100	19.4	29.4	55.8	66.7
2000	100	20.0	28.6	55.3	67.5
2001	100	20.7	28.1	54.9	68.5
2002	100	19.1	29.6	54.5	69.6
2003	100	20.9	28.7	55.9	73.1
2004	164	18.7	71.8	96.7	129.8
2005	164	18.8	68.6	93.7	129.0
2006	164	19.0	68.4	93.6	132.2
2007	164	19.1	68.1	120.6	174.9
Subtotal	2419	394.5	1025.1	1617.8	1906.9

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984		34.2	1.9	36.1	29.3
1985		84.0	4.8	88.8	74.1
1986		164.0	58.0	226.7	197.9
1987	180	205.5	427.0	655.1	596.1
1988	400	216.4	521.0	753.5	711.3
1989	874	104.2	677.5	798.3	786.3
1990	803	88.1	574.5	680.6	682.6
1991	600	184.1	384.7	592.3	611.8
1992	700	70.0	419.6	506.4	529.7
1993	1000	131.8	395.0	555.5	593.3
1994	983	74.8	318.3	410.0	446.9
1995	412	68.7	116.8	213.8	235.8
1996	291	67.2	82.7	160.9	180.7
1997	133	47.4	46.9	104.6	120.0
1998	173	40.4	57.2	101.5	118.9
1999	196	38.4	61.7	106.5	127.3
2000	267	39.0	80.9	126.2	154.1
2001	293	38.9	88.0	135.1	168.6
2002	254	32.9	79.4	118.5	151.3
2003	316	34.4	95.3	135.9	177.8
2004	136	27.3	63.2	95.2	127.7
2005	163	28.3	71.9	105.2	144.8
2006	162	27.4	71.2	103.5	146.2

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AMRAAM (AIM-120), December 31, 1996

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

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007	162	28.3	70.8	104.0	150.8
Subtotal	8498	1875.7	4768.3	6914.2	7263.3

(U) Summary does not include funding or quantities for Seek Eagle procurements of 12 AMRAAMs in FY90, 24 AMRAAMs in FY94, and 18 Captive Air Training Missiles (CATMs) in FY95.

The recurring flyaway in FYs 84 - 86 is for 15 missiles in the Raytheon qualification lot and are not considered fully configured end items.

Funding reflects OSD approved inflation indices dated January 6, 1997.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	2419	394.5	1025.1	1875.4	2108.0
USAF	8498	1875.7	4768.3	8803.0	8940.3
Grand Total	10917	2270.2	5793.4	10678.4	11048.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	111	111
Procurement	6237	6152

(U) Percent Total Program Quantities Delivered: 57.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7208.3

(U) Percent Total Program Expended: 65.2%

(U) Hughes is ahead of scheduled deliveries by 2 missiles, and Raytheon is 87 missiles behind schedule.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The AMRAAM will augment the AIM-7 and be integrated and maintained using existing support resources with no additional manpower requirements. The All-Up-Round (AUR) maintenance concept calls for aircraft loading/unloading, removal/replacement of wings and fins and Built-In-Test (BIT) within the missiles. A missile failing BIT will be sent to the Intermediate-Level Shop

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

for test verification on the Missile Bit Test Set (MBTS). For the Navy, the missile will be downloaded/uploaded on a different station or aircraft to verify missile failure. Failed missiles, AF or Navy, will be returned to a Naval Weapons Station (NWS) for failure confirmation and isolation to the failed missile section. Defective sections will be returned to the AMRAAM depot for repair.

The O&S costs are the direct costs for the tactical missile and the Load Trainer/Captive Carry Missile (LT/CCM) associated with operating, supporting, and maintaining the AMRAAM missile over a 20 year deployment phase starting in FY91 for the AF and FY92 for the Navy. The AF estimate covers base operations including Load Trainer/Captive Carry Missile (LT/CCM), AUR fault verification, operational firings, depot repairs (seven year ICS), supply/item management, transportation, replenishment spares, and field software updates. The Navy estimate includes AMRAAM fleet operations and support, intermediate maintenance at NWS, depot rework (five years ICS), technical support (fleet support, engineering services, quality surveillance, program management), supply support, replenishment spares, and contractor augmented support.

The O&S cost estimate was updated December 1996.

There are no antecedent systems; the AMRAAM is designed to augment the AIM-7 Sparrow.

b. (U) Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	AMRAAM Average Annual Cost Per Year	Antecedent Average Annual Cost Per Year
Mission Pay & Allowances	1.1	N/A
Unit Level Consumption	12.0	0.0
Intermediate Maintenance	0.1	0.0
Depot Maintenance	10.4	0.0
Contractor Support	0.0	0.0
Sustaining Support	5.0	0.0
Indirect Costs	0.2	0.0
Total	28.8	0.0

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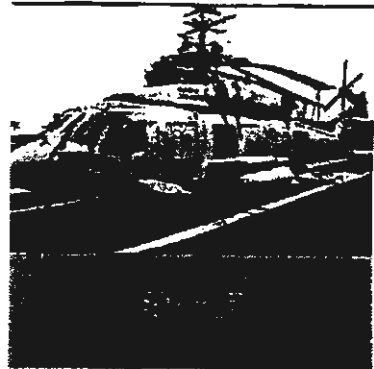
N-18 SH-60R

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SH-60R

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AS OF DATE: December 31, 1996

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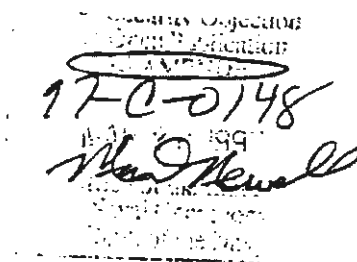


1. (U) Designation and Nomenclature (Popular Name): SH-60R Multi-Mission Helicopter Upgrade
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
Air ASW, and Special Mission Progra CAPT Larrie Cable
(PMA-299) JP-1, Rm 720 Assigned: May 25, 1995
Washington, DC 20361-1299 DSN 664-2686; COMM 703-604-2686
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0604212N Project H0485, H1707
PROCUREMENT:
(U) APPN 1506 ICM 018200 (W 1997)

CLEARED
FOR OPEN PUBLICATION

AS AMENDED **MAR 26 1997** **9**

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



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5. (U) References:

Development Baseline (SAR):

(U) FY 1996/1997 President's Budget
ASN, RDA Acquisition Decision Memorandum dated August 1993.

Approved Program (APB):

(U) NAE Approved Acquisition Program Baseline dated June 19, 1995.

6. (U) Mission and Description:

(U) The Multi-Mission Helicopter Upgrade (formally called LAMPS MK III Block II Upgrade) is a development program which brings critical capability improvements to the SH-60B/F helicopters. The capability improvements are essential to future tactical rotary-wing effectiveness in providing battlegroup protection while achieving coastal littoral battlespace dominance. The Block II Upgrade improves the capability of the LAMPS MK III Weapons System to provide battle group protection and adds significant capability in coastal littoral and regional conflicts. The Block II Upgrade entered Engineering and Manufacturing Development (EMD) in FY93 and represents a major avionics modification to the SH-60B, greatly enhancing both primary mission areas of Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASuW). The Airborne Low Frequency Sonar (ALFS) will be added to enhance the existing acoustic suite. ASuW effectiveness will be improved with the addition of a multi-mode radar which includes an inverse synthetic aperture imaging radar mode to permit stand-off classification of hostile threats. An improved Electronic Surveillance Measures (ESM) system will enable passive detection and targeting of radar sources not detectable with the current system. Aircrew and aircraft survivability in hostile environments will be significantly improved through software integration of the self-defense equipments. Provisions for a tactical data transfer system to improve platform interoperability by rapid, secure transfer of mission information between multiple air and surface units is included in the upgrade.

The ALFS program develops a low frequency sonar and increased sonobuoy processing capability for the SH-60 helicopter to maintain and improve undersea warfare mission effectiveness against the quiet submarine threat in both deep and shallow water environments. This project provides a dipping sonar with demonstrated deep water capabilities typically 3 to 6 times greater than the current in-service helicopter sonar (square miles of ocean searched per hour). The ALFS system (designated AN/AQS-22) will be installed in the SH-60R aircraft. ALFS provides longer detection ranges and greater detection capability by using lower frequencies, less signal attenuation, longer pulse lengths, improved processing and increased transmission power. This improvement will significantly increase battle group and independent ship protection providing improved survivability and operating flexibility. The ALFS program will utilize the Enhanced Modular Signal Processor (EMSP), designated UYS-2A, as its acoustic processor. The incorporation of enhanced shallow water detection/classification capability, improvements to the acoustic processor, and onboard acoustic performance predictions represent current developments to meet littoral challenges.

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7. (U) Executive Summary:

(U) A Tentative Operational Requirement (TOR) for the Block II Upgrade was received in the Naval Air Systems Command (NAVAIRSYSCOM) in May 1986. NAVAIRSYSCOM responded with a Development Options Paper in September of 1986 which listed options for meeting the established requirements and outlined the associated costs. A formal Operational Requirement (OR) for the LAMPS MK III Block II Upgrade was initiated. In April 1987 the Block II OR was revised to include the requirement for dipping sonar. The "Operational Requirements for SH-60B Block II Upgrade" (OR# 209-05-90) was approved in April 1988. The OR was again rewritten to respond to the format and requirements of DODINST 5000.2 and include Congressionally directed Electronic Surveillance Measures (ESM) improvements in 1991. The latest Operational Requirements Document (ORD# 314-03-92) was approved August 3, 1992. The program achieved a MSII decision for entry into Engineering, Manufacturing, and Development (EMD) in July 1993.

Since December 1990, IBM Federal Sector Division of Owego NY has been under contract to define the air vehicle and mission avionics systems required to meet the Navy's requirements. A structured systems engineering process has been implemented to identify requirements, flow them down into system, subsystem, prime item and critical item specifications, allocate the requirements to hardware and software critical items, perform industry surveys, trade studies, performance analysis, identification of promising technologies, risk identification and mitigation, and cost-benefit analysis of performance criteria. IBM was awarded an EMD contract on August 23, 1993. IBM Federal Sector Division was subsequently acquired by Loral Federal Systems in March 1994, and Lockheed Martin in April 1996.

An EMD contract for Airborne Low Frequency Sonar (ALFS) was awarded to the Hughes Aircraft Company in FY91. A system level Critical Design Review (CDR) was completed in FY93 and design verification testing completed at Seneca Lake, NY in FY94. The first two ALFS Engineering Development Models (EDMs) were delivered in FY95, with the system currently in an engineering and manufacturing development phase. Shallow Water Upgrade enhancements commenced September 1995; DTIIA testing commenced November 1995.

The scheduled Initial Operating Capability (IOC) has slipped from March 01 to October 02 due to the reprogramming of \$57M of Advance Procurement funding from FY98 into FY99 (\$41M) and FY01 (\$16M) regular procurement funding lines. This reprogramming action resulted from implementation of DoD advance procurement full funding policy. This reprogramming of funds also caused other milestone dates to slip one year (see Section 9a Schedule Milestones). DTIIA/DT Assist and CDR commenced in October 1996. Successful completion of ALFS DTIIA Seneca Lake Baseline Testing occurred in October 1996; ground and flight testing commenced November 1996.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

There are currently a schedule breach and RDT&E cost breach to the APB (dated June 1995). The schedule breach, affecting several milestones (see Section 9a), is due to the reprogramming of \$57M Advance Procurement funding from FY98 to FY99 (\$41M) and FY01 (\$16M). This reprogramming action resulted from implementation of DoD advance procurement full funding policy. The RDT&E cost breach is due to the funding for 4 LRIP test articles being converted from APN to RDT&E. A Program Deviation Report and new APB is being submitted.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone II	JUL 93	JUL 93	JUL 93
EMD Contract Award	JUL 93	JUL 93	AUG 93
Preliminary Design Review	JUL 95	JUL 95	NOV 95
Critical Design Review	OCT 96	OCT 96	MAR 97 (Ch-1)
LRIP Contract Award	NOV 98	NOV 98	JAN 00 (Ch-2)
LRIP First Delivery	JUL 00	JUL 00	JUL 01 (Ch-2)
TECHEVAL			
Start	JAN 00	JAN 00	JAN 01 (Ch-2)
Complete	JUN 00	JUN 00	JUN 01 (Ch-2)
OPEVAL			
Start	SEP 00	SEP 00	SEP 01 (Ch-2)
Complete	MAR 01	MAR 01	MAR 02 (Ch-2)
Milestone III	OCT 01	OCT 01	OCT 02 (Ch-2)
Airborne Low Frequency Sonar			
EMD Contract Award	JAN 92	JAN 92	JAN 92
Preliminary Design Review	OCT 92	OCT 92	OCT 92
Critical Design Review	APR 93	APR 93	APR 93

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

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
TECHEVAL			
Start	FEB 98	FEB 98	FEB 98
Complete	JUN 98	JUN 98	JUN 98
OPEVAL			
Start	JUL 98	JUL 98	JUL 98
Complete	SEP 98	SEP 98	SEP 98
Milestone III	JAN 99	JAN 99	JAN 99
Production Contract Award	MAR 99	MAR 99	MAR 99
Initial Operating Capability	MAR 01	MAR 01	OCT 02 (Ch-2)

b. (U) Current Change Explanations --

CH-1. Critical Design Review (CDR) changed from Oct 96 to Mar 97. Although the start date (Oct 96) does not change, CDR will not complete until Mar 97 due to technical issues regarding cockpit rearchitecture, design issues associated with integrated mission processor, multi-mode radar, and data display subsystem.

CH-2. The following schedule changes occurred due to a reprogramming of \$57M of FY98 Advance Procurement funding from FY98 to FY99 (\$41M) and FY01 (\$16M) regular funding resulting in an APB breach and program replan. A Program Deviation Report and new Acquisition Program Baseline is being submitted. Milestone date changes are as follows:

	From	To
LRIP Contract Award	Jan 99	Jan 00
LRIP First Delivery	Jul 00	Jul 01
TECHEVAL Start	Jan 00	Jan 01
TECHEVAL Complete	Jun 00	Jun 01
OPEVAL Start	Sep 00	Sep 01
OPEVAL Complete	Mar 01	Mar 02
Milestone III	Oct 01	Oct 02
IOC	Mar 01	Oct 02

10. (U) Performance Characteristics:

a. Performance --	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Maximum Operating Sea State	5	5 / 5	TBD	5
Mission Duration (ASW) (hrs)	3.3	3.3 / 2.3	TBD	2.3
Mission Duration (ASUW) (hrs)	3.5	3.5 / 3.0	TBD	3.0
Multi-Mode Radar				

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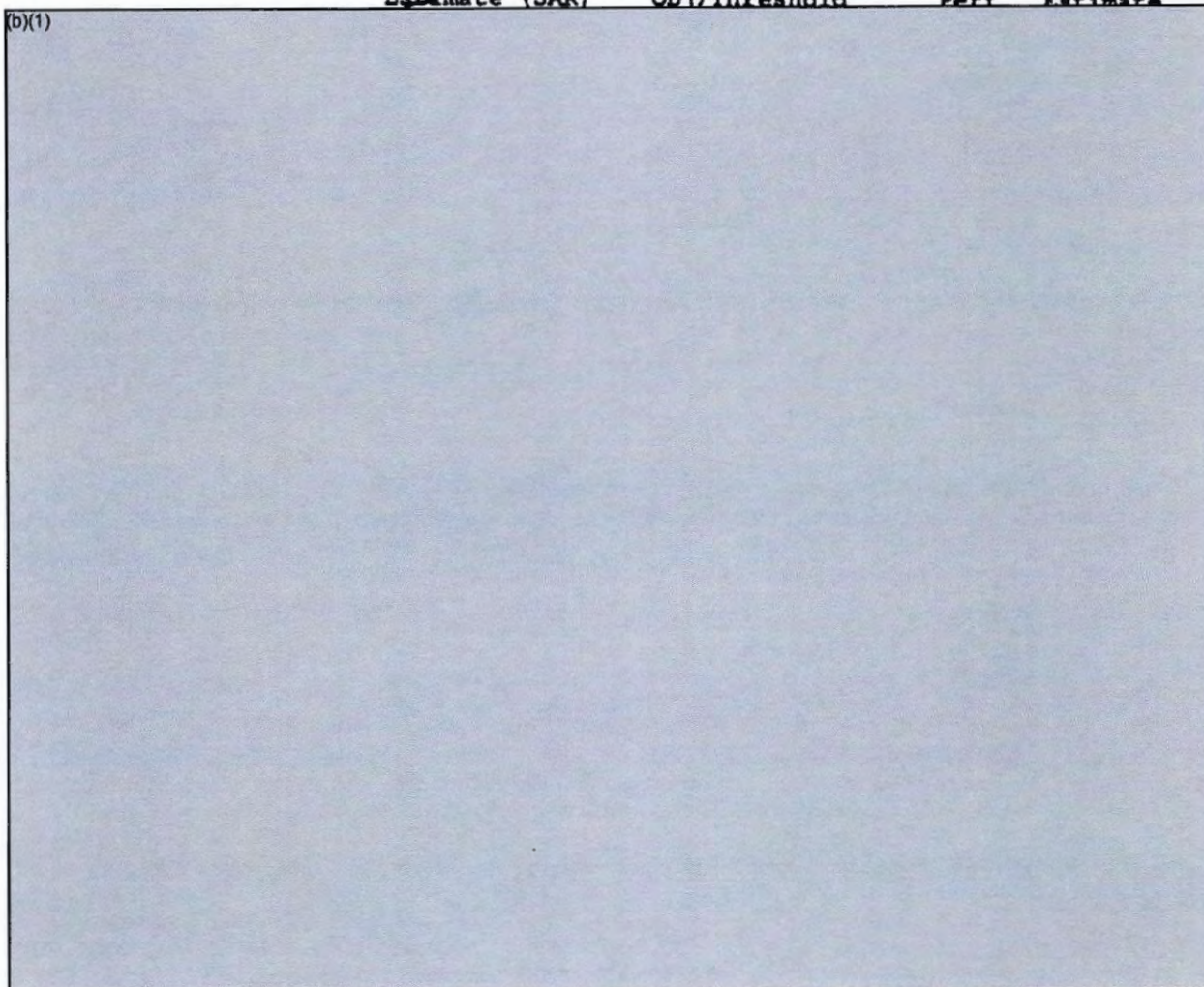
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SH-60R, December 31, 1996

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

a. Performance --	Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)

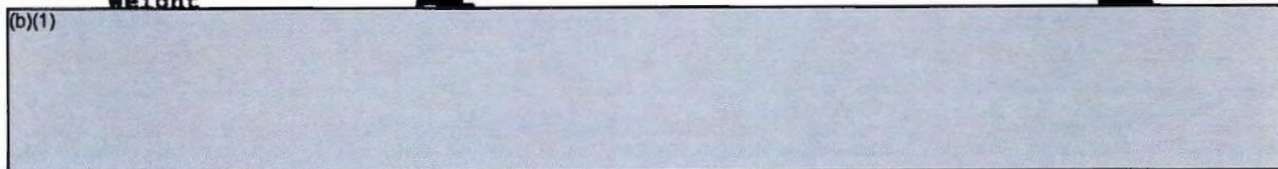


Airborne Low Frequency

Sonar

Operating Frequency (Khz)	<5	<5	/ <5	TBD	<5
Maximum System Weight	550	550	/ 550	TBD	550

(b)(1)



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

a. Performance --	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Reeling Machine	1000	1000 / 150	TBD	150
MCBCF (cycles)				
Avionics MTBMCF	78	78 / 53	TBD	53
(hrs) (excluding cable and reeling machine)				
MTBF (hrs)	58	58 / 39	TBD	39
MTTR, O Level (hrs)	2.0	2.0 / 3.8	TBD	3.8
Availability (%)	0.98	0.98 / 0.90	TBD	.90

b. Current Change Explanations -- None.

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	508.4	508.4	814.2
Procurement	3512.1	3512.1	3550.9
Airframe/CFE	(2119.0)		(2397.0)
GFE	(435.7)		(380.0)
Nonrecurring flyaway	(150.6)		(13.1)
Total Flyaway	(2705.3)		(2790.1)
Pubs	(40.0)		(77.6)
Weapon System	(5.6)		(4.9)
Field Activities	(165.5)		(156.0)
ILS/LSA/MES	(79.2)		(85.4)
Total Other Wpn Sys	(290.3)		(323.9)
Peculiar Support	(238.9)		(260.6)
Initial Spares	(277.6)		(176.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 93 Base-Year \$	4020.5	4020.5	4365.1
Escalation	1615.9	1615.9	1268.3
Development (RDT&E)	(40.3)	(40.3)	(76.1)
Procurement	(1575.6)	(1575.6)	(1192.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5636.4	5636.4	5633.4

b. (U) Quantity --

Development (RDT&E)	0	0	4
Procurement	188	188	184
Total	188	188	188

Note: Excludes 2 RDTE prototypes from the SAR Baseline and from the Current Estimate that are not considered fully configured.

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

(U) The total LRIP quantity of 53 (4 RDT&E, 39 Production) exceeds ten percent of the total procurement quantity in order to meet program objectives and ensure aircraft availability for fleet operations based on the designed life limit of 10,000 flight hours. Should the LRIP quantity be limited to 10% of total procurement, the number of aircraft unavailable for fleet operations while awaiting to enter the remanufacture process would be unacceptable for maintaining the inventory requisite for operational tempo and readiness.

c. (U) Foreign Military Sales --

None.

d. (U) Nuclear Costs --

None.

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUN 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 93 BY\$)	4365.1	4020.5	
(2) Quantity	188	188	
(3) Unit Cost	23.219	21.386	+8.57
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 93 BY\$)	3550.9	3512.1	
(2) Quantity	184	188	
(3) Unit Cost	19.298	18.681	+3.30

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	548.7	5087.7	-	5636.4
Previous Changes:				
Economic	-7.4	-461.6	-	-469.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+50.9	-	+50.9
Estimating	+68.2	-125.3	-	-57.1
Other	-	-	-	-
Support	-	+84.1	-	+84.1
Subtotal	+60.8	-451.9	-	-391.1
Current Changes:				
Economic	-0.8	+37.5	-	+36.7
Quantity	+190.9	-181.4	-	+9.5
Schedule	-	-145.4	-	-145.4
Engineering	+5.0	+33.5	-	+38.5
Estimating	+15.5	+497.5	-	+513.0
Other	-	-	-	-
Support	+70.2	-134.4	-	-64.2
Subtotal	+280.8	+107.3	-	+388.1
Total Changes	+341.6	-344.6	-	-3.0
Current Estimate	890.3	4743.1	-	5633.4

(U) Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	508.4	3512.1	-	4020.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+32.1	-	+32.1
Estimating	+61.3	-84.4	-	-23.1
Other	-	-	-	-
Support	-	+60.2	-	+60.2
Subtotal	+61.3	+7.9	-	+69.2
Current Changes:				
Economic	-	-	-	-
Quantity	+166.0	-155.3	-	+10.7
Schedule	-	-117.2	-	-117.2
Engineering	+4.5	+26.7	-	+31.2
Estimating	+13.6	+382.9	-	+396.5
Other	-	-	-	-
Support	+60.4	-106.2	-	-45.8
Subtotal	+244.5	+30.9	-	+275.4
Total Changes	+305.8	+38.8	-	+344.6
Current Estimate	814.2	3550.9	-	4365.1

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&E</u>		
	Total variance associated with transfer of 4 LRIP aircraft from AP,N to RDT&E,N.	+226.4	+261.1
	Quantity variance associated with the transfer of 4 LRIP aircraft from AP,N to RDT&E,N. (Quantity)	+166.0	+190.9
	Support costs associated with 4 LRIP aircraft transferred from AP,N to RDT&E,N. (Support)	+60.4	+70.2
	Revised escalation indices. (Economic)	N/A	-0.8
	Increase for System integration studies and initial design efforts for evaluation of Parametric Airborne Dipping Sonar (PADS). (Engineering)	+4.5	+5.0
	Increase for ALFS OT-IIA support. (Estimating)	+2.0	+2.2
	Increase for support of Block II Critical Design Review. (Estimating)	+1.9	+2.0
	Defense Business Operating Fund, Small Business Innovation Research, pricing adjustments, inflation adjustments, and other undistributed RDT&E adjustments. (Estimating)	-2.0	-2.0
	Increase for SH-60R development contract to maintain schedule requirements. (Estimating)	+6.2	+6.8
	Increase for ALFS Logistics Support Analysis, testing of DT/OT deficiencies, and Program Readiness Review. (Estimating)	+5.5	+6.0
	Reduction for AN/SQQ-89 Improvements. (Estimating)	-5.0	-6.0
	Increase for continuation of Block II development program. (Estimating)	+5.0	+6.3
	Minor estimating adjustment to reflect President's Budget. (Estimating)	0.0	+0.2
	RDT&E Subtotal	+244.5	+280.8
(2)	<u>Procurement</u>		
	Total variance associated with the transfer of 4 LRIP aircraft from AP,N to RDT&E,N.	-223.5	-261.1
	Quantity change associated with the transfer of 4 LRIP aircraft from AP,N to RDT&E,N (Total Flyaway). (Quantity)	-155.3	-181.4
	Estimating adjustment to airframe cost of 4 LRIP aircraft transferred from AP,N to RDT&E,N. (Estimating)	-8.1	-9.5

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Support costs associated with 4 LRIP aircraft transferred from AP,N to RDT&E,N. (Support)	-60.1	-70.2
Revised escalation indices. (Economic)	N/A	+22.3
Economic adjustment for negative program change. (Economic)	N/A	+15.2
Decrease due to change in procurement profile. (Schedule)	-117.2	-145.4
Addition of Left Hand Extended Pylon. (Engineering)	+26.7	+33.5
Refinement of prior estimates (increase in Airframe/Contractor Furnished Equipment, and Government Furnished Equipment electronics estimates). (Estimating)	+391.0	+507.0
Reduction in spares and refinement of other support element estimates. (Support)	-46.1	-64.2
Procurement Subtotal	+30.9	+107.3

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
29.98	-2.30	+0.04	-0.77	+0.48	+2.42	--	+0.11	-0.02	29.96

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.06	-2.30	-0.40	-0.79	+0.46	+2.02	--	-0.27	-1.28	25.78

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14e. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	JUL 93	N/A	JUL 93
Milestone III	N/A	OCT 01	N/A	OCT 02
FUE/IOC	N/A	MAR 01	N/A	OCT 02
Total Cost	N/A	5636.4	N/A	5633.4
Total Quantity	N/A	188	N/A	188
Prog Acq Unit Cost	N/A	29.98	N/A	29.96

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

a. RDT&E --
 (U) Development (Block II):
 Lockheed Martin, Owego, NY
 N00019-93-C-0196, CPFF
 Award: August 23, 1993
 Definitized: December 22, 1994

Current Contract Price			Estimated Price At Completion	
Target	Cailling	Qty	Contractor	Program Manager
\$266.5	N/A	2	\$284.3	\$299.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-7.6	\$-5.5
Cumulative Variances To Date (11/30/96)	\$-16.0	\$-8.8
Net Change	\$-8.4	\$-3.3

Explanation of Change:

(U) The Contractor for N00019-93-C-0196 changed from Loral to Lockheed Martin. Loral was acquired by Lockheed Martin in April 1996.

Technical and software productivity issues related to the development of the Integrated Mission Processor (IMP) subsystem, and software and engineering design activities associated with the Radar and Data Display subsystems continue to be the primary drivers behind the unfavorable cumulative cost and schedule variances.

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

(U) Development (ALFS):

Hughes Aircraft Company, Fullerton CA

N00019-92-C-0001, CPIF

Award: December 31, 1991

Definitized: December 31, 1991

Initial Contract Price		
Target	Ceiling	Qty
\$31.4	N/A	4

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$59.6	N/A	6	\$64.6	\$65.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-15.4	\$-1.8
Cumulative Variances To Date (01/21/97)	\$-18.3	\$-0.3
Net Change	\$-2.9	\$1.5

Explanation of Change:

(U) The completion of delinquent system development and test milestones account for the improvement to the unfavorable cumulative schedule variance. Although this contract is 94% complete, the additional cost associated with rework and test delays is the primary reason for the additional cost growth.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY90-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-11)	<u>Total</u>
RDTE	425.6	72.1	218.9	173.7	890.3
Procurement	-	-	-	4743.1	4743.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	425.6	72.1	218.9	4916.8	5633.4

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

b. Annual Summary -- Multi-Mission Helicopter

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY93 Dollars Nonrec	Flyaway FY93 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				11.1	10.3
1991				29.6	28.5
1992				53.7	53.2
1993				72.1	73.1
1994				68.5	70.8
1995				66.5	70.1
1996				60.6	65.2
1997				49.5	54.4
1998				64.3	72.1
1999				191.1	218.9
2000				107.6	125.9
2001				28.4	33.9
2002				6.2	7.6
2003				5.0	6.3
Subtotal	4			814.2	890.3

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY93 Dollars Nonrec	Flyaway FY93 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998					
1999					
2000	15		238.9	320.1	381.7
2001	15	13.1	233.4	322.4	392.9
2002	19		300.1	368.8	460.1
2003	21		324.4	395.9	506.3
2004	20		302.9	374.0	490.7
2005	20		294.1	361.3	486.4
2006	20		293.3	359.7	496.8
2007	20		292.4	358.1	507.5
2008	20		292.2	360.3	523.9
2009	14		205.3	260.3	388.3
2010				35.0	53.6
2011				35.0	54.9
Subtotal	184	13.1	2777.0	3550.9	4743.1

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	188	13.1	2777.0	4365.1	5633.4

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date - None.

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 377.9

(U) Percent Total Program Expended: 6.7%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The basis for this estimate, dated October 16, 1996, was demonstrated current systems Operating and Support costs adjusted for anticipated improvements in reliability (primarily based on an analogy with the SH-60B aircraft). Personnel costs are based on a 90% manning estimate to reflect the fact that operational squadrons are not always fully manned.

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Average Annual Cost per Squadron	Avg Annual Cost per SH-60B Squadron
Mission Pay & Allowances	8.7	6.3
Unit Level Consumption	9.3	1.4
Intermediate Maintenance	0.0	0.0
Depot Maintenance	3.1	2.3
Contractor Support	0.0	0.0
Sustaining Support	1.6	0.8
Indirect Costs	0.5	0.2
Total	23.2	11.0

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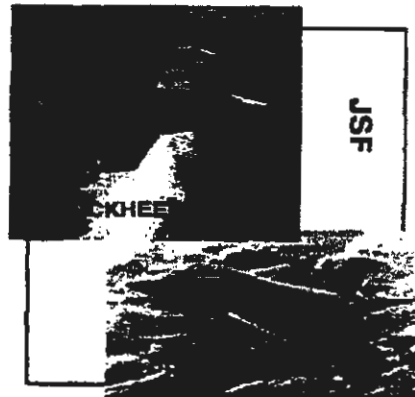
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: JSF

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Joint Strike Fighter (JSF)
Program

2. DoD Component: OSD

SAF/PAS

Joint Participants:

USAF, USN, USMC, DARPA, United Kingdom, Norway, Denmark, The Netherlands

97-0107

3. Responsible Office and Telephone Number:

CONGRESSIONAL

Joint Strike Fighter Program Office	RAFM Craig Steidle
1745 Jefferson Davis Hwy	Assigned: August 9, 1995
Suite 307	DSN 332-7638; COMM (703) 602-7638
Arlington, VA 22202-3402	Steidlece.entrprs.jast.mil

The JSF Program is a joint DoD program with no executive service. Service Acquisition Executive (SAE) Authority alternates between the Department of the Navy and the Department of the Air Force, and currently resides with the Air Force.

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603800E
PE 0603800F
PE 0603800N
PE 0604800F
PE 0604800N

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DIRECTOR, OFFICE OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

The United Kingdom, The Netherlands, Denmark and Norway are contributing funding for current JSF development efforts under the terms of

- 1 -

OASD(PA) DPMR 97C 0400

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

existing or pending formal agreements. Foreign participation in the Engineering and Manufacturing Development (E&MD) Phase commencing in 2001 is anticipated. This SAR includes funding from foreign sources as reflected in Section 16.

5. References:

SAR Baseline (Planning Estimate):

Defense Acquisition Executive (DAE) Approved Program Baseline (APB) dated November 15, 1996.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated November 15, 1996.

6. Mission and Description:

The Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next-generation strike aircraft for the United States Navy, Air Force, Marine Corps and allies. The carrier suitable variant of the JSF will provide the Navy a first day of the war, survivable strike fighter aircraft to complement the F/A-18E/F. The Air Force variant will be a multirole aircraft, primary-air-to-ground, to replace the F-16 and A-10 (Service intent) and complement the F-22. The Short Takeoff and Vertical Landing (STOVL) variant will be a multirole strike fighter aircraft to replace the AV-8B and F/A-18A/C/D for the Marine Corps, and replace the Sea Harrier for the United Kingdom Royal Navy. The cornerstone of the JSF Program is affordability -- reducing the development cost, production cost, and cost of ownership of the JSF family of aircraft. The program was structured from the beginning to be a model of acquisition reform, with an emphasis on jointness, technology maturation and concept demonstrations, and early cost and performance trades integral to the weapon system requirements definition process.

7. Executive Summary:

The Department of Defense established the Joint Advanced Strike Technology (JAST) Program, now called the Joint Strike Fighter Program, as an outcome of the 1993 Bottom-Up Review. The program was created as the focal point for defining affordable next-generation strike weapon systems to replace aging Navy and Air Force tactical assets. Program emphasis is on affordability -- reducing the development cost, production cost, and cost of ownership of the JSF family of aircraft.

Fiscal Year 1995 legislation merged the Defense Advanced Research Projects Agency (DARPA) Advanced Short Take-Off and Landing (ASTOVL) program with the then-JAST Program. Facilitated by the JSF Program Office, the Services produced the Joint Initial Requirements Document (JIRD) in August 1995 and briefed it to the Joint Requirements Oversight Council (JROC). The JROC endorsed the program process and the "family of aircraft" strategy, and emphasized the "great potential towards achieving an affordable solution to meet our joint warfighting capability." The United Kingdom became a

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7. Executive Summary (Cont'd):

collaborative partner in the program under the terms of a Memorandum of Understanding (MOU) signed in December 1995, extending a collaboration begun under the DARPA ASTOVL program. The Under Secretary of Defense for Acquisition and Technology designated the JSF Program a joint, DoD Acquisition Category ID Program in May 1996. Norway, Denmark and The Netherlands will participate in the program effective in FY 1997 under the terms of a pending multi-lateral agreement.

Since inception, program activities have centered around three objectives that provide a sound foundation for start of E&MD in 2001: (1) facilitating the Services development of fully validated, affordable operational requirements; (2) lowering risk by investing in and demonstrating key leveraging technologies that lower the cost of development, production and ownership; and (3) demonstrating operational concepts. The Concept Exploration and Concept Development Phases of the JSF Program are completed. Concept Demonstration efforts commenced in November 1996 with competitive contract awards to Boeing and Lockheed Martin for Concept Demonstration Programs (CDP). These competing contractors will build and fly concept demonstrator aircraft, conduct concept unique ground demonstrations, and continue refinement of their ultimate delivered weapon system concepts. Specifically, both Boeing and Lockheed Martin will demonstrate commonality and modularity, STOVL hover and transition, and low speed handling qualities of their concepts. Pratt and Whitney is providing propulsion hardware and engineering support for the Weapon System Concept Demonstration efforts. General Electric is continuing technical efforts related to development of an alternate engine source for production. Requirements definition and technology maturation efforts also continue in this phase.

This is an RDT&E-only SAR since JSF is a pre-Milestone II program. Limited reporting is permitted for pre-Milestone II programs in accordance with Title 10, United States Code, Section 2432, "SARs."

This is an initial SAR.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

Nunn-McCurdy unit cost is not applicable for pre-Milestone II programs.

9. Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
	NOV 96	NOV 96	NOV 96
Concept Demonstration			
Contract Award			
Milestone II	MAR 01	MAR 01	MAR 01
Milestone III	TBD	TBD	TBD
IOC	TBD	TBD	TBD

b. Current Change Explanations -- None.

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10. Performance Characteristics:

a. Performance --

Jt Init Rqmts Document (JIRD) 1 Desired Operational Characteristics	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
CTOL Capability	Yes	Yes / Yes	TBD	Yes
STOVL Capability (STOVL Variant)	Yes	Yes / Yes	TBD	Yes
Aircraft Carrier Suitable (CV Variant and STOVL Variant)	Yes	Yes / Yes	TBD	Yes
Range Radius NM - CTOL Variant	450-600	450-600 / N/A	TBD	450-600
Range Radius NM - STOVL Variant	450-550	450-550 / N/A	TBD	450-550
Range Radius NM - CV Variant	>600	>600 / N/A	TBD	>600
Internal Weapons Carriage - CTOL Variant	2 X 1000# class A-G, 2 X AIM-120, Internal Gun	2 X / N/A 1000# / class / A-G, 2 X/ AIM-120,/ Internal/ Gun /	TBD	2 x 1000# class A-G, 2 X AIM-120, Internal Gun
Internal Weapons Carriage - STOVL Variant	2 X 1000# class A-G, 2X AIM-120	2 X / N/A 1000# / class / A-G, 2X / AIM-120 /	TBD	2 X 1000 # class A-G, 2 X AIM-120
Internal Weapons Carriage - CV Variant	2 X 2000# class A-G, 2 X AIM-120	2 X / N/A 2000# / class / A-G, / 2 X / AIM-120 /	TBD	2 X 2000# class A-G, 2 X AIM-120
Speed & Maneuverability	compa- rable to F-16 / F/A-18	Compa- rable to / F-16 / / F/A-18 /	TBD	compa- rable to F-16/ F/A-18
Strike and Destroy Targets Day or Night in Adverse Weather Conditions	Yes	Yes / N/A	TBD	Yes

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10a. Performance Characteristics (Cont'd):

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
	Yes	Yes	/ N/A	TBD	Yes
Integration of Offboard Sensors and Data Fusion					
Signature Reduction /Low Observables	Yes	Yes	/ N/A	TBD	Yes
Logistic Footprint	5-8 C-141B equiva- lent loads	5-8 C-141B equiva- lent loads	/ N/A / / /	TBD	5-8 C-141B equival- ent loads
Sortie Generation Rate - CTOL Variant	3-4/day sus- tained; 4-5/day surge	3-4/day sus- tained; 4-5/day surge	/ N/A / / /	TBD	3-4/day sus- tained; 4-5/day surge
Sortie Generation Rate - CV Variant	3/day sus- tained; 4/day surge	3/day sus- tained; 4/day surge	/ N/A / / /	TBD	3/day sus- tained; 4/day surge
Sortie Generation Rate - STOVL Variant	4/day sus- tained; 6/day surge	4/day sus- tained; 6/day surge	/ N/A / / /	TBD	4/day sus- tained; 6/day surge
Unit Flyaway Cost - CTOL Variant	\$28M	\$28M	/ N/A	TBD	\$28M
Unit Flyaway Cost - CV Variant	\$31-38M	\$31-38M	/ N/A	TBD	\$31M
Unit Flyaway Cost - STOVL Variant	\$30-35M	\$30-35M	/ N/A	TBD	\$30M

NOTES:

The above Desired Operational Characteristics are documented in the Joint Initial Requirements Document (JIRD) dated 15 August 1995. The Services will update the JIRD annually with the Joint Requirements Oversight Council (JROC) based on results of cost and operational trades using cost as an independent variable; consequently the Desired Operational Characteristics are subject to change. Objectives and additional thresholds will be established for Key Performance Parameters upon signature of the Joint Operational Requirements Document (JORD) nearing Milestone II.

JSF Variants:

USAF - Conventional Take-Off and Landing (CTOL)
USN - Aircraft Carrier Suitable (CV)
USMC - Short Take-Off and Vertical Landing (STOVL)

Unit flyaway costs above are constant base year FY94 dollars.

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10a. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None.

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

a. Cost --	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	19000.0	19000.0	18860.4
Procurement	0.0	N/A	
Total Sailaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 94 Base-Year \$	19000.0	19000.0	18860.4
Escalation	5800.0	5800.0	4305.5
Development (RDT&E)	(5800.0)	(5800.0)	(4305.5)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	24800.0	24800.0	23165.9
b. Quantity --			
Development (RDT&E)	N/A	N/A	N/A
Procurement	N/A	N/A	N/A
Total	N/A	N/A	N/A

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

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

13. Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	24800.0	-	-	24800.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-1230.4	-	-	-1230.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-403.7	-	-	-403.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1634.1	-	-	-1634.1
Total Changes	-1634.1	-	-	-1634.1
Current Estimate	23165.9	-	-	23165.9

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

Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Planning Estimate	19000.0	-	-	19000.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-139.6	-	-	-139.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-139.6	-	-	-139.6
Total Changes	-139.6	-	-	-139.6
Current Estimate	18860.4	-	-	18860.4

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	RDTE		
	Revised escalation rates from 1995 to 1997 (Economic)	N/A	-1230.4
	Adjustment to reflect uniform application of escalation in prior estimate (Estimating)	-139.6	-403.7
	RDTE Subtotal	-139.6	-1634.1

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

- a. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.
- b. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	MAR 01	N/A	N/A	MAR 01
Milestone III	TBD	N/A	N/A	TBD
FUE/IOC	TBD	N/A	N/A	TBD
Total Cost	N/A	N/A	N/A	N/A
Total Quantity	N/A	N/A	N/A	N/A
Prog Acq Unit Cost	N/A	N/A	N/A	N/A

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

a. RDT&E --
Propulsion CDP:
 Pratt and Whitney, West Palm Beach FL
 N00019-97-C-0050, CPAF
 Award: January 23, 1997
 Definitized: January 23, 1997

Initial Contract Price		
Target	Ceiling	Qty
\$832.0	\$	

Current Contract Price		
Target	Ceiling	Qty
\$832.0	\$	

Estimated Price At Completion	
Contractor	Program Manager
\$	\$

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

Explanation of Change:

Contract performance data is not provided here due to the competitive nature of the contract.

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15. Contract Information (Cont'd):

Weapon System CDP:
Lockheed Martin Corp., Ft. Worth TX
N00019-97-C-0038, CPFF
Award: November 16, 1996
Definitized: November 16, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$718.8	\$	

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$718.8	\$	

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$	\$

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
\$	\$
\$	\$

Explanation of Change:

Contract performance data is not provided here due to the competitive nature of the contract.

Weapon System CDP:
Boeing Defense and Space, Seattle WA
N00019-97-C-0037, CPFF
Award: November 16, 1996
Definitized: November 16, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$661.8	\$	

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$661.8	\$	

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$	\$

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
\$	\$
\$	\$

Explanation of Change:

Contract performance data is not provided here due to the competitive nature of the contract.

Alternate Engine:
General Electric, Cincinnati, OH
N00019-96-C-0176, CPFF
Award: February 13, 1997
Definitized: February 13, 1997

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$96.0	\$	

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>

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15. Contract Information (Cont'd):

\$96.0 \$ \$

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	<u>\$</u>	<u>\$</u>
Net Change	<u>\$</u>	<u>\$</u>

Explanation of Change:

Contract performance data is not provided here due to the competitive nature of the contract.

J/IST:
McDonnell Douglas Corp., St. Louis MO
F33615-95-R-3801, CPFF
Award: September 22, 1995
Definitized: September 22, 1995

<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$63.6	\$	

<u>Current Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$63.6	\$	

<u>Estimated Price At Completion</u>	
<u>Contractor</u>	<u>Program Manager</u>
\$63.6	\$63.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	<u>\$-0.4</u>	<u>\$-0.5</u>
Net Change	<u>\$-0.4</u>	<u>\$-0.5</u>

Explanation of Change:

Initial SAR; variance is not significant.

MIRFS:
Hughes Aircraft Company, Los Angeles CA
N00019-96-C-0074, CPFF
Award: February 12, 1996
Definitized: February 12, 1996

<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$54.6	\$	

<u>Current Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$54.6	\$	

<u>Estimated Price At Completion</u>	
<u>Contractor</u>	<u>Program Manager</u>
\$54.6	\$54.6

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$0.8	\$0.0
Net Change	\$0.8	\$0.0

Explanation of Change:

Initial SAR; variance is not significant.

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

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

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-08)</u>	<u>Total</u>
RDT&E	1070.1	995.5	950.7	20149.6	23165.9
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1070.1	995.5	950.7	20149.6	23165.9

b. Annual Summary -- JSF

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				27.4	28.9
1997				71.4	76.9
1998				21.7	23.9
Subtotal				120.5	129.7

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				29.1	29.5
1995				95.1	98.3
1996				75.8	80.0
1997				228.5	246.1
1998				408.2	448.9
1999				394.9	443.5
2000				217.5	249.4
2001				498.4	583.6

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

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				1168.5	1398.0
2003				1562.8	1913.7
2004				1556.6	1955.6
2005				1286.7	1658.6
2006				778.0	1028.9
2007				411.9	558.9
2008				91.5	127.4
Subtotal				8803.5	10820.4

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				81.1	83.8
1996				77.1	81.3
1997				233.9	252.0
1998				416.5	458.1
1999				414.6	465.6
2000				214.0	245.4
2001				498.6	583.9
2002				1170.1	1399.9
2003				1564.5	1915.7
2004				1555.5	1954.2
2005				1283.3	1654.2
2006				778.0	1028.9
2007				411.9	558.9
2008				91.5	127.4
Subtotal				8790.6	10809.3

Appropriation: 9991 Other RDT&E Funding

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				13.3	14.0
1997				73.6	79.3
1998				58.7	64.6
1999				37.0	41.6
2000				27.0	31.0
2001				59.9	70.1
2002				140.3	167.8

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

Appropriation: 9991 Other RDT&E Funding

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				186.9	228.9
2004				204.5	256.9
2005				181.1	233.4
2006				99.3	131.3
2007				52.5	71.3
2008				11.7	16.3
Subtotal				1145.8	1406.5

"Other RDT&E Funding" reflects current and anticipated foreign funding

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				120.5	129.7
Navy				8803.5	10820.4
USAF				8790.6	10809.3
Other Funding				1145.6	1406.5
Grand Total				18860.4	23165.9

17. Delivery/Expenditure Information:

a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 363.2

Percent Total Program Expended: 1.6%

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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AF-7 C-17A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: C-17A

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): C-17 Globemaster III

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

C-17 SYSTEMS PROGRAM OFFICE	B/GEN CHARLES L. JOHNSON
AERONAUTICAL SYSTEMS CENTER	Assigned: June 4, 1996
2590 LOOP ROAD WEST	DSN 785-1545; COMM 937-255-1545
WPAFB, OH 45433-7142	johnsocl@c17mis.wpafb.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0401130F
PE 0604227F (Shared) Project 663282
PE 0604231F
PE 0604609F (Shared) Project 663263 (Shared)

PROCUREMENT:

APPN 3010 ICN C017AD (Air Force)

MILCON:

PE 0401130F

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DIRECTOR, CENTRAL INTELLIGENCE
AND
ASSISTANT SECRETARY FOR
INTELLIGENCE

SAF/PAS

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97-C-0552

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5. References:

SAR Baseline (Production Estimate):

Program Management Directive 0020(22), dated May 10, 1989. Amended FY91 President's Budget.

Approved Program:

Approved Acquisition Program Baseline (APB) dated March 1, 1996.

6. Mission and Description:

The purpose of the C-17 aircraft is to modernize the airlift fleet and improve the overall capability of the US to rapidly project, reinforce, and sustain combat forces worldwide. The aircraft augments the C-5 and will replace the C-141 in intertheater deployment and augments the C-130 with intratheater operations. Because the C-17 is capable of carrying outsize cargo over intertheater ranges into austere airfields, it introduces a direct deployment capability that significantly improves airlift responsiveness. This improved responsiveness dramatically improves the mobility of our general purpose forces.

Significant features of the multi-engine C-17 include: super critical wing design and winglets to reduce drag and increase fuel efficiency and range; receive 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 capability to operate into and out of small austere airfields; forward and upward directed thrust reverser system that provides backup capability, reduces the aircraft ramp space requirements, and minimizes interference of dust and debris on the activities of ground personnel; cargo door, ramp airdrop, and cargo restraint systems that are operable by a single loadmaster and permit immediate equipment offload without special handling equipment; two-man cockpit with cathode ray tube displays that reduce complexity and improve reliability; maximum use of built-in test features to reduce maintenance and troubleshooting times; and walk-in avionics bays that improve accessibility. The end result is significantly reduced maintenance manhours per flight hour.

7. Executive Summary:

In 1981 the Secretary of Defense directed funding for a new aircraft to increase the nation's strategic airlift capability. That new aircraft was the C-17. The research and development contract was awarded in Jul 82 and initial production began in Jan 88. The Milestone III decision authorized the full rate production of 120 total aircraft in Nov 95.

The Air Force announced that 48 C-17s will be assigned to both Charleston AFB SC and McChord AFB WA. In addition, Altus AFB OK will receive eight training aircraft and the 172nd AW(ANG) in Jackson MS will receive six aircraft. AMC will distribute the remaining ten aircraft to C-17 units as backup aircraft.

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C-17A, December 31, 1996

7. Executive Summary (Cont'd):

Activation of the 58th Airlift Squadron at Altus AFB OK occurred on 30 Jan 96. The new squadron received its first aircraft on 23 Mar 96. A second weapon system trainer was installed at Altus. This trainer provides additional throughput capability to meet AMC's requirements for trained aircrews.

On 1 Feb 96, the C-17 became the first major Air Force program to implement a commercial quality system. The new system is based on ISO-9000 and is a major change from the old MIL-SPEC quality program. The new quality program will greatly enhance program ability to meet affordability goals and embrace the current reform initiative relating to the adoption of commercial practices on military programs.

The C-17 received Flight International's Annual Aerospace Industry Award for Military Aviation during a ceremony in Singapore. The award is given to recognize and reward the very best in the international aerospace industry.

During the Bosnia deployment, the C-17 transported more than 15,000 passengers, including the President of the United States and first family, the Secretary of State, and the Secretary of Defense, plus over half of the airlift cargo supporting Operation Joint Endeavor. Between Dec 95 and the end of Feb 96, the C-17 Globemaster III excelled in flying intratheater as well as intertheater cargo from the US and the United Kingdom to Rhein-Main AB, Germany; Sarajevo and Tuzla, Bosnia; and Tazsar, Hungary.

During Mar 96, the first two C-17 subcontracts were awarded under the DoD established Mentor Protege Program. The program is designed to assist minority contractors with the transfer of technologies and knowledge. Aircraft Engineering Corporation will assemble centerline bulkheads for the C-17 wing and Mid-America Consulting Group will provide avionics and electronics engineering services for the Avionics Integration Support Facility.

The Personnel Airdrop Optimization (PAO) Phase II contract was awarded on 12 Mar 96. The goal of PAO II was to provide a solution to permit use of the standard Army 15-foot static line and to increase the airdrop entry gross weight above 360,000 pounds. Previously, the C-17 was limited to a nonstandard, 20-foot static line to prevent jumpers from contacting deployment bags (d-bags) during aircraft exit. The McDonnell Douglas effort to return to 15-foot static lines included flight test and wind tunnel testing of 26 material solution candidates from May to Sep 96. Although this combined solution raised the cluster of deployment bags higher along the fuselage, no aircraft modification tested will fully eliminate d-bag contact. The C-17 System Program Office (SPO) recommended the 20-foot static line as the only solution which definitively eliminates d-bag contact. Test results indicated the 20-foot line is feasible on C-17, as well as C-130 and C-141 aircraft. Pursuit of aircraft modification was terminated and the Army is now proceeding with a universal 20-foot static line option.

On 26 Apr 96, President Clinton signed into law the FY96 Supplemental Appropriation Bill that contained language approving a multiyear procurement of

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C-17A, December 31, 1996

7. Executive Summary (Cont'd):

80 C-17 aircraft. On 31 May 96, Secretary Widnall signed letters of transmittal to McDonnell Douglas Aircraft and Pratt & Whitney for the procurement of 80 C-17 aircraft and the associated engines. The contracts are valued at \$16.2B. These long-term commitments are the longest and largest multiyear contracts ever entered into by the Department of Defense. Execution of the multiyear procurement strategy will save the US taxpayer more than \$1B over a 7-year period. This \$1B savings is in addition to the previously negotiated annual savings of approximately \$4.4B realized from production efficiencies, streamlining, and reform initiatives.

To support HQ AMC's request to develop a safe C-17 formation geometry, multiple aircraft tests were conducted in order to define the risk of paratrooper interaction with wake vortices. The C-17 SPO recommended a multi-ship, multi-element, echelon formation geometry in all wind conditions. Subsequent to 6-months of buildup testing, a successful mass jump of 612 paratroopers from six aircraft in the echelon formation was completed 31 Jan 97. The Army staff is now reviewing the test results and preparing to issue an operational release of capability.

A labor dispute began in the McDonnell Douglas, St. Louis production facility on 4 Jun 96. The St. Louis facility produces over 20,000 detailed parts and 10 major assemblies comprising approximately 27% of the C-17 by weight. Throughout the strike, the C-17 production areas were manned at approximately 175 percent of pre-strike levels. Deliveries of all parts and major assemblies for aircraft through P-33 delivered well before contractually required dates. The International Association of Machinist and Aerospace Workers settled their dispute with McDonnell Douglas on 6 Sep 96 and returned to work on 16 Sep 96.

On 17 Jul 96, the durability test article successfully completed the third lifetime of testing. Pressure cycle testing is continuing and was 30 percent complete at the end of Dec 96.

On 5 Sep 96, the United Auto Workers Union went on strike against the ALCOA Cleveland Forge Division. Contract discussions began 25 Sep 96. Ratification of a new agreement occurred 27 Sep 96; workers returned to the factory on 30 Sep 96. This short strike had minimal impact on the C-17 program.

The C-17 was well received at the Farnborough International Air Show in the United Kingdom. Aircraft P-26 flew to the air show from Charleston AFB SC. Admiral (Ret) William J. Crowe Jr., Ambassador to the Court of Saint James and the former Chairman of the Joint Chiefs of Staff, and the Secretary of the Air Force, Dr. Sheila Widnall, visited the McDonnell Douglas Transport Aircraft booth.

The C-17/Non-Developmental Airlift Aircraft Program Team was awarded the second annual John J. Welch Jr. Award for Excellence in Acquisition Management. This award is presented to the team demonstrating superior management in the acquisition area by: significantly increasing present or future operational effectiveness of a weapon system; developing improved or new management practices; reducing cost or time in acquisition; improving weapon system

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7. Executive Summary (Cont'd):

support and readiness for the Air Force. The team was recognized for implementing innovative reforms to processes and operating procedures, which dramatically improved the cost, timeliness, quality, and operational effectiveness of delivered aircraft.

The SPO accelerated developing and fielding a minor software change to correct in-flight shutdown of the flight director and autopilot when crossing the equator. All aircraft were corrected as of 11 Jan 97. The problem, first discovered during developmental test and evaluation, was scheduled for correction as part of the Block 8 software upgrade. The correction was made early because of anticipated operations across the equator to support Phoenix Tusk.

To aid the refugees in Zaire, the 437th Air Wing deployed nine C-17s to Rhein-Main AB, Germany as a part of Operation Phoenix Tusk. The aircraft performed a variety of missions from Rhein-Main. The Globemasters maintained a mission capable rate of approximately 97 percent and have now returned to Charleston AFB SC.

In Sep 96, the Air Force Chief of Staff directed the initiation of the Air Mobility Contingency Precision Approach Capability. The effort will develop and field a precision approach and landing capability on 35 C-17 aircraft by 30 Dec 97. The GEC Marconi Precision Landing System Receiver (PLSR) will provide the capability for AMC to operate from locations equipped with standard USAF Mobile Microwave Landing System transmitters. On 22 Nov 96, an Undefined Contract Action was awarded to McDonnell Douglas for the development and integration of the PLSR on the C-17. New start notification for the retrofit effort was sent to Congress on 6 Jan 97.

In Nov 96, the SPO completed a Depot Support Strategy study which was a cost benefit analysis of organic versus contractor depot support for the C-17. This study examined every subsystem in detail and showed that contractor logistics support was a viable option. However, because of factors including DOD policy to out source support, the uncertainties surrounding core depot work and 60/40 legislation, system immaturity, and the potential of savings from a commercial variant of the C-17, the SPO developed a concept called Flexible Sustainment. This concept was developed in coordination with using commands, Air Logistics Centers, and the Defense Logistic Agency and provides for C-17 support until some of the aforementioned uncertainties become clear. Under this concept, the prime contractor would provide not only the existing field support services and depot level maintenance and modifications, but also material management configuration control and improved data management systems. This interim contractor support would continue through production, but two years prior to contract termination a final decision on the long term support posture for the C-17 would be made. The contractor would be incentivized to improve long term readiness and supportability and would be held responsible to overarching weapon system metrics such as mission capability rates and cost per flying hour.

On 7 Nov 96, the C-17 program office was awarded the 1996 Schriever Award for outstanding product management and for their significant contributions towards

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7. Executive Summary (Cont'd):

the implementation of Integrated Weapon System Management. The C-17 program office located at Wright Patterson AFB OH, along with their support system partners at Kelly AFB TX, have established, maintained, and continued to strengthen their emphasis on customer focus and have demonstrated exceptional responsiveness to the needs of the Air Mobility Command.

The Semi-Prepared and Matted Runway program conducted a joint Army-Air Force meeting in early Nov 96 to finalize the costs and schedule requirements. During mid-Dec 96, a team of Army and Air Force civil engineers, combat controllers, and flight test engineers surveyed eight candidate semi-prepared runway test sites for future runway friction testing.

The Diminishing Manufacturing Sources Action Team began a program to manage obsolete parts and material shortages. The goal is to develop the processes, gain the necessary funding, and plan for production and support of aircraft systems containing obsolete components. Avionics is the predominant area impacted due to the high concentration of integrated circuits and their short technology life spans. The team is currently evaluating the potential risk to the C-17 program and is gathering data from various government and commercial sources.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Source Selection Decision	AUG 81	N/A	AUG 81
Contract Award	JUL 82	N/A	JUL 82
Start FSED	FEB 85	N/A	FEB 85
Milestone II (DSARC)	NOV 87	FEB 85	FEB 85
First Full Funded Production Lot	JAN 88	JAN 88	JAN 88
Milestone IIIA (DAB)	NOV 87	JAN 89	JAN 89
Low-Rate Initial Production	N/A	JAN 89	JAN 89
First Flight	JUN 91	N/A	SEP 91
T-1 First Flight	N/A	JUN 91	SEP 91
IOC (Delivery of 12 A/C to sqdn)	JUN 93	JAN 95	JAN 95
Complete DT&E/IOT&E	JUN 93	N/A	N/A
DT&E			
Start	N/A	JUN 91	SEP 91
Complete	N/A	DEC 94	DEC 94
IOT&E			
Start	N/A	DEC 94	DEC 94
Complete	N/A	JUN 95	JUN 95
Full Rate Production Contract Award	N/A	FEB 96	FEB 96
RM&AE (Formerly ORE)	N/A	JUL 95	AUG 95
Milestone IIIB	SEP 93	NOV 95	NOV 95
FOC	SEP 01	TBD	TBD
Depot Support Date	N/A	TBD	TBD

b. Current Change Explanations --

There have been no schedule changes since the 31 Dec 95 Selected

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9b. Schedule (Cont'd):
Acquisition Report.

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
Maintenance Manhours Per Flying Hour (Air Vehicle)	14.6	N/A	/ N/A	N/A	N/A
Mean Time Between Maintenance Inherent (hrs) (MTBMI)	1.69	N/A	/ N/A	N/A	N/A
Mean Time Between Maintenance Corrective (hrs) (MTBMC)	.83	.78	/ .75	1.56	0.88
Mean Time Between Removal (hrs) (MTBR)	5.37	2.8	/ 2.5	7.45	4.67
Mean Manhours to Repair (hrs)	4.51	7.35	/ 7.35	2.70	6.67
Maximum Take-off Gross Weight (lbs) (TOGW)	580000	N/A	/ N/A	N/A	N/A
Maximum Payload (lbs)	172200	N/A	/ N/A	N/A	N/A
Payload at Range (lbs @ 2400 nm)	167006	N/A	/ N/A	N/A	N/A
Range Unrefueled (nm)	2372	N/A	/ N/A	N/A	N/A
Landing Field Length (ft)	2541	3,000	/ 3,000	2500	2900
Takeoff Field Length (ft)	7370	N/A	/ N/A	N/A	N/A
Cruise Speed (Mach) (450 KTAS)	.77	N/A	/ N/A	N/A	N/A
Backup Capability (% grade)	2	2	/ 1.5	3.8	3.8
Mission Completion Success Probability (%)	94	N/A	/ N/A	N/A	N/A
Payload Range at 3200 nm (LBS)	N/A	130,000	/ 110,000	113000	131000
Turning Capability (ft for 180 degree turn)	N/A	96	/ 90	96/80	96/80
Vehicles/Rolling Stock/Outsize Cargo (no of vehicle load configurations)	N/A	15	/ 15	15	15
Airdrop No. of persons	N/A	102	/ 102	102	102

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10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
LBS of heavy eqmt	N/A	110,000 / 60,000	110000/ 60000	110000/ 60000
No. of CDS bundles	N/A	40 / 30	40	40

The demonstrated performance for number of Container Delivery Systems (CDS) bundles changed from 30 to 40 using the Enhanced Container Vertical Restraint (ECVR) which allows for the last 10 remaining bundles to be put on the ramp. Testing at Edwards AFB CA was completed on 24 Jun 96. The ECVR will be incorporated on production aircraft beginning with P-41. On 25 Oct 96, the SPO recommended AMC release the capability dependent upon completing ECVR retrofit of delivered aircraft.

b. Current Change Explanations -- None.

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	6463.2	7733.3	7620.9
Procurement	34419.2	32824.2	32149.4
Airframe	(22158.8)		(22683.9)
Engines	(5478.3)		(2212.3)
Avionics	(1168.8)		(898.7)
ECO			(168.1)
Product Improvement			(379.9)
Non Recurring			(1090.6)
Total Flyaway	(28805.9)		(27433.5)
Total Other Weapon System			(0.0)
Peculiar Support	(2267.0)		(2876.0)
Initial Spares	(3346.3)		(1839.9)
Construction (MILCON)	368.5	334.4	354.1
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	41250.9	40891.9	40124.4
Escalation	561.0	2369.8	1229.4
Development (RDT&E)	(-1122.3)	(-998.6)	(-921.3)
Procurement	(1673.7)	(3356.8)	(2141.3)
Construction (MILCON)	(9.6)	(11.6)	(9.4)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	41811.9	43261.7	41353.8

Total program current estimate changes since the Dec 95 SAR reflect additional Multiyear Procurement savings and reductions to budgets.

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

b. Quantity --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0	0	0
Procurement	210	120	120
Total	210	120	120

NOTES:

The quantity excludes one aircraft (T-1) that is fully configured as a test article; it is not reconfigured to the production configuration.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 96 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	40124.4	40891.9	
(2) Quantity	120	120	
(3) Unit Cost	334.370	340.766	-1.88
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	32149.4	32824.2	
(2) Quantity	120	120	
(3) Unit Cost	267.912	273.535	-2.06

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	5340.9	36092.9	378.1	41811.9
Previous Changes:				
Economic	+100.2	-208.3	-7.4	-115.5
Quantity	-	-11383.3	-	-11383.3
Schedule	-	+2939.8	+10.1	+2949.9
Engineering	+17.5	+86.5	-	+104.0
Estimating	+1094.3	+7302.1	-45.8	+8350.6
Other	+170.0	+178.0	-	+348.0
Support	-21.8	-293.2	-	-315.0
Subtotal	+1360.2	-1378.4	-43.1	-61.3
Current Changes:				
Economic	-5.0	-101.5	-0.8	-107.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+33.1	-	-	+33.1
Estimating	-29.6	+0.0	+29.3	-0.3
Other	-	-	-	-
Support	-	-322.3	-	-322.3
Subtotal	-1.5	-423.8	+28.5	-396.8
Total Changes	+1358.7	-1802.2	-14.6	-458.1
Current Estimate	6699.6	34290.7	363.5	41353.8

Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	6463.2	34419.2	368.5	41250.9
Previous Changes:				
Quantity	-	-8927.8	-	-8927.8
Schedule	-	+641.4	-	+641.4
Engineering	+18.1	+81.4	-	+99.5
Estimating	+992.3	+6658.0	-40.4	+7609.9
Other	+171.6	+170.7	-	+342.3
Support	-28.1	-594.7	-	-622.8
Subtotal	+1153.9	-1971.0	-40.4	-857.5
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+30.8	-	-	+30.8
Estimating	-27.0	+3.9	+26.0	+2.9
Other	-	-	-	-
Support	-	-302.7	-	-302.7
Subtotal	+3.8	-298.8	+26.0	-269.0
Total Changes	+1157.7	-2269.8	-14.4	-1126.5
Current Estimate	7620.9	32149.4	354.1	40124.4

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-5.0
Support for integration development for the Auto Communication Processor, Precision Landing System Receiver (PLSR), and the 8.33 KHZ VFH radio (Engineering)	+30.8	+33.1
C-17 FY97 funds were reprogrammed to Electronics Systems Center for the development of the PLSR. (Estimating)	-3.9	-4.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Congressional action to pay for other priorities including Bosnia, anti-terrorism, counter-terrorism, and troop security programs. (Estimating)	-10.8	-11.2
FY02 and FY03 requirements were reduced to the post-FYDP budget during a corporate Air Force review. (Estimating)	-12.6	-14.7
RDT&E Subtotal	+3.8	-1.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-104.9
Economic adjustment for negative program change. (Economic)	N/A	+3.4
Adjustment for Current and Prior Inflation. (Estimating)	+20.3	+21.0
Additional MYP savings were reprogrammed for AF and DOD priorities. (Estimating)	-57.3	-69.1
Adjustment for Current and Prior Inflation. (Support)	+3.2	+3.4
This decrease reflects the C-17 share of the Air Force reduction for initial spares. The Air Force pool was negatively impacted by slow item deliveries and low expenditure rates. (Support)	-145.9	-157.6
Budget was reduced because the C-17 did not annualize support costs. This reduction was offset by additional support requirements in the post-FYDP period. (Support)	-119.1	-120.0
Correction of prior year variance calculation (Estimating)	+40.9	+48.1
(Support)	-40.9	-48.1
Procurement Subtotal	-298.8	-423.8

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.8
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Funding was added to support the activation of McChord AFB WA. (Estimating)	+25.7	+29.0
 MILCON Subtotal	 +26.0	 +28.5

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
189.30	-16.62	--	+5.04	+1.82	+13.76	--	+5.80	+9.80	199.10

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
199.10	-1.86	+54.48	+24.58	+1.14	+69.59	+2.90	-5.31	+145.52	344.62

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
170.16	-15.97	--	+3.45	+1.33	+7.71	--	+5.21	+1.71	171.87

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14b. Unit Cost and Other History (Cont'd):

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
171.87	-2.58	+34.05	+24.50	+0.72	+60.85	+1.48	-5.13	+113.89	285.76

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	NOV 87	N/A	FEB 85	FEB 85
Milestone III	NOV 87	N/A	JAN 89	JAN 89
FUE/IOC	JAN 92	N/A	JUN 93	JAN 95
Total Cost	39753.8	N/A	41811.9	41353.8
Total Quantity	210	N/A	210	120
Prog Acq Unit Cost	189.3	N/A	199.1	344.62

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

a. RDT&E --

Performance Improvement:

McDonnell Douglas, Long Beach, CA

F33657-95-D-2026, CPAF

Award: July 9, 1995

Definitized: July 9, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$71.3	\$	0

Current Contract Price		
Target	Ceiling	Qty
\$67.5	\$	0

Estimated Price At Completion	
Contractor	Program Manager
\$67.5	\$67.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$1.7	\$-3.1
Cumulative Variances To Date (11/24/96)	\$6.8	\$-2.5
Net Change	\$5.1	\$0.6

Explanation of Change:

The Producibility Enhancement/Performance Improvement (PE/PI) contract was reported as one contract in the 31 Dec 95 SAR. The contract was separated into its R&D and Procurement sections to aid understanding in this reporting. The Producibility Enhancement portion of the contract is reported in section 15.b.

The decrease in target price on the Performance Improvement contract reflects the deobligation of funds for the Aircraft Structural Integrity

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15. Contract Information (Cont'd):
Program underrun.

Cost Variance: The positive cost variance for the period is primarily attributable to minimal down time, technical problems, and repairs on the Aircraft Structural Integrity Program ground testing effort. Due to trouble-free testing, the Structural Development Design and Integrity Group required fewer hours than expected for repair, analysis, and technical support.

Schedule Variance: Follow-on Flight Test is the driver for the positive schedule variance. Residual Spares budgeted for support of the Follow-on Flight Test at Edwards AFB CA were aligned with the actual requirement.

b. Procurement --
FY95 Lot VII Buy:
McDonnell-Douglas, Long Beach, CA
F33657-93-C-0036, FFP
Award: April 1, 1994
Definitized: September 12, 1995

			Initial Contract Price	
	Target	Ceiling	Qty	
	\$1530.5	\$1675.9	6	

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1530.5	\$	6	\$1530.5	\$1530.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-5.3	\$-26.4
Cumulative Variances To Date (07/28/96)	\$-12.3	\$-7.3
Net Change	\$-7.0	\$19.1

Explanation of Change:

The Lot VII contract authorized the production of six aircraft, P-27 through P-32. This contract was converted to a Firm Fixed Price (FFP) type contract on 11 Jul 96. No Cost Performance Report (CPR) is available after the 28 Jul 96 report. Cost and schedule variance reporting is no longer required on this FFP contract.

			Initial Contract Price	
	Target	Ceiling	Qty	
	\$123.4	\$	0	

Producibility Enhancement:
McDonnell Douglas, Long Beach, CA
F33657-95-D-2026, CPAF
Award: July 9, 1995
Definitized: July 9, 1995

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$338.6	\$	0	\$338.6	\$338.6

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$8.5	\$-17.2
Cumulative Variances To Date (11/24/96)	\$3.2	\$-5.7
Net Change	\$-5.3	\$11.5

Explanation of Change:

The PE/PI contract was reported as one contract in the 31 Dec 95 SAR. The contract was separated into its R&D and Procurement sections to aid understanding in this reporting.

The contract value changed in this report to reflect the addition of production enhancement work since the last report.

Cost Variance: The primary driver for the negative impact on cost is the Nacelle/Engine Affordability Team (N/EAT). Extra manpower and overtime were needed to recover schedule on the N/EAT design account. Additionally, overhead actual costs incurred were higher than the Forward Pricing Rate Agreement rates originally used to budget the overhead effort.

Schedule Variance: The positive schedule variance is attributed to the N/EAT project. The project was replanned during Feb 96 to reflect the late release of engineering drawings to Vought, the sub contractor for the effort. There was no impact to the N/EAT project end date.

<u>Aircraft MYP (FY97-03):</u>			<u>Initial Contract Price</u>		
McDonnell Douglas, Long Beach, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F33657-96-C-2059, FFP			\$14209.4	\$	80
Award: May 31, 1996					
Definitized: May 31, 1996					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$14209.4	\$	80	\$14209.4	\$14209.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

On 31 May 96, this contract for the procurement of 80 aircraft was signed. The contract is a 7-year, multiyear procurement contract to procure the aircraft. Cost and schedule variance reporting is not required on this FFP contract.

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15. Contract Information (Cont'd):

FY96 Lot VIII Buy:
McDonnell Douglas, Long Beach, CA
F33657-94-C-2251, FFP
Award: February 23, 1996
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$1877.1	\$	8

Current Contract Price		
Target	Ceiling	Qty
\$1877.1	\$	8

Estimated Price At Completion	
Contractor	Program Manager
\$1877.1	\$1877.1

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

Explanation of Change:

The Lot VIII contract authorized the production of eight aircraft, P-33 through P-40. The contract was awarded on 23 Feb 96. Cost and schedule variance reporting not is not required on this FFP contract.

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

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

Appropriation	Prior Years (FY81-97)	Budget Year (FY98)	Budget Year (FY99)	Balance To Complete (FY00-07)	Total
RDT&E	5877.4	113.6	202.3	506.3	6699.6
Procurement	16753.6	2290.7	3082.7	12163.7	34290.7
MILCON	250.4	9.7	74.0	29.4	363.5
O&M	-	-	-	-	-
Total	22881.4	2414.0	3359.0	12699.4	41353.8

b. Annual Summary -- C-17 Globemaster III

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1981				54.1	33.4
1982					
1983				86.4	59.6
1984				37.4	26.8

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

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985				163.3	121.0
1986				461.7	350.4
1987				787.8	625.5
1988				1351.5	1101.5
1989				1098.7	938.3
1990				1026.0	903.9
1991				818.7	748.3
1992				268.8	252.9
1993				171.0	164.3
1994				228.8	223.5
1995				184.9	184.2
1996				70.9	72.0
1997				69.2	71.8
1998				107.3	113.6
1999				187.1	202.3
2000				155.9	172.1
2001				148.2	167.2
2002				71.7	82.6
2003				71.5	84.4
Subtotal				7620.9	6699.6

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987		32.2		74.3	61.2
1988	2	91.0	695.7	848.8	733.4
1989	4	17.3	1038.5	1329.9	1186.3
1990	4	77.2	1248.6	1641.4	1511.7
1991		80.3		244.7	233.7
1992	4	43.2	1389.3	1852.7	1804.5
1993	6	19.4	1930.8	1983.2	1959.4
1994	6	156.5	1827.7	2195.5	2206.5
1995	6	384.0	1696.8	2318.0	2373.6
1996	8	10.6	1998.3	2452.8	2565.6
1997	8	14.2	1718.2	1982.9	2117.7
1998	9	3.3	1838.3	2101.6	2290.7
1999	13	8.8	2418.5	2769.7	3082.7
2000	15	8.9	2590.2	3018.0	3434.5
2001	15	8.9	2563.6	2978.4	3463.9
2002	15	8.8	2560.7	2748.3	3276.0
2003	5	126.0	827.7	1162.0	1420.0

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

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				253.2	317.5
2005				142.5	183.4
2006				39.3	51.9
2007				12.2	16.5
Subtotal	120	1090.6	26342.9	32149.4	34290.7

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				6.6	5.7
1990				5.4	5.0
1991				31.3	29.5
1992				79.2	76.1
1993				31.7	31.1
1994				15.2	15.2
1995					
1996				6.6	6.9
1997				76.3	80.9
1998				9.0	9.7
1999				66.9	74.0
2000				26.0	29.4
Subtotal				354.2	363.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	120	1090.6	26342.9	40124.5	41353.8

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	29	29

Percent Total Program Quantities Delivered: 25.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 17402.6

Percent Total Program Expended: 42.1%

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18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The average annual cost per C-17 squadron was derived by dividing the Air Force Service Cost Position, dated 13 Sep 95, for the total O&S cost by the nine operational squadrons and further dividing by the number of years covered by the estimate (36 years, from FY96 through FY31). This estimate was done in FY96 constant dollars.

The O&S costs were based on a total of 120 aircraft, of which 96 were operated under the Active/Associate Reserve concept, 6 under the Air Reserve Component Unit Equipped (ARC UE), 8 training aircraft, and 10 in backup inventory. The estimate included direct and indirect costs, as described below.

(1) Direct costs include: mission personnel, unit-level consumables, depot maintenance, Contractor Logistics Support (CLS), and sustaining support costs. Mission personnel consist of aircrew, base maintenance, wing/squadron overhead, and weapon system security personnel requirements. Unit-level consumables include: fuel, base maintenance supplies, and depot-level reparable. Depot maintenance costs capture: airframe overhaul, repair of ground support equipment, and depot support activity. CLS covers the costs of maintaining the engines. Sustaining support includes: replacement support equipment, sustaining engineering, and sustaining software support.

(2) Indirect costs include: personnel support and installation support activities. Personnel support covers medical personnel and supplies, training (aircrew training system contracted support, maintenance trainer contract support, initial C-17 flying training, and initial specialty training, and permanent change of station costs. Installation support covers base operating and real property maintenance personnel and miscellaneous operating expenses.

b. There is no antecedent system for the C-17 program. The C-17 has a much wider range of capabilities than exists in the other current airlift aircraft. It can carry outsize cargo similar to the C-5, airdrop similar to the C-141, and operate in small austere environments similar to the C-130.

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per C-17 Squadron	Avg Annual Cost for Antecedent System
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	26.3	0.0
Intermediate Maintenance	47.6	0.0
Depot Maintenance	2.7	0.0
Contractor Support	2.6	0.0
Sustaining Support	2.2	0.0
Indirect Costs	23.5	0.0
Total	104.9	0.0

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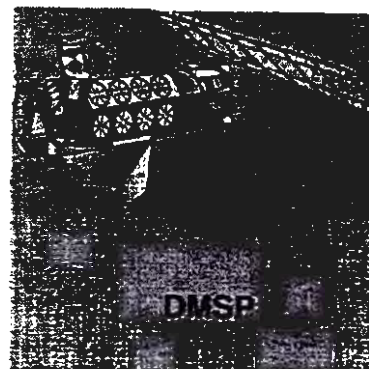
SECRETSELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: DMSP

AS OF DATE: December 31, 1996

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- (U) Designation and Nomenclature (Popular Name): DMSP Block 5D-2 Improved/5D-3/Defense Meteorological Satellite Program
- (U) DoD Component: USAF
- (U) Responsible Office and Telephone Number:
 DMSP Office Col Norton B. James III
 SMC/CI Assigned: December 4, 1995
 2420 Vela Way Suite 1467-A8 DSN 833-4333; COMM (310) 336-4333
 Los Angeles AFB, CA 90245-4659
- (U) Program Elements/Procurement Line Items:
 RDT&E:
 (U) PE 0305160F
 PROCUREMENT:
 (U) APPN 3080 ICN 833340 (Air Force)
 (U) APPN 3080 ICN 836740 (Air Force)
 (U) APPN 3020 ICN MS0554 (Air Force)
 MILCON:
 (U) PE 0305160F

SAF/PAS

97--0101

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 AS AMENDED

17 MAR 3 1997

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

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5. (U) References:

SAR Baseline (Production Estimate):

(U) (U) Production Estimate:

PMD R-S 3015 (20), dated May 31, 1983, subject "DMSP"

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated June 24, 1996.

6. (U) Mission and Description:

(U) The mission of the Defense Meteorological Satellite Program (DMSP) is to provide an enduring and survivable capability, through all levels of conflict consistent with the survivability of the supported forces, to collect and disseminate global visible and infrared cloud data and other specialized meteorological, oceanographic, and solar-geophysical data required to support worldwide DoD operations and high-priority programs. Timely data are supplied to Air Force Global Weather Central, the Navy Fleet Numerical Oceanography Center, the Air Force Space Forecast Center, and to deployed tactical terminals worldwide. The DMSP system is the only DoD meteorological satellite system. It consists of two three-axis stabilized satellites in 450 nautical mile sun-synchronous polar orbits (98.7 degrees inclination), command readout stations, command and control facilities, strategic data processing facilities, worldwide fixed and mobile tactical terminals, and communication satellite links. The DMSP Block 5D-2 Improved (S11-14)/5D-3 (S15-20) systems replace the Block 5D-2 system. Three Block 5D-2 Improved satellites are operational.

7. (U) Executive Summary:

(U) DMSP is a Joint-Service program in accordance with the Memorandum of Agreement on Joint Service Management and Operations, dated 15 Dec 76. DMSP is a continuing program to support requirements of special strategic missions, the Joint-Service mission, and the Joint Chiefs of Staff. On 19 Dec 95, DMSP and the 5D-3 spacecraft production contractor (Lockheed-Martin) negotiated a revised production schedule. An Integrated Baseline Review (IBR) was conducted to evaluate the baseline put in place by Lockheed-Martin as a result of this replan. No major concerns or disconnects were identified and the new contract baseline was deemed acceptable. In Jan 96, Lockheed-Martin announced the calendar year 1998 plant closure at East Windsor, New Jersey. In Mar 96, Lockheed-Martin notified the program office of an overrun on the spacecraft production contract due to recurring problems with solar arrays and power systems hardware as well as schedule delays and rate increases. The SPO has projected an overrun at completion since Apr 92. Spacecraft S16 delivery slipped from 31 Aug 96 (contract date) to 20 Dec 96 due to problems with test equipment, thermal vacuum chamber, Power System Electronics (PSE), Battery Charge Assembly (BCA) and deployment of the UHF antenna. The S16 spacecraft was funded with FY89 Missile Procurement (3020) funds which cancelled on 30 Sep 96. Current year funds have been identified to replace cancelled funds. The SPO is closely monitoring progress on S17 and all work funded with FY90 funds

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7. (U) Executive Summary (Cont'd):

to ensure on-time delivery prior to funds cancellation on 1 Oct 97.

Litigation activities continue on the Aerojet claim filed with the Armed Services Board of Contract Appeals (ASBCA) in early 1994. The hearing is scheduled to begin in Aug 1997. Special Sensor Microwave Imager Sounder (SSMIS) Flight Unit 1 has experienced numerous technical and schedule setbacks due to component failures. On 1 Apr 96, the Space and Missile Systems Center Commander Gen Lyles, and the SPO convened an SSMIS Multi-Service User Summit to discuss impacts of potential late delivery and alternatives in the case of nondelivery of the SSMIS. The SSMIS contract is jointly funded by Air Force and Navy with FY88-91 funds. FY88/89 Navy and FY89 Air Force funds have already cancelled and current year funds will be required to replace the cancelled amounts once Aerojet delivers and invoices.

The 607th Weather Squadron in Yongsan, Korea and the 617th Weather Squadron in Tuzla, Bosnia received Small Tactical Terminal (STT) units in support of their operations in Jan 96. On 1 Jun 96, installation of the first Joint Task Force Satellite Terminal (JTFSST) at Yongsan, Korea was completed. Additional units have been installed at Keesler AFB and in Saudi Arabia. The Air Weather Service (AWS) fielding decision for STTs was made on 18 Dec 96. The Space and Missile Systems Center Commander signed a Justification Review Document (JRD) for additional STT systems on 26 Dec 96.

The Titan II pad may not be available for DMSP launch beyond FY99 due to lack of funding. The SPO is currently examining options and costs to ensure S16 access to space pending the availability of the Evolved Expendable Launch Vehicle (EELV). A launch call for DMSP S14 was issued by the 14th Air Force in Nov 96; launch is scheduled for 2 Apr 97.

On 12 Dec 96, DMSP was declared unexecutable by the Air Force Acquisition Executive (AFAE) due to insufficient budget of 78-80M unfunded dollars in FY98-03; the Secretary and Chief of Staff of the Air Force were briefed on DMSP overall status in Dec 96 by the DMSP System Program Director.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
SATELLITE			
Block 5D-2 Improved Production Start (S-11)	SEP 83	SEP 83	SEP 83
S-15 Design Contract Award	NOV 85	N/A	JUL 86
Satellite Delivery			
S-11	JUL 87	DEC 88	DEC 88
S-12	N/A	NOV 89	OCT 89
S-13	N/A	AUG 90	AUG 90
S-14	N/A	NOV 90	NOV 90
S-15 (Block 5D-3)	N/A	SEP 91	DEC 91
Satellite Availability			
S-11	N/A	DEC 89	DEC 88
S-12	N/A	SEP 90	OCT 89
S-13	N/A	JUN 91	AUG 90
S-14	N/A	JUN 92	NOV 90
S-15 (Block 5D-3)	N/A	SEP 93	DEC 91
Award of Block 5D-3 Multiyear Procurement	N/A	MAY 89	JUN 89
Initial Titan II Capability IOC	N/A	OCT 90	OCT 90
Block 5D-2 Improved (S-11)	TBD	N/A	DEC 91
Block 5D-3 (S-15)	TBD	N/A	TBD
PRIMARY SENSOR			
Design Contract Award (S-11)	SEP 82	SEP 82	SEP 82
Production Contract Award (S12-S15)	JAN 84	JAN 84	JAN 84

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Production Contract Award (S16-S20)	N/A	SEP 88	SEP 88
S-16 Primary Sensor Delivery	N/A	SEP 92	FEB 93
GROUND SYSTEMS			
Thule Command Readout Station			
(1) Operational	SEP 87	N/A	FEB 88
(2) Deactivate Loring CRS	SEP 88	N/A	APR 90
Fairchild Satellite Operations Center (FSOC) Operational	SEP 87	MAY 89	AUG 89
Award Mark IVB Contract	N/A	OCT 88	OCT 88
Mark IVB IOT&E	N/A	OCT 91	MAR 92
Begin Mark IVB Production	N/A	JAN 92	JUN 92
Final Mark IVB Delivery	N/A	SEP 97	APR 95
SYSTEM			
DMSP System Milestone IV	N/A	N/A	N/A

(U) Note: Block 5D-2 Improved/Block 5D-3 IOC will occur 30 days after launch (completion of on-orbit checkout). As DMSP launches on demand, no firm estimate is currently available.

b. Current Change Explanations -- None.

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Satellite				
Altitude (+/-20 nm)	450	N/A / N/A	450	450
Inclination (+/- .15 degrees)	98.7	N/A / N/A	98.7	98.7
Mean Mission				
Duration (months)				
5D-2 Improved	33	48 / 30	48	39
5D-3	42	60 / 30	N/A	42
Early Orbit				
Checkout (days)				
5D-2 Improved	30	30 / 30	19	30
5D-3	30	30 / 30	N/A	30
Primary Sensor				
Global Resolution (km)	2.78	2.78 / 2.78	2.78	2.78
Theater Resolution (km)	.56	.56 / .56	.56	.56
Mark IVB Tactical Terminals				

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

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Mean Time Between Corrective Maintenance Actions (MTBCMA) (hrs)	720	705 / 705	N/A	705
Mean Time to Repair (MTTR) (hrs)	1	1 / 1	.37	1
Mean Time Between False Alarm (MTBFA) (hrs)	20000	20000 / 20000	N/A	20000
Mean Time Between Critical Failures (MTBCF) (hrs)	2000	1945 / 1945	N/A	1945
Maintenance Manhours per Operating Hour (MMH/OH)	.0233	.0233 / .0233	N/A	.0233
Inherent Availability	.9995	.9995 / .9995	N/A	.9995
Fraction of Failures Isolated by Built- In Test (%)	90	90 / 90	N/A	90
Survivability	(b)(1)			
Autonomous Operation (days)	N/A	60 / 7	N/A	7

(U) Note: The Altitude parameter is 450 nautical miles with a difference between apogee and perigee of no more than 30 nautical miles.

The current estimate for the technical parameters represents anticipated values based on current on-orbit satellite performance. Mean mission duration for both the 5D-2 Improved and 5D-3 spacecraft represent anticipated values and are based on current on-orbit performance of similar satellites.

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

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

	Production <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	224.5	224.9	248.3
Procurement	491.6	616.9	622.6
Launch Vehicle	(26.0)		(7.2)
Spacecraft	(201.3)		(247.5)
Primary Sensor	(79.6)		(102.0)
Mission Sensors	(57.1)		(86.1)
Support	(48.9)		(75.0)
Total Flyaway	(412.9)		(517.8)
Ground System	(58.0)		(91.6)
Field Level Support	(19.8)		(0.0)
Total Other Wpn Sys	(77.8)		(91.6)
Peculiar Support	(0.0)		
Initial Spares	(0.9)		(13.2)
Construction (MILCON)	2.6	3.0	2.7
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 75 Base-Year \$	718.7	844.8	873.6
Escalation	1160.3	1391.2	1459.7
Development (RDT&E)	(318.1)	(299.6)	(359.5)
Procurement	(839.1)	(1088.3)	(1097.2)
Construction (MILCON)	(3.1)	(3.3)	(3.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	1879.0	2236.0	2333.3
b. (U) Quantity --			
Development (RDT&E)	1	1	1
Procurement	<u>8</u>	<u>9</u>	<u>9</u>
Total	9	10	10

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUN 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 75 BY\$)	873.6	844.8	
(2) Quantity	10	10	
(3) Unit Cost	87.360	84.480	+3.41
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 75 BY\$)	622.6	616.9	
(2) Quantity	9	9	
(3) Unit Cost	69.178	68.544	+0.92

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	542.6	1330.7	5.7	1879.0
Previous Changes:				
Economic	-33.1	-141.8	-0.2	-175.1
Quantity	-	+190.2	-	+190.2
Schedule	-	+1.9	-	+1.9
Engineering	-13.6	-70.4	-	-84.0
Estimating	+89.5	+289.7	-	+379.2
Other	-	-	-	-
Support	+40.0	+112.0	+0.2	+152.2
Subtotal	+82.8	+381.6	0.0	+464.4
Current Changes:				
Economic	-1.1	-2.5	-	-3.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-13.6	+18.5	-	+4.9
Other	-	-	-	-
Support	-2.9	-8.5	-	-11.4
Subtotal	-17.6	+7.5	-	-10.1
Total Changes	+65.2	+389.1	0.0	+454.3
Current Estimate	607.8	1719.8	5.7	2333.3

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	224.5	491.6	2.6	718.7
Previous Changes:				
Quantity	-	+61.2	-	+61.2
Schedule	-	-	-	-
Engineering	-5.2	-24.8	-	-30.0
Estimating	+19.8	+61.8	-	+81.6
Other	-	-	-	-
Support	+14.7	+28.9	+0.1	+43.7
Subtotal	+29.3	+127.1	+0.1	+156.5
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.6	+6.7	-	+2.1
Other	-	-	-	-
Support	-0.9	-2.8	-	-3.7
Subtotal	-5.5	+3.9	-	-1.6
Total Changes	+23.8	+131.0	+0.1	+154.9
Current Estimate	248.3	622.6	2.7	873.6

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised economic escalation rates. (Economic)	N/A	-1.1
Revised estimate to reflect current and prior year actuals. (Estimating)	-1.8	-5.2
Re-estimate of spacecraft & sensor support activities due to increased on-orbit life. (Estimating)	0.0	+0.2
Revised estimate for spacecraft sensor system engineering support due to budget constraints. (Estimating)	-2.8	-8.6
Re-estimate of ground segment support due to planned convergence of Department of Defense/Department of Commerce Weather Satellite Programs. (Support)	-0.9	-2.9
RDT&E Subtotal	-5.5	-17.6
(2) <u>Procurement</u>		
Revised economic escalation rates. (Economic)	N/A	-2.5
Adjustment to current and prior year escalation. (Estimating)	+0.2	+0.4

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate to reflect current and prior year actuals. (Estimating)	+1.0	+3.0
Reprogramming to fund Economic Price Adjustment (EPA)/Award Fee for 5D3 production contract. (Estimating)	+3.0	+7.1
Reprogramming to fund the Special Sensor Microwave Sounder (SSMIS) retrofit due to late sensor deliveries resulting in the need for out-of-cycle sensor integration to spacecraft. (Estimating)	+1.5	+5.0
Revised estimate of spacecraft and sensor technical support due to budget constraints. (Estimating)	-0.2	-0.5
Re-estimate of Support and Services Activities due to extended ground storage period resulting in longer on-orbit satellite life. (Estimating)	+1.2	+3.5
Revised estimate of initial spares. (Support)	+0.1	+0.5
Revised estimate of Small Tactical Terminal production due to curtailment of planned hardware upgrade. (Support)	-2.9	-9.0
Procurement Subtotal	+3.9	+7.5

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
208.78	-17.87	-1.86	+0.19	-8.40	+38.41	--	+14.08	+24.55	233.33

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
166.34	-16.03	+2.65	+0.21	-7.82	+34.24	--	+11.50	+24.75	191.09

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	TBD	DEC 91
Total Cost	N/A	N/A	1879	2333.3
Total Quantity	N/A	N/A	9	10
Prog Acq Unit Cost	N/A	N/A	208.78	233.33

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

a. RDT&E --

(U) SSMIS:
Aerojet Electrosystems Co, Azusa CA
F04701-89-C-0036, FPIF/CP
Award: March 17, 1989
Definitized: March 17, 1989

Initial Contract Price		
Target	Ceiling	Qty
\$68.3	\$72.5	3

Current Contract Price		
Target	Ceiling	Qty
\$109.4	\$115.6	5

Estimated Price At Completion	
Contractor	Program Manager
\$115.6	\$115.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-53.4	\$-2.8
Cumulative Variances To Date (12/31/96)	\$-69.6	\$-2.7
Net Change	\$-16.2	\$0.1

Explanation of Change:

(U) The Initial Contract Price, Current Contract Price, and the Estimated Price At Completion include applicable performance and award fees. The Program Manager estimated price at completion increased to incorporate costs incurred for the cost plus effort. The estimated price for the fixed price portion is constrained by the ceiling of \$72.2M which is the limit of the government's liability on the production effort. Also included in the estimated price at completion is \$0.6M in award fees earned, \$2.0M in potential award fees, and \$4.3M in potential on-orbit performance incentives.

The increase in cost variance is due to cost associated with the schedule extension for flight unit deliveries. Additional contributors are: extensive rework and retest for anomaly resolutions uncovered during thermal vacuum test and calibration. Extensive effort for mixer, phase lock oscillator and slip ring problems resolution as well as Red Team activities have contributed to the overall increase.

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

The contract is currently funded to ceiling price. The contractor has encountered numerous test failures during integration. The program office is continually working with the program integrator to reduce the impact of late sensor delivery to satellite integration.

The schedule variance improved due to completion of calibration testing.

b. Procurement --

(U) 5D-3 SPACECRAFT:

Lockheed Martin, Princeton, NJ

F04701-89-C-0029, FPIF/AF

Award: June 30, 1989

Definitized: June 30, 1989

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$252.3	\$274.3	5	
Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$305.1	\$331.1	5	\$328.1	\$330.4
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>
			\$-12.4	\$-14.1
Cumulative Variances To Date (12/31/96)			<u>\$-21.1</u>	<u>\$5.1</u>
Net Change			\$-8.7	\$19.2

Explanation of Change:

(U) The increase to the current contract target and ceiling prices over the original values is due to contract modifications for mission sensor integration, the advanced flight vehicle simulation facility, real-time data smooth transmitters, Special Sensor Microwave Imager Sounder (SSMIS) integration work-arounds and an Equitable Price Adjustment (EPA) modification.

The Initial Contract Price, Current Contract Price, and the Estimated Price At Completion include applicable performance and award fees. The Program Manager's estimate at completion exceeds the contractor's estimate based upon Cost Performance Report (CPR) indicators, a four month delivery delay of the first production unit (S-16), continuing problems with solar array production, and test delays on S-17 and S-18 caused by the siphoning of test personnel and equipment needed to support Air Force directed launch of S-14 satellite. Also included in the estimated price at completion is \$6.3M in award fees earned, \$4.9M in potential award fees, and \$16.9M in potential on-orbit performance incentives.

The increase in cost variance is due to problems associated with solar array fabrication, batteries, manufacturing of key subassemblies, rate increases, and delivery delays.

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

The contractor has been moderately successful in the attempt to accelerate spacecraft deliveries. The improved schedule variance is due to a single point adjustment of +\$18M due to a replan which extended the delivery dates and allowed earned value to be accrued based on material deliveries. Current schedules predict contract completion by 15 Mar 98, three months ahead of contract requirement, but three months behind the contractor's goal of 31 Dec 97.

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

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

<u>Appropriation</u>	<u>Prior Years (FY82-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-05)</u>	<u>Total</u>
RDT&E	481.5	14.1	19.1	93.1	607.8
Procurement	1352.4	48.6	48.9	269.9	1719.8
MILCON	5.7	-	-	-	5.7
O&M	-	-	-	-	-
Total	1839.6	62.7	68.0	363.0	2333.3

b. Annual Summary -- 5D2 IMP/5D-3 SPACECRAFT

Appropriation: 3600 Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY75 Dollars Nonrec</u>	<u>Flyaway FY75 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1982				8.4	15.5
1983				8.7	16.8
1984				9.8	19.6
1985				18.4	37.9
1986				24.1	50.9
1987				26.6	58.8
1988				16.0	36.3
1989				19.0	45.3
1990				17.9	44.0
1991				17.8	45.2
1992				9.6	25.1
1993				6.4	17.2
1994				6.9	18.8
1995				6.3	17.1
1996				6.5	18.2

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

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				5.2	14.8
1998				4.9	14.1
1999				6.5	19.1
2000				6.3	18.9
2001				5.8	18.0
2002				4.8	15.0
2003				3.6	11.5
2004				4.4	14.6
2005				4.4	15.1
Subtotal	1			248.3	607.8

(U) Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3. (Satellites 11-20)

Base year dollars were computed using DMSP peculiar indices for FY82-94 and OSD Standard Indices for FY95-05.

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				7.0	14.4
1983	2	3.8	77.1	68.8	150.7
1984		3.7		13.3	30.3
1985	2	4.2	94.7	54.3	127.6
1986		4.0	20.9	16.1	39.5
1987		3.6		6.9	17.5
1988		2.7		27.1	71.9
1989	1	2.6	48.6	60.0	166.4
1990	1	5.2	50.5	45.1	127.4
1991	1	5.2	60.0	57.2	167.0
1992	2	4.8	97.0	35.8	105.9
1993		3.9		10.1	30.8
1994		2.8		9.7	30.3
1995		1.9		9.6	28.9
1996		1.8		9.1	27.9
1997		2.4		8.8	27.6
1998		2.4		11.0	35.2
1999		2.0		11.2	36.8
2000		1.8		11.0	36.7

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

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001		1.9		11.2	38.3
2002		2.1		10.1	35.4
2003		2.0		10.0	35.8
2004		2.1		9.8	35.9
2005		2.1		9.5	36.0
Subtotal	9	69.0	448.8	522.7	1454.2

(U) FY86 recurring amount is for primary and mission sensors for the development spacecraft (S-15). The amount shown for non-recurring cost is associated with the FFRDC support.

Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3. (Satellites 11-20)

Base year dollars were computed using DMSP peculiar indices for FY82-94 and OSD standard Indices for FY95-05.

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1983				3.7	7.5
1984				6.3	13.1
1985				13.3	28.7
1986				4.1	9.3
1987				3.0	6.9
1988				4.3	10.4
1989				6.5	16.3
1990				0.5	1.2
1991				7.1	18.7
1992				2.9	7.9
1993				4.7	13.1
1994				4.2	12.1
1995				5.5	15.4
1996				5.4	15.4
1997				4.2	12.3
1998				4.5	13.4
1999				4.0	12.1
2000				3.3	10.3
2001				2.6	8.4
2002				2.5	8.0

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

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				1.1	3.7
2004				3.1	10.9
2005				3.1	10.9
Subtotal				99.9	265.6

(U) Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3.

Base year dollars were computed using DMSP peculiar indices for FY82-94 and OSD Standard Indices for FY95-05.

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY75 Dollars Nonrec	Flyaway FY75 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985				2.7	5.7
Subtotal				2.7	5.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	10	69.0	448.8	873.6	2333.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	5	5

(U) Percent Total Program Quantities Delivered: 60.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1617.2

(U) Percent Total Program Expended: 69.3%

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
Operations and support costs include all costs of operating, maintaining, and supporting the DMSP spacecraft from dedicated ground control centers at Fairchild AFB WA (Fairchild Satellite Operations Center) and Offutt AFB NE (Multi-Purpose Operations Center). Costs also include the costs for contractor support for sustaining engineering and the operations personnel at each of the operations centers. These costs do not include the unallocated costs associated with the shared use of remote tracking stations which are programmed and borne by the Air Force Satellite Control Network and the Consolidated Space Operations Center program elements.

The O&S cost estimate was updated in December 1992.

No antecedent system for the Block 5D-2 Improved/5D-3 meteorological satellite exists.

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

Cost Element	Avg Annual Cost Per 5D-2 Constellation	Avg Annual Cost Per (Antecedent)
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	11.2	0.0
Intermediate Maintenance	13.1	0.0
Depot Maintenance	2.4	0.0
Contractor Support	124.4	0.0
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	151.1	0.0

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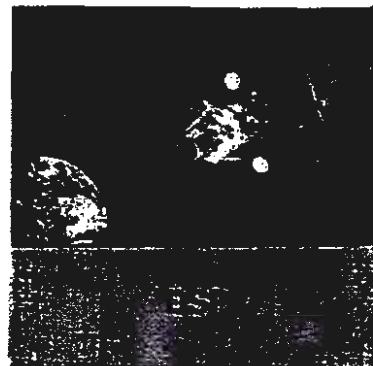
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PROGRAM: DSP

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Defense Support Program - Strategic Surveillance and Warning Satellite System (DSP)
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:
 SMC/MT Col Craig P. Weston
 185 Discoverer Blvd. Assigned: March 1, 1994
 Suite 2512 DSN 833-1807; COMM (310) 363-1807
 Los Angeles AFB, CA 90245-4695
4. (U) Program Elements/Procurement Line Items:
 RDT&E:
 (U) PE 0102431F
 (U) PE 0305911F
 PROCUREMENT:
 (U) APPN 3080 ICN 833100 (Air Force)
 (U) APPN 3080 ICN 836710 (Air Force)
 (U) APPN 3080 ICN 836790 (Air Force)
 (U) APPN 3080 ICN 86190A (Air Force)
 (U) APPN 3020 ICN MS0647 (Air Force)
 MILCON:
 (U) PE 0102431F
 (U) PE 0305911F

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5. (U) References:

SAR Baseline (Development Estimate):

(U) Program Management Directive (PMD) # NO.R-S 4047 (24), dated Oct 18, 1983;
SPECIFICATION NO. DSP 80-01, Revision A, May 1, 1984. FY85 Research,
Development, Test, and Engineering (RDT&E) Descriptive Summaries, Jan 1984.

Approved Program:

(U) AFAE Approved Acquisition Program Baseline (APB) dated March 30, 1994.

6. (U) Mission and Description:

(b)(1)



7. (U) Executive Summary:

(b)(1)



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7. ~~(S)~~ Executive Summary (Cont'd):

(b)(1)

(U) ALERT IMPROVEMENTS. Attack and Launch Early Reporting to Theater (ALERT) (formerly TALON SHIELD) Initial Operating Capability (IOC) was achieved in Mar 95. Since then, performance has consistently exceeded its operational availability requirements. In Jul 96, ALERT improved its tactical abilities to report theater events by adding an operational capability to fuse other message sources. Continued software capability upgrade development and phase-ins, such as the above improvement example, will enable prototyping and demonstrating advanced capabilities for the SBIRS ground element.

(U) DSP CONTRACT CONSOLIDATION. The DSP consolidated all Aerojet and TRW Blocks 18 and 23 post-production efforts, Aerojet Sensor Engineering Services, and TRW orbital support, into two prime contracts to streamline contract management and to provide increased flexibility for launch operations. Contract Award to Aerojet was accomplished on 23 Sep 96 and on 1 Oct 96 to TRW.

(U) SRSU COMPLETION. Installation of the second Satellite Readout Station Upgrade (SRSU) antenna at the OGS occurred on 3 May 96. The fourth and final phase of Initial Operational Test & Evaluation (IOT&E) was completed on 12 Jun 96. System Turnover and Operational Acceptance by AFSPC of the last antenna at the OGS was accomplished on 10 Jul 96, and the SRSU contract was closed out by the SBIRS SPO on 30 Aug 96.

(U) CANCELLATIONS OF SATELLITES 24-25. Due to budget reduction and program requirement changes, Satellites 24 and 25 were cancelled on 11 Mar 94 and 30 Jun 94 respectively. As a result of the cancellations, Aerojet delivered a Request for Equitable Adjustment (REA) Proposal for Sensor 23 on 21 Dec 94. On 5 Jan 95, Aerojet submitted a stand-alone proposal for Sensor 23 production; a contract modification for these efforts was issued 20 Feb 96.

(U) SAR TERMINATION. DSP has delivered 22 of 23 (95.7%) Satellites. This will be the final SAR for the DSP program.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

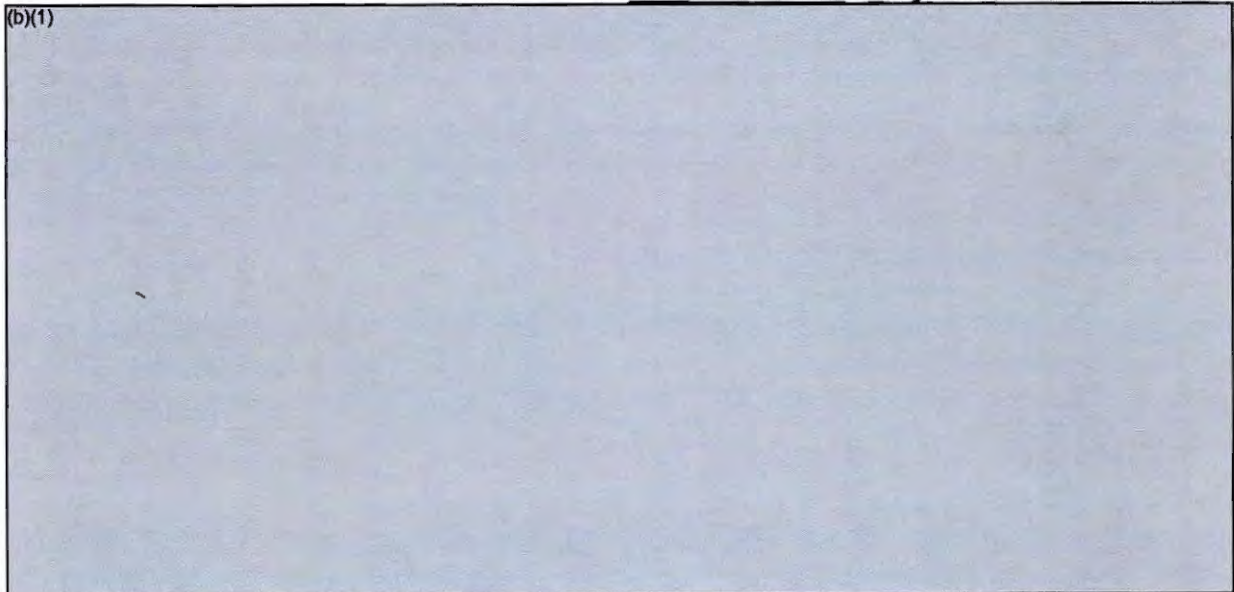
Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

Development Approved Current
Estimate (SAR) Program (APB) Estimate

(b)(1)



(U) Note: Satellites 24 and 25 and the Laser Crosslink System (LCS) have been canceled.

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

b. Current Change Explanations -- None.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAP)	Approved Program (APB) Chi/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

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

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1304.3	1618.3	1678.6
Procurement	3094.6	4307.2	4357.7
Flyaway	(2364.4)		(3461.1)
Other Weapon Systems	(730.2)		(896.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	25.7	25.5	25.5
Acquisition O&M	0.0	0.0	0.0
Total FY 78 Base-Year \$	4424.6	5951.0	6061.8
Escalation	1123.0	3189.6	3288.9
Development (RDT&E)	(-30.4)	(263.6)	(375.9)
Procurement	(1151.6)	(2924.0)	(2911.0)
Construction (MILCON)	(1.8)	(2.0)	(2.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5547.6	9140.6	9350.7

b. (U) Quantity --

Development (RDT&E)	4	4	4
Procurement	15	21	19
Total	19	25	23

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 94 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 78 BY\$)	6061.8	5951.0	
(2) Quantity	23	25	
(3) Unit Cost	263.557	238.040	+10.72
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 78 BY\$)	4357.7	4307.2	
(2) Quantity	19	21	
(3) Unit Cost	229.353	205.105	+11.82

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1273.9	4246.2	27.5	5547.6
Previous Changes:				
Economic	-20.3	-180.0	-0.1	-200.4
Quantity	-	+1365.6	-	+1365.6
Schedule	+0.4	+156.2	-	+156.6
Engineering	-	-	-	-
Estimating	+481.5	+1048.5	+0.1	+1530.1
Other	-	-	-	-
Support	+289.4	+358.4	-	+647.8
Subtotal	+751.0	+2748.7	0.0	+3499.7
Current Changes:				
Economic	-2.1	-3.8	-	-5.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+31.7	+288.8	-	+320.5
Other	-	-	-	-
Support	-	-11.2	-	-11.2
Subtotal	+29.6	+273.8	-	+303.4
Total Changes	+780.6	+3022.5	0.0	+3803.1
Current Estimate	2054.5	7268.7	27.5	9350.7

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

(U) Summary (FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1304.3	3094.6	25.7	4424.6
Previous Changes:				
Quantity	-	+678.4	-	+678.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+214.2	+319.1	-0.2	+533.1
Other	-	-	-	-
Support	+149.1	+170.1	-	+319.2
Subtotal	+363.3	+1167.6	-0.2	+1530.7
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+11.0	+99.2	-	+110.2
Other	-	-	-	-
Support	-	-3.7	-	-3.7
Subtotal	+11.0	+95.5	-	+106.5
Total Changes	+374.3	+1263.1	-0.2	+1637.2
Current Estimate	1678.6	4357.7	25.5	6061.8

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-2.1
	Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+1.2
	Bosnia I and II reductions. Resulted in delaying the hardware upgrade for the Aerojet programming facility at Azusa. (Estimating)	-0.2	-0.4
	Congressional directed reductions resulting in reduced post-production special studies. (Estimating)	-2.0	-4.4
	Federally Funded Research and Development Center (FFRDC) reductions, Space program adjustments, based upon Increment I of SBIRS High. (Estimating)	-13.8	-34.2
	Additional content based upon the addition of FY 02 and 03 program requirements. (Estimating)	+26.5	+69.5
	RDT&E Subtotal	+11.0	+29.6
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-6.7

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Economic adjustment for negative program change. (Economic)	N/A	+2.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.4
Refinement of estimate based upon contract consolidation. Budget increase for the Evolved Expendable Launch Vehicle (EELV). (Estimating)	+2.1	+6.4
Additional content to the program which added FY 02 and 03 launch out requirements. (Estimating)	+96.9	+282.0
Realignment of excess Satellite Readout Station Upgrade (SRSU) Funds to Milsatcom to upgrade Milstar Mobile Ground System. (Support)	-0.4	-1.6
Increased requirement for Space Modification. (Support)	+0.4	+1.2
Reduction in initial Spares. (Support)	-3.7	-10.8
Procurement Subtotal	+95.5	+273.8

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
291.98	-8.97	+8.59	+6.81	--	+80.46	--	+27.68	+114.57	406.55

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
283.08	-9.67	+12.28	+8.22	--	+70.38	--	+18.27	+99.48	382.56

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	JUN 73	N/A	JUN 73
Total Cost	N/A	5547.6	N/A	9350.7
Total Quantity	N/A	19	N/A	23
Prog Acq Unit Cost	N/A	291.98	N/A	406.55

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

a. Procurement --		Initial Contract Price		
(U) <u>Satellite 23:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
TRW Space & Defense, Redondo Beach CA				
F04701-93-C-0001, FPI		\$619.3	\$653.4	3
Award: June 11, 1993				
Definitized: June 11, 1993				
		Estimated Price At Completion		
Current Contract Price		<u>Contractor</u>	<u>Program Manager</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
\$521.9	\$550.8	1	\$307.5	\$307.5
		Cost Variance Schedule Variance		
Previous Cumulative Variances		\$6.7	\$-2.5	
Cumulative Variances To Date (12/29/96)		\$4.6	\$-0.2	
Net Change		\$-2.1	\$2.3	

Explanation of Change:

(U) (U) The Contractor's Estimated Price at Completion represents the proposed values for the Laser Cross Link System (LCS) termination and cancellations of Satellites 24 and 25. The funds will not change under the current contract price until all cancellation and termination actions have been contractually definitized.

(U) There is no impact to the contract or to the program.

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

(U) Sensor 23:
Gencorp, Aerojet, Azusa, CA
F04701-93-C-0002, FPI/AF/CP
Award: June 11, 1993
Definitized: June 11, 1993

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$485.6	\$507.1	3

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$259.2	\$264.0	1

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$258.2	\$260.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.2	\$-1.0
Cumulative Variances To Date (01/02/97)	\$1.1	\$-3.1
Net Change	\$-0.1	\$-2.1

Explanation of Change:

(U) The reductions in Current Contract Price and Estimated Price are due to completion of negotiations and cancellation of Sensors 24 and 25.

(U) There is no impact to the contract or to the program.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY67-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-03)	<u>Total</u>
RDT&E	1877.3	23.2	39.9	114.1	2054.5
Procurement	6358.9	113.9	137.8	658.1	7268.7
MILCON	27.5	-	-	-	27.5
O&M	-	-	-	-	-
Total	8263.7	137.1	177.7	772.2	9350.7

b. Annual Summary -- DSP SATELLITE

Appropriation: 3600 Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY78 Dollars Nonrec</u>	<u>Flyaway FY78 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1967				57.1	30.8
1968				93.4	52.3
1969				162.4	95.3
1970				118.9	73.5

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

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1971				130.7	84.4
1972				47.5	31.9
1973				46.7	32.3
1974				77.6	60.1
1975				40.7	34.4
1976				18.2	16.4
1977					
1978				30.4	29.4
1979				28.0	28.7
1980				27.2	30.6
1981				24.8	31.0
1982				63.2	87.6
1983				97.4	144.2
1984				76.9	119.2
1985				29.6	47.7
1986				38.0	63.3
1987				37.4	63.8
1988				64.8	115.4
1989				48.9	89.4
1990				52.0	99.8
1991				45.4	89.7
1992				34.7	71.2
1993				24.2	51.1
1994				22.1	47.7
1995				16.6	36.5
1996				27.1	60.6
1997				14.9	34.0
1998				11.2	25.0
1999				9.8	23.2
2000				16.4	39.9
2001				9.8	24.4
2002				8.0	20.2
2003				13.3	34.4
Subtotal	4			1678.6	2054.5

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1969				31.4	17.8
1970				62.3	37.0

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

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1971	3		282.6	165.3	102.8
1972	2		188.4	157.5	105.2
1973	3		282.6	231.4	167.1
1974				38.1	28.1
1975	1		94.2	91.7	80.8
1976				42.1	39.5
1977					
1977				27.9	28.0
1978				88.9	94.1
1979				100.0	123.4
1980				73.9	103.9
1981				33.5	51.8
1982				146.2	241.4
1983	2		583.7	273.5	478.1
1984	2		583.7	239.5	436.6
1985				28.3	53.0
1986				56.7	111.4
1987				126.9	259.8
1988	1		130.7	166.5	353.4
1989	2		261.4	194.2	430.4
1990	1		130.7	152.2	343.5
1991	1		130.7	140.5	326.3
1992				27.4	64.4
1993				85.9	206.2
1994	1		792.4	156.6	383.9
1995				142.8	354.2
1996				25.6	64.7
1997				27.4	70.7
1998				43.2	113.7
1999				51.2	137.7
2000				71.2	195.5
2001				64.6	181.4
2002				48.9	140.5
2003				47.8	140.7
Subtotal	19		3461.1	3461.1	6067.0

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1969				31.3	17.6
1970				144.5	85.4
1971				56.5	35.0

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

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1972				65.2	42.0
1973				27.6	19.0
1974				2.2	1.7
1975				6.4	5.6
1976				13.7	12.8
197T					
1977				13.6	13.6
1978				0.3	0.3
1979				6.0	7.6
1980				19.0	26.6
1981				46.8	70.3
1982				66.5	103.4
1983				55.8	90.1
1984				21.7	36.1
1985				29.9	51.4
1986				71.9	128.9
1987				48.3	89.8
1988				13.8	26.6
1989				0.9	1.8
1990				34.5	71.0
1991				35.2	74.2
1992				26.7	58.0
1993				17.1	37.7
1994				12.9	29.1
1995				10.8	24.9
1996				16.0	37.5
1997				1.4	3.4
1998				0.1	0.2
1999					0.1
Subtotal				896.6	1201.7

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1975				19.6	17.3
1976					
197T					
1977					
1978					
1979					
1980					
1981					

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

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY78 Dollars Nonrec	Flyaway FY78 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982					
1983				1.1	1.9
1984					
1985				4.8	8.3
Subtotal				25.5	27.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	23		3461.1	6061.8	9350.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	4	4
Procurement	18	18

(U) Percent Total Program Quantities Delivered: 95.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7046.7

(U) Percent Total Program Expended: 75.4%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
 These Operations and Maintenance (O&M) funds implement PMD direction to support system sustaining engineering (orbital satellites, ground data systems, and operational system users), and support Ground Data Systems (GDS) sensors and survivability-enhanced Satellites 14-23. Support of operational orbital satellites includes anomaly detection and correction, analysis of on-orbit sensor performance, data compilation and analysis, analysis of special-interest, computer support functions, and launch support. These sustaining efforts reflect a relatively stable level-of-effort requirement through FY 98 to support both advanced configuration of new operational satellites, and an aging orbital satellite configuration with increased anomaly resolution requirements. O&S data is as of 15 Jan 97.

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

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

Cost Element	Avg Annual Cost Per DSP System	Avg Annual Cost Per No Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Other Direct Costs	20.3	N/A
Total	20.3	0.0

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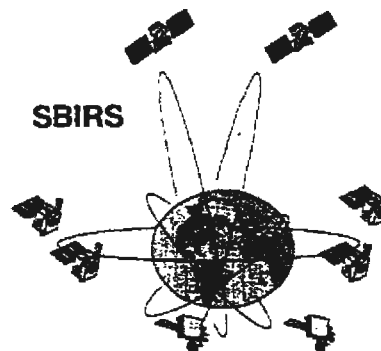
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SBIRS

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Space Based Infrared System (SBIRS)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

SMC/MT	Col Craig P. Weston
185 Discoverer Blvd.	Assigned: March 1, 1994
Suite 2512	DSN 833-1807; COMM (310) 363-1807
Los Angeles, CA 90245-4695	

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

RDT&E:
(U) PE 0604441F
PROCUREMENT:
(U) APPN 3020 ICN MSSBIR (Air Force)
MILCON:
(U) PE 0604441F
O&M:
(U) PE 0305915F

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
17 MAR 11 1997

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (DAFIS)
DEPARTMENT OF DEFENSE

SAF/PAS

97--0106

CONGRESSIONAL

~~Classified by DPMO SBIRS 000 12 Jan 96~~
~~Excluded from automatic downgrading and declassification~~
~~Excluded from automatic downgrading and declassification~~

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5. (U) References:

SAR Baseline (Planning Estimate):

(U) Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated February 06, 1995.

Approved Program / Development Estimate (DE):

(U) Approved Acquisition Program Baseline (APB) dated October 3, 1996.

6. (U) Mission and Description:

(U) The Space Based Infrared System (SBIRS) program is a new effort to satisfy key requirements delineated in the SBIRS 1 Oct 96 Operational Requirements Document within the available budget and schedule. SBIRS is an integrated "system of systems", consisting of multiple space and ground elements, with deployment phasing "High now, Low later", simultaneously satisfying requirements in the following mission areas: Missile Warning, Missile Defense, Technical Intelligence, and Battlespace Characterization. The baseline architecture for SBIRS includes space elements in Highly Elliptical Orbits (HEO), Geosynchronous Earth Orbits (GEO), and Low Earth Orbits (LEO), in addition to the following ground elements: a CONUS-based Mission Control Station (MCS) and backup (MCSB), overseas Relay Ground Stations (RGSs), Relocatable Terminals (RTs), and associated communication links. The High Component consists of four satellites in GEO, two hosted sensors in HEO (platforms provided by another organization), and associated ground elements. The current Low Component baseline, to be updated in Engineering and Manufacturing Development (EMD), consists of 3 rings of satellites, 8 satellites per ring, in low earth orbit.

7. (U) Executive Summary:

(U) This SAR reports on SBIR High as in previous SARs. However, certain SBIR Low information is included in sections 7, 9, 10, and other related narratives and footnotes. The SBIR Low financial, unit cost, contract, and related information will not be reported until after the SBIRS DAB review, scheduled for May 97.

(U) (1) SBIR HIGH:

(U) SBIR HIGH PRE-EMD ACTIVITIES/REVIEWS. SBIR High Pre-Engineering and Manufacturing Development (Pre-EMD) began in Aug 95. The Pre-EMD continued into 1996 with a "system of systems" requirements analysis effort. This effort was predicated on a Cost and Operational Effectiveness Analysis (COEA)-like process to refine the Operational Requirements Document (ORD), system definition, risk mitigation planning, and costing. The process' goal was to achieve an affordable system requirements set. Integral to the process were the numerous reviews and conferences accomplished throughout Spring 96 to garner Warfighter requirements consensus and to demonstrate contractor ability to meet system performance as well as cost and schedule goals. The reviews conducted included:

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7. (U) Executive Summary (Cont'd):

- A Senior Warfighter Forum on 31 Jan 96.
- System Requirement Reviews (SRRs) at Lockheed-Martin Missile & Space (LMMS) on 20-23 Feb 96 and Hughes-TRW on 26-29 Feb 96.
- A Joint Requirements Oversight Council (JROC), which approved US Space Command's SBIRS Capstone Requirements Document (CRD) on 30 Apr 96.
- System Functional Reviews (SFRs) at Hughes-TRW on 18-21 Jun 96 and at Lockheed-Martin Missile & Space (LMMS) on 24-27 Jun 96.
- A paper JROC, which approved the AF Space Command's SBIRS Operational Requirements Document (ORD) on 27 Nov 96.

(U) DOCUMENTATION/EMD PHASE. In parallel to the activities above, the SBIRS team also actively planned, refined, and coordinated the program acquisition strategy necessary for Defense Acquisition Board (DAB) approval to enter the EMD phase. On 3 Oct 96, the Under Secretary of Defense (Acquisition and Technology) [USD(A&T)] reviewed and signed the SBIRS "system of systems" Single Acquisition Management Plan (SAMP) and the Acquisition Program Baseline (APB). Subsequently, USD(A&T) issued the Acquisition Decision Memorandum (ADM).

(U) EMD CONTRACT AWARD. On 7 May 96, the SBIR High Component Call for Improvement and the Downselect Guide were released to the contractors. EMD proposals were submitted to the Government on 5 Jul 96. Formal government downselect activities began on 8 Jul 96. The source selection decision was made by SAF/AQ, and a \$1.9B SBIR High Component EMD contract modification was competitively awarded to LMMS of Sunnyvale, CA on 8 Nov 96. In addition, \$217.4M is planned for contract options.

(U) MILCON CONTRACT AWARD. Military Construction (MILCON) efforts were accomplished during 1996 to arrive at a baseline design for the SBIRS Mission Control Station (MCS). RFPs for MCS construction were released in late Oct 96. Contract Award occurred in Nov 96.

(U) EMD CONTRACTOR KICK-OFFS. An executive level SBIR High EMD contract kick-off meeting was accomplished 25-26 Nov 96. Senior management from Air Force Space Command (AFSPC), the SBIRS SPO, and LMMS attended. Also, a formal SBIR High kick-off meeting was conducted 9-10 Dec 96, and LMMS presented a detailed overview of the EMD program.

(U) (2) SBIR LOW:

(U) SBIRS DSB REVIEWS; SBIRS DAB OBJECTIVES. As a result of the 12 Jul 96 joint review of the National Missile Defense (NMD) and the SBIR Low [formerly Space and Missile Tracking System (SMTS)] programs, USD(A&T) designated SBIR Low as a Major Defense Acquisition Program (MDAP). The USD(A&T) commissioned the Defense Science Board (DSB) to review early deployment options for SBIR Low. Based on DSB's findings and recommendations, USD(A&T) directed the Air Force to plan for SBIR Low deployment to begin in FY04 as an optimized balance of cost and risks. A SBIRS DAB is scheduled for May 97. DAB objectives are to: (1) baseline the Low acquisition strategy, the Low program, and SBIR High and Low test strategy, (2) establish SBIR Low Program Definition and Risk Reduction (PDRR) success criteria, and (3) review the SBIR Low independent cost

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7. (U) Executive Summary (Cont'd):
assessment.

(U) FDS PROGRAM RESTRUCTURE. The Flight Demonstration System (FDS) Program was restructured in the summer of 96 to adjust content, add long wave infrared capability, constrain cost growth, and recognize impacts caused by government funding uncertainties. The resulting revised launch date is not earlier than 3Q FY99. TRW completed a Critical Design Review in Dec 96. Projected design performance meets or exceeds program requirements.

(U) LADS CONTRACT AWARD/COMPETITION. The Low Altitude Demonstration System (LADS) competitive Dem/Val contract was awarded to Rockwell on 3 Sep 96 for \$179M. The LADS contract will provide additional risk reduction for the SBIR Low concept, an alternative concept to the FDS program, and robust competition within the SBIR Low program.

(U) MSX EXPERIMENT-MSTI ACCOMPLISHMENTS. The Mid-Course Space Experiment (MSX) was launched on 24 Apr 96 on a Delta II from Vandenberg AFB. On 31 August, MSX successfully viewed a dedicated ICBM target which deployed 26 objects to replicate re-entry vehicles and penetration aids. Data reduction confirmed successful mid-course track in the Medium Wavelength Infrared (MWIR) band, first-time viewing of target in the Long Wavelength Infrared (LWIR) bands, and characterization of background signatures. The success of this experiment builds confidence that similar techniques planned by Low FDS program will also discriminate between warheads and decoys. The Miniature Sensor Technology Integration (MSTI) infrared sensor satellite was launched 16 May 96 on a Standard Pegasus over the Pacific Ocean west of Vandenberg AFB. MSTI is collecting infrared data with all sensors performing nominally. To date, MSTI has taken over 120,000 scenes in the Short Wavelength Infrared (SWIR) and Medium Wavelength Infrared (MWIR) passbands. MSTI has completed several joint data collections with MSX, research aircraft, and ground-based sensors. MSTI payload operations are scheduled to conclude Jun 97 with all mission objectives completed.

(U) COBRA BRASS DELAYS. Delays in delivering Cobra Brass components (telescopes, optics, cryocoolers, flight electronics) have compressed the original master schedule which eliminates all margin in the originally planned delivery date to the host satellite. All major elements have been delivered to Sandia National Laboratory for final integration and testing. The test status supported a late Feb 97 shipment date for integration with the host satellite.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program; DE	Current Estimate	
Pre-EMD				
System Requirements Review	TBD	N/A	FEB 96	
System Functional Review	TBD	N/A	JUN 96	
High Component Milestone II	N/A	OCT 96	OCT 96	(Ch-1)
High Component PDR (Space and Ground Increment 2)	N/A	DEC 97	DEC 97	(Ch-1)
High Component CDR (Space and Ground Increment 2)	N/A	SEP 99	SEP 99	(Ch-1)
Low Component FDS CDR	N/A	DEC 96	DEC 96	(Ch-1)
Low Component FDS Launch	N/A	SEP 99	SEP 99	(Ch-1)
Low Component Dem/Val Launch	N/A	TBD	TBD	(Ch-1)
Ground Segment Increment 1 Certification	SEP 99	AUG 99	AUG 99	(Ch-1)
Low Component Pre-EMD Start	N/A	OCT 99	OCT 99	(Ch-1)
Low Component Milestone II	N/A	DEC 00	DEC 00	(Ch-1)
Msn Control Station Govt Acceptance	SEP 01	N/A	N/A	(Ch-1)
HEO Sensor 1 Delivery	SEP 02	SEP 01	SEP 01	
Ground Segment Increment 2 Certification	N/A	JAN 02	JAN 02	(Ch-1)

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

Planning Estimate (SAR)	Approved Program;DE	Current Estimate
----------------------------	------------------------	---------------------

(b)(1)

b. (U) Current Change Explanations --

(Ch-1) The current schedule milestones have been updated to reflect the dates in the Approved Program Baseline(APB), dated 03 Oct 96.

10. (U) Performance Characteristics:

a. Performance --

Planning Estimate (SAR)	Approved Program;DE Obj/Threshold	Demon- strated Perf	Current Estimate
----------------------------	---	---------------------------	---------------------

(b)(1)

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

Planning	Approved Program; DE	Demonstrated	Current
Estimate (SAR)	Obi/Threshold	Perf	Estimate

(b)(1)

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

Planning	Approved Program; DE	Demonstrated	Current
Estimate (SAR)	Obj/Threshold	Perf	Estimate

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

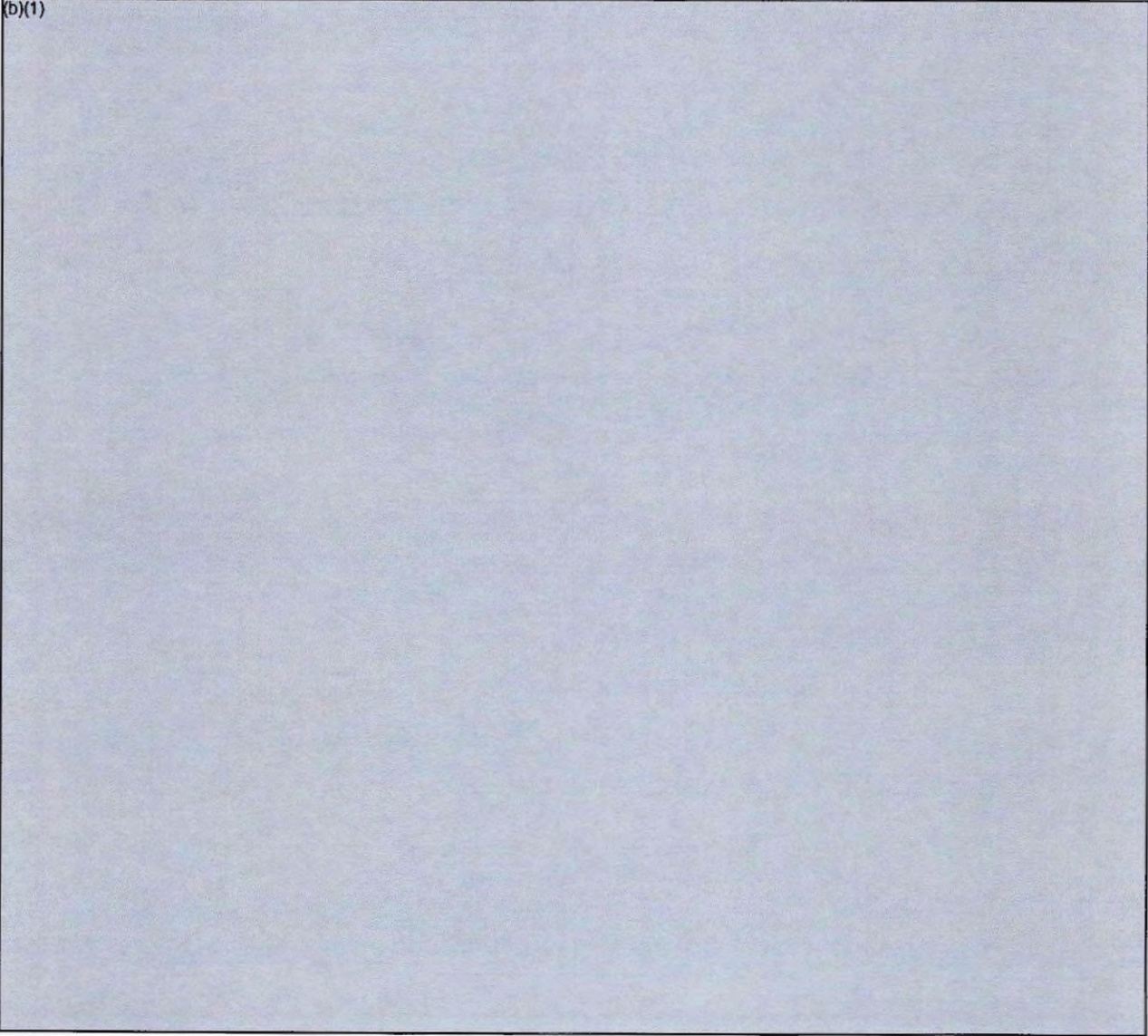
	Planning	Approved	Demon-	
	Estimate (SAR)	Program;DE	strated	Current
		Obj/Threshold	Perf	Estimate
(b)(1)				

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

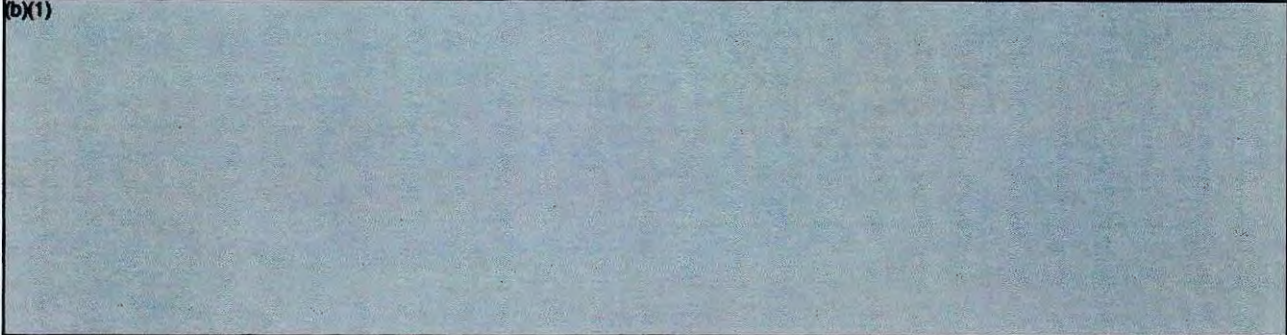
	Planning	Approved	Demon-	Current
	Estimate (SAR)	Program;DE	strated	Estimate
		Obj/Threshold	Perf	
(b)(1)				

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

	Planning	Approved	Demon-	Current
	Estimate (SAR)	Program;DE	strated	Estimate
		Obj/Threshold	Perf	
(b)(1)				

(U) ACRONYMS:

(b)(1) 

b. Current Change Explanations -- None.

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

	Planning Estimate (SAR)	Approved Program/DE	Current Estimate
a. (U) Cost --			
Development (RDT&E)	2308.0	3303.7	2713.7
Procurement	0.0	0.0	507.4
Flyaway			(507.4)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		
Construction (MILCON)	0.0	26.0	26.1
Acquisition O&M	0.0	140.2	124.9
Total FY 95 Base-Year \$	2308.0	3469.9	3372.1
Escalation	362.3	191.8	467.9
Development (RDT&E)	(362.3)	(181.7)	(332.4)
Procurement	(0.0)	(0.0)	(109.6)
Construction (MILCON)	(0.0)	(2.5)	(2.4)
Acquisition O&M	(0.0)	(7.6)	(23.5)
Total Then Year \$	2670.3	3661.7	3840.0

(U) NOTE: SBIRS was directed to use missile procurement funds after the APB was approved. The APB will be updated after the SBIRS DAB in May 97 to reflect the current program direction.

The Current Estimate totals include Pre-EMD and EMD costs for SBIR High through FY06. It also includes missile procurement funds for GEO G4 and G5.

b. (U) Quantity --

Development (RDT&E)	0	5	3
Procurement	N/A	N/A	2
Total	N/A	N/A	5

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	3372.1	3469.9	
(2) Quantity	5	5	
(3) Unit Cost	674.420	693.980	-2.82
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	507.4	0.0	
(2) Quantity	2	0	
(3) Unit Cost	253.700	N/A	N/A

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Planning Estimate	2670.3	-	-	-	2670.3
Previous Changes:					
Economic	-104.8	-	-	-	-104.8
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+11.3	-	-	-	+11.3
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-93.5	-	-	-	-93.5
Current Changes:					
Economic	-13.5	-	-0.3	-	-13.8
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+482.8	-	+0.3	+0.6	+483.7
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+469.3	-	-	+0.6	+469.9
Total Changes	+375.8	-	-	+0.6	+376.4
Adjustments	-	+617.0	+28.5	+147.8	+793.3
Current Estimate	3046.1	617.0	28.5	148.4	3840.0

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

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Planning Estimate	2308.0	-	-	-	2308.0
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+10.9	-	-	-	+10.9
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+10.9	-	-	-	+10.9
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+394.8	-	+0.1	-15.3	+379.6
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+394.8	-	+0.1	-15.3	+379.6
Total Changes	+405.7	-	+0.1	-15.3	+390.5
Adjustments	-	+507.4	+26.0	+140.2	+673.6
Current Estimate	2713.7	507.4	26.1	124.9	3372.1

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-13.5
	Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.8
	Realignment of funds to support the Miniature Sensor Technology Integration (MSTI) launch. (Estimating)	+2.8	+2.9
	Additional cost required to complete development of the program. (Estimating)	+908.2	+1096.1
	Allocation of cost change since Baseline. Direction to use missile procurement funds to buy G4 and G5. (Estimating)	-516.8	-617.0
	RDT&E Subtotal	+394.8	+469.3
(2)	<u>MILCON</u>		
	Revised escalation indices. (Economic)	N/A	-0.3
	Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.3
	MILCON Subtotal	+0.1	0.0

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

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(3) O&M		
Adjustment to correct inflation rates used to develop the Acquisition Program Baseline (APB). (Estimating)	-15.7	0.0
Additional funds to support ground operations. (Estimating)	+0.4	+0.6
O&M Subtotal	-15.3	+0.6

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Plan Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	768.00

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Plan Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	308.50

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	OCT 96	N/A	OCT 96
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	DEC 03	N/A	DEC 03
Total Cost	2670.3	N/A	N/A	3840
Total Quantity	N/A	N/A	N/A	5
Prog Acq Unit Cost	N/A	N/A	N/A	768

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

a. RDT&E --
 (U) SBIRS High Pre-EMD:
 Hughes Aircraft, El Segundo, CA
 F04701-95-C-0018, CPFF
 Award: August 4, 1995
 Definitized: August 4, 1995

Current Contract Price			Initial Contract Price	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
\$80.0	\$80.0	0	\$80.0	\$80.0

	<u>Contractor</u>	<u>Program Manager</u>
Estimated Price At Completion	\$80.0	\$80.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.6	\$-0.4
Cumulative Variances To Date (01/26/96)	\$0.0	\$0.0
Net Change	\$-1.6	\$0.4

Explanation of Change:

(U) The Pre-EMD contract efforts was completed on target with no cost or schedule variances. This will be the last report for this contract.

(U) SBIR HIGH EMD Mod:
 Lockheed-Martin Msl Sys, Sunnyvale CA
 F04701-95-C-0017, CPAF
 Award: October 31, 1995
 Definitized: October 31, 1995

Current Contract Price			Initial Contract Price	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
\$1590.1	\$1904.5	5	\$80.0	\$80.0

	<u>Contractor</u>	<u>Program Manager</u>
Estimated Price At Completion	\$1904.5	\$1904.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.6	\$-0.5
Cumulative Variances To Date (01/26/96)	\$0.0	\$0.0
Net Change	\$-1.6	\$0.5

Explanation of Change:

(U) Pre-EMD: The Pre-EMD effort for this contract was completed within the initial \$80M Target with no cost or schedule variances.

EMD: Lockheed-Martin was selected for the EMD portion of SBIR High on 8 Nov 96, and a contract modification was added to the contract. The changes above in Current Contract Prices, Quantity, and Estimated Prices At Completion result from the modification. The first Cost Performance Report (CPR) for this effort will be submitted in Feb 97. That CPR will reflect Jan 97 fiscal month end information. An Integrated Baseline Review (IBR) kickoff was held on 6 Dec 96. IBR discussions occurred during Jan 97. The IBR out briefing occurred 19 Feb 97.

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

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

<u>Appropriation</u>	<u>Prior Years (FY95-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-06)</u>	<u>Total</u>
RDT&E	467.8	338.4	549.3	1690.6	3046.1
Procurement	-	-	-	617.0	617.0
MILCON	14.5	14.0	-	-	28.5
O&M	-	12.4	11.3	124.7	148.4
Total	482.3	364.8	560.6	2432.3	3840.0

(U) Note: SBIR Low funding information is not included. It will not be reported until after the May 97 SBIRS Defense Acquisition Board (DAB) review.

b. Annual Summary -- SBIR (High)

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				111.2	113.0
1996				159.5	165.2
1997				179.2	189.6
1998				313.3	338.4
1999				498.0	549.3
2000				517.7	582.9
2001				371.0	426.7
2002				245.0	287.9
2003				153.0	184.1
2004				68.9	85.0
2005				58.4	74.0
2006				38.5	50.0
Subtotal	3			2713.7	3046.1

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001				34.9	40.8
2002	1		264.3	229.4	274.4

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

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003	1		243.1	194.8	238.8
2004				10.3	13.0
2005				10.1	13.0
2006				27.9	37.0
Subtotal	2		507.4	507.4	617.0

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				13.4	14.5
1998				12.7	14.0
Subtotal				26.1	28.5

Appropriation: 3400 Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				11.5	12.4
1999				10.2	11.3
2000				14.5	16.3
2001				15.3	17.6
2002				13.9	16.3
2003				15.0	18.1
2004				15.2	18.8
2005				14.8	18.8
2006				14.5	18.8
Subtotal				124.9	148.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5		507.4	3372.1	3840.0

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17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 244.5

(U) Percent Total Program Expended: 6.4%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

These Operations and Maintenance funds support the activation of new Space Based Infrared System (SBIRS) High Component ground operating and training facilities at four sites worldwide, along with the deactivation of an OCONUS Defense Support Program (DSP) site. SBIRS High Component Increment 1 consolidates operations from three DSP sites into one CONUS-based site. These funds support the procurement of temporary facilities, office equipment, furniture, travel, supplies, and communication links necessary for the activation of the SBIRS Mission Control Station two OCONUS Relay Ground Stations, and Initial Qualification Training (IQT) facility in FY99. These funds also provide for site cleanup, equipment transportation, and travel associated with the deactivation of the DSP Overseas Ground Station (OGS). Also support with these funds are the repair and transportation of Government Furnished Equipment (GFE), TDY for training of the initial cadre of operators, and AFOTEC efforts.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per SBIR (High) system	Avg Annual Cost Per DSP System
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	13.9	20.3
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
	N/A	N/A
Total	13.9	20.3

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: Army TACMS/APAM

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Army Tactical Missile System
 (Army TACMS/APAM)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

HQDA	COL John W. Holly
ATTN: SFAE-MSI-AB	Assigned: January 9, 1996
RedstoneArsenal, AL 35898-5650	DSN 746-1141; COMM (205) 876-1141

IS REVIEWED

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

RDT&E:

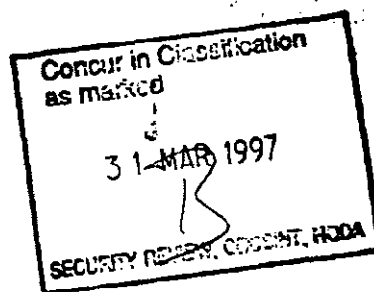
- (U) PE 23802 Project D2MT, D304
- (U) PE 64324 Project D302

PROCUREMENT:

- (U) APPN 2032 ICN C98500 (Army)
- (U) APPN 2032 ICN C98501 (Army)
- (U) APPN 2032 ICN C98502 (Army)
- (U) APPN 2032 ICN C98510 (Army)
- (U) APPN 2032 ICN CA0261 (Army)

MILCON:

- (U) PE 024030



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5. (U) References:

SAR Baseline (Production Estimate):

(U) Decision Change Paper (DCP), dated 15 Sep 90, subject: "Army Tactical Missile System Block I," based on Milestone III (DAB) decision.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated March 24, 1995.

6. (U) Mission and Description:

(U) The Army Tactical Missile System (Army TACMS/APAM) Block I is a ground-launched missile system consisting of a surface-to-surface guided missile with an anti-personnel/anti-materiel (APAM) warhead. The Improved Army TACMS (Block IA) integrates global positioning system (GPS) components and increases range of the Block I missile. The inherent GPS accuracies will be achievable independent of range. Army TACMS missiles are fired from the Multiple Launch Rocket System (MLRS) modified M270 launcher and are being deployed within the ammunition loads of corps MLRS battalions and/or division artillery MLRS batteries. Army TACMS includes: GUIDED MISSILE AND LAUNCHING ASSEMBLY TEST SET, GUIDED MISSILE SYSTEM TRAINING SET, GUIDED MISSILE SYSTEM: M165 TRAINER, TEST DEVICE, GUIDED MISSILE: M70 Modified M270 Launcher Army TACMS Missile Facilities. The Army TACMS provides a deep fires missile system that operates in near all-weather conditions, day or night. It is used to attack tactical surface-to-surface missile sites, air defense missile sites, logistics elements and command/control/communication complexes. The Block IA missile will destroy high value targets at ranges approximately twice that of the current Block I missile. The Block IA missile will be especially suited for destroying enemy surface-to-surface missile system launchers.

Army TACMS Block I replaces the conventional Lance system and the Army TACMS Block IA does not replace another defense system.

7. (U) Executive Summary:

(U) The Army Tactical Missile System (TACMS) resulted from a requirement to engage high priority targets at ranges beyond those of existing weapons. The Required Operational Capability (ROC) was approved in May 1985. The Army TACMS entered Full-Scale Development (FSD) in March 1986 and proceeded to Full-Rate Production in 1991. Army TACMS was successfully utilized in support of Operation Desert Shield/Desert Storm.

The Block IA Program was approved for Engineering and Manufacturing Development (EMD) in February 1994. Testing of prototype Block IA missiles was successfully conducted in support of the FY 94 Joint Precision Strike Demonstration (JPSD). Additionally, on January 11, 1995, a prototype Block IA missile was successfully fired at White Sands Missile Range (WSMR) in support of the Naval Surface Fire Support Advance Technology Demonstration (ATD) to demonstrate the capability to launch a modified Army TACMS from an M270 launcher on a sea-going platform and successfully engage a land target. Subsequently, the first "at sea" launch of an Army TACMS missile was successfully conducted on February 12, 1995. Further, developmental testing included: a Drop Test series which was completed in February 1996 and three EMD Block IA missiles that were fired at WSMR on February 8, 1996,

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7. (U) Executive Summary (Cont'd):

March 7, 1996, and March 28, 1996 as part of the contractor Production Prove-out Testing (PPT). Five Pre-Production Qualification Test (PPQT) flights were completed, one of which achieved maximum range of 316 km flight test, and another utilizing a dual missile firing. PPQT-1 and PPQT-2 were fired on May 10, 1996 and July 11, 1996. The third and fourth flight tests were both successfully fired on August 1, 1996 and the fifth and last flight test was fired on October 17, 1996 from Fort Wingate, NM. This final test was a production representative Block IA missile firing that was a cooperative effort with the Space and Strategic Defense System Targets Office. Two OT flight test missiles were fired from an Improved Position Determining System (IPDS) configured M270 launcher at WSMR and McGregor Ranges. OT-1, conducted on September 11, 1996, was flown against targets in the impact area and OT-2, conducted on September 19, 1996, used the inertial (non-Global Positioning System (GPS)) navigation system, achieving an accuracy better than the requirement for an inertial flight. Justification and Approval of the Army TACMS Block IA Multi-year was signed by the Assistant Secretary of the Army (RD&A) on September 9, 1996.

A Milestone III Review will be held on March 20, 1997 for approval to enter Full-Rate Production for the Army TACMS Block IA missile. Long lead time items for the FRP I were awarded in January 1997.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. (U) Schedule:

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Army TACMS Block I			
Assault Breaker Tech			
Demonstration			
Start	APR 78	APR 78	APR 78
Complete	DEC 82	DEC 82	DEC 82
Special Task Force Initiated	MAR 81	N/A	MAR 81
Mission Element Need	APR 81	N/A	APR 81
Statement Approval			
Joint (Army/AF) Program	JUN 82	JUN 82	JUN 82
Directed			
ROC Approved	MAY 85	MAY 85	MAY 85
Request For Proposal (RFP)	JUN 85	N/A	JUN 85
Released			
Milestone II (ASARC)	DEC 85	N/A	DEC 85
Milestone II (DSARC)	FEB 86	FEB 86	FEB 86
FSD Contract Award	MAR 86	MAR 86	MAR 86
EDT-C			
Start	MAR 86	MAR 86	MAR 86
Complete	FEB 89	FEB 89	FEB 89
Depot Service Support	N/A	JUN 87	JUN 87
Long Lead Time Items Contract	MAY 88	MAY 88	MAY 88
Option Award			
DA Program Review (ASARC IIIA)	FEB 89	JAN 89	JAN 89
LRIP Contract Option Award	FEB 89	FEB 89	FEB 89
DT II Flight Test			
Start	MAR 89	MAR 89	MAR 89
Complete	DEC 89	DEC 89	DEC 89
OT Readiness Review	MAR 90	MAR 90	MAR 90
First LRIP Delivery	MAR 90	MAR 90	MAR 90
IOTE Flight/Ground Test			
Start	MAR 90	MAR 90	MAR 90
Complete	JUN 90	JUN 90	JUN 90
Confirmatory Test Complete	JUL 90	JUN 90	JUN 90
(if required)			
First Unit Equipped	AUG 90	AUG 90	AUG 90
Initial Operational	OCT 90	AUG 90	AUG 90
Capability (IOC)			
Milestone III (DAB)	OCT 90	NOV 90	NOV 90
Organic Support Capability	N/A	NOV 90	NOV 90
Full-Rate Production Contract	NOV 90	NOV 90	NOV 90
Award			
Prod Verification Test			
(if required)			
Start	NOV 90	NOV 90	NOV 90
Complete	MAY 91	JAN 91	JAN 91
First Full Rate Production	OCT 91	MAY 91	MAY 91
Delivery			
Full-Rate Production-II	N/A	DEC 91	DEC 91
Contract Award			

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
	N/A	SEP 92	SEP 92
First Full-Rate Production-II Delivery			
Army TACMS Block IA			
Milestone IV-Preplanned Product Improvement (P3I) Anti-Personnel/ Anti-Materiel (APAM)	N/A	FEB 94	FEB 94
P3I APAM Engineering and Manufacturing Development (EMD) Contract Award	N/A	FEB 94	MAR 94
Critical Design Review	N/A	JUN 95	JUN 95
Production Prove-Out Test (PPT)			
Start	N/A	JUN 95	JUL 95
Complete	N/A	JAN 96	MAR 96
Pre-Production Qualification Tests (PPQT)			
Start	N/A	JAN 96	MAY 96
Complete	N/A	JUN 96	OCT 96 (Ch-1)
LRIP Decision	N/A	MAR 96	MAY 96
Operational Test & Evaluation			
Start	N/A	MAR 96	AUG 96
Complete	N/A	JUN 96	SEP 96 (Ch-2)
LRIP II Contract Award	N/A	DEC 96	N/A
Production Decision	N/A	OCT 97	MAR 97
Full-Rate Production (FRP) Contract Award	N/A	DEC 97	APR 97 (Ch-3)
LRIP Delivery	N/A	AUG 97	AUG 97
Organic Support Capability	N/A	SEP 97	SEP 97
Depot Service Support	N/A	SEP 97	SEP 97
Initial Operational Capability (IOC)	N/A	FEB 98	FEB 98
LRIP II Delivery	N/A	JUN 98	N/A
First FRP Delivery	N/A	MAY 99	MAY 98

b. (U) Current Change Explanations --

(Ch-1) PRE-PRODUCTION QUALIFICATION TESTS (PPQT) - Completion date changed from August 1996 to October 1996 to reflect actual completion date. The delay was due to the non-availability of the Ft. Wingate range in the August 1996 timeframe.

(Ch-2) BLOCK IA OPERATIONAL TEST AND EVALUATION - Completion date was changed from October 1996 to September 1996 to reflect the actual completion date.

(Ch-3) BLOCK IA FULL-RATE PRODUCTION (FRP) CONTRACT AWARD - Contract award date was changed from March 1997 to April 1997 to allow processing time following the Milestone III decision on March 20, 1997.

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10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(S) BLOCK I				
Range (km)	130	130 / 130	172@WSMR	165@Sea Level
Payload (kg)	454	454 / 454	567	567
Accuracy				
(b)(1)				
(S) BLOCK IA				
Range (km)-Maximum	N/A	330 / 300	316@WSMR	300@Sea (Ch-2) ~ level
Range (km)-Minimum	N/A	50-70 / <130	93.4	70.0 (Ch-3)
Payload (kg)	N/A	158 / 158	173	173 (Ch-4)
Accuracy				
(b)(1)				

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Army TACMS/APAM, December 31, 1996

10b. ~~(S)~~ Performance Characteristics (Cont'd):

b. ~~(S)~~ Current Change Explanations --

(b)(1)

(CH 2) - Block IA maximum range Demonstrated Performance changed from N/A to 316km as demonstrated in PPQT-5, Flight #10, from Ft. Wingate to WSMR. Sea level was added to Current Estimate for clarification.

(CH 3) - Block IA minimum range Demonstrated Performance was changed from TBD to 93.4 as demonstrated in PPQT-2, Flight #5 at WSMR. The Current Estimate was changed from <130 to 70.0 by Army TACMS 6-Degrees of Freedom (DOF) analysis.

(CH 4) Block IA payload Demonstrated Performance was changed from 175 to 173 and the Current Estimate was changed from 177 to 173 based on the number of bomblets (300) being used on all tactical versions.

(b)(1)

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Army TACMS/APAM, December 31, 1996

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	650.6	631.1	732.1
Procurement	846.4	1345.2	1542.1
Flyaway	(821.2)		(1521.1)
Other Weapon Systems	(22.9)		(11.6)
Peculiar Support	(0.0)		(5.5)
Initial Spares	(2.3)		(3.9)
Construction (MILCON)	9.6	8.6	9.9
Acquisition O&M	0.0	0.0	0.0
Total FY 91 Base-Year \$	1506.6	1984.9	2284.1
Escalation	1.6	523.9	116.6
Development (RDT&E)	(-89.3)	(26.8)	(-78.5)
Procurement	(90.0)	(495.2)	(194.5)
Construction (MILCON)	(0.9)	(1.9)	(0.6)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1508.2	2508.8	2400.7
b. (U) Quantity --			
Development (RDT&E)	15	18	18
Procurement	1542	2447	2447
Total	1557	2465	2465

Note: Excludes 35 RDTE prototypes from the SAR Baseline and 42 from the Current Estimate that are not considered fully configured.

(U) The current estimate for the Development quantity includes 15 Block I and 3 Block IA missiles. The current estimate for the Procurement quantity includes 1647 Block I and 800 Block IA missiles.

The approved Low Rate Initial Production quantity was 100. A quantity of 70 was procured.

c. (U) Foreign Military Sales --
Commitments to date are for 72 Army TACMS missiles for the government of Turkey for a total of \$61.4M.

d. (U) Nuclear Costs --
None.

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Army TACMS/APAM, December 31, 1996 -

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 91 BY\$)	2284.1	2310.4	
(2) Quantity	2465	2465	
(3) Unit Cost	0.927	0.937	-1.07
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 91 BY\$)	1542.1	1565.8	
(2) Quantity	2447	2447	
(3) Unit Cost	0.630	0.640	-1.56

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	561.3	936.4	10.5	1508.2
Previous Changes:				
Economic	-1.2	-85.1	-0.3	-86.6
Quantity	-	+476.9	-	+476.9
Schedule	-	+63.2	-	+63.2
Engineering	+96.7	-26.9	-	+69.8
Estimating	-2.7	+416.0	+0.3	+413.6
Other	-	-	-	-
Support	-	+13.2	-	+13.2
Subtotal	+92.8	+857.3	0.0	+950.1
Current Changes:				
Economic	-0.1	+5.4	-	+5.3
Quantity	-	-	-	-
Schedule	-	-10.3	-	-10.3
Engineering	-	-	-	-
Estimating	-0.4	-21.4	-	-21.8
Other	-	-	-	-
Support	-	-30.8	-	-30.8
Subtotal	-0.5	-57.1	-	-57.6
Total Changes	+92.3	+800.2	0.0	+892.5
Current Estimate	653.6	1736.6	10.5	2400.7

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

(U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Production Estimate	650.6	846.4	9.6	1506.6
Previous Changes:				
Quantity	-	+364.0	-	+364.0
Schedule	-	+40.9	-	+40.9
Engineering	+83.4	-18.9	-	+64.5
Estimating	-1.6	+325.0	+0.3	+323.7
Other	-	-	-	-
Support	-	+20.1	-	+20.1
Subtotal	+81.8	+731.1	+0.3	+813.2
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.3	-11.1	-	-11.4
Other	-	-	-	-
Support	-	-24.3	-	-24.3
Subtotal	-0.3	-35.4	-	-35.7
Total Changes	+81.5	+695.7	+0.3	+777.5
Current Estimate	732.1	1542.1	9.9	2284.1

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDTE</u>		
	Revised escalation indices. (Economic)	N/A	-0.1
	Revised estimate due to budget adjustments. (Estimating)	-0.3	-0.4
	RDTE Subtotal	-0.3	-0.5
(2)	<u>Procurement</u>		
	Correction to Dec 95 SAR to align flyaway and support cost. (Estimating)	+10.0	+11.8
	(Support)	-10.0	-11.8
	Revised escalation indices. (Economic)	N/A	-2.5
	Economic adjustment for negative program change. (Economic)	N/A	+7.9
	Acceleration of annual procurement buy profile/shortened by one year. (Schedule)	0.0	-10.3
	Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.6
	Revised estimate based on multiyear approval for FY 98-01. (Estimating)	-28.1	-42.3
	Revised estimate to adjust prior year Flyaway dollars to actual. (Estimating)	-0.3	0.0

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate to recategorize support cost to flyaway cost.		
(Estimating)	+7.9	+9.8
(Support)	-7.9	-9.8
Revised estimate for MLRS reprogramming.		
(Estimating)	-1.1	-1.3
Increase in Initial Spares for second year requirement. (Support)	+0.7	+0.9
Revised Other Weapon System support cost due to over estimation of consumables requirements (Support)	-7.1	-10.1
Procurement Subtotal	-35.4	-57.1

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.97	-0.03	-0.17	+0.02	+0.03	+0.16	--	-0.01	--	0.97

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.61	-0.03	-0.03	+0.02	-0.01	+0.16	--	-0.01	+0.10	0.71

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	FEB 86	FEB 86	FEB 86	FEB 86
Milestone III	N/A	SEP 89	OCT 90	NOV 90
FUE/IOC	JUN 90	JUN 90	AUG 90	AUG 90
Total Cost	3585.8	1222.3	1508.2	2400.7
Total Quantity	N/A	1050	1557	2465
Prog Acq Unit Cost	N/A	1.16	0.97	0.97

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

a. RDT&E --

(U) P3I EMD (IA) Missiles:
Vought Systems, Dallas, TX
DAAH01-94-C-0002, CPlF
Award: March 31, 1994
Definitized: March 31, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$52.4	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$52.5	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$52.5	\$52.8

Previous Cumulative Variances
Cumulative Variances To Date (12/31/96)
Net Change

Cost Variance	Schedule Variance
\$-2.4	\$-5.4
\$-3.3	\$-1.8
\$-0.9	\$3.6

Explanation of Change:

(U) The cost and schedule variances are not significant.

(U) LRIP (Block IA):
Vought Systems, Dallas, TX
DAAH01-92-C-0038, FFP
Award: June 14, 1996
Definitized: February 28, 1997

Initial Contract Price		
Target	Ceiling	Qty
\$45.8	N/A	70

Current Contract Price		
Target	Ceiling	Qty
\$45.8	N/A	70

Estimated Price At Completion	
Contractor	Program Manager
\$45.8	\$45.8

Explanation of Change:

(U) Cost and schedule variance reporting is not required for this FFP contract.

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

b. Procurement --			Initial Contract Price		
(U) FRP V Missiles:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Vought Systems, Dallas, TX					
DAAH01-92-C-0038, FFP			\$78.3	N/A	148
Award: November 15, 1994					
Definitized: November 15, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$78.3	N/A	148	\$78.3	\$78.3	

Explanation of Change:

(U) Cost and schedule variance reporting is not required for this FFP contract.

(U) FRP VI:			Initial Contract Price		
Vought Systems, Dallas, TX			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-92-C-0038, FFP					
Award: November 9, 1995			\$33.2	N/A	50
Definitized: November 9, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$33.2	N/A	50	\$33.2	\$33.2	

Explanation of Change:

(U) Cost and schedule variance reporting is not required for this FFP contract.

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

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

<u>Appropriation</u>	<u>Prior Years (FY80-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-02)</u>	<u>Total</u>
RDT&E	653.6	-	-	-	653.6
Procurement	1309.3	98.8	103.0	225.5	1736.6
MILCON	10.5	-	-	-	10.5
O&M	-	-	-	-	-
Total	1973.4	98.8	103.0	225.5	2400.7

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

b. Annual Summary -- GUIDED MSL&LNCH ASSY:M39

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1980				14.6	9.4
1981				19.9	14.0
1982				15.8	11.8
1983				7.7	6.0
1984				62.6	50.2
1985				92.3	76.4
1986				125.2	106.6
1987				87.1	76.5
1988				109.6	100.1
1989				77.7	73.8
1990				36.9	36.4
1991					
1992					
1993					
1994				23.2	25.4
1995				32.6	36.3
1996				22.3	25.4
1997				4.6	5.3
Subtotal	18			732.1	653.6

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				3.7	3.5
1989	66	0.3	67.3	72.9	72.4
1990	104	3.2	95.2	100.7	103.1
1991	373		217.9	219.0	229.7
1992	300		160.1	161.0	172.6
1993	351		173.9	174.2	190.5
1994	255		127.4	128.1	142.8
1995	148		97.1	98.0	111.6
1996	120	4.1	99.0	105.1	121.3
1997	97		135.9	137.1	161.8
1998	153		80.4	81.9	98.8
1999	160		83.3	83.6	103.0
2000	160		79.3	79.5	100.1
2001	160		96.7	86.8	111.6
2002				10.5	13.8
2003					
Subtotal	2447	7.6	1513.5	1542.1	1736.6

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

Appropriation: 2050 Military Construction, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991				4.8	5.0
1992				5.1	5.5
Subtotal				9.9	10.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2465	7.6	1513.5	2284.1	2400.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	50	50
Procurement	1573	1576

(U) Percent Total Program Quantities Delivered: 66.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1654.3

(U) Percent Total Program Expended: 68.9%

(U) The fully configured end items for RDT&E are 15 Block I and 3 Block IA RDT&E units. The remaining RDT&E units will be used for testing as non-fully configured items.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
Army TACMS is fired from the modified MLRS M270 launcher within the MLRS organizational units. Army TACMS Operating and Support (O&S) general support costs, including manning and crew support, are included in the O&S section of the MLRS SAR. Army TACMS is a certified round. Maintenance support is determined on the basis of periodic surveillance tests.

The average annual cost per missile reflects average annual cost for total Army TACMS Block I and Block IA missiles (2447).

There was no antecedent system for the Army TACMS/APAM. The date of the O&S cost estimate is February 11, 1997.

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

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

Cost Element	Avg Annual Cost Per Block I/Block IA	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	2.0	N/A
Unit Level Consumption	1.8	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	1.9	N/A
Contractor Support	0.0	N/A
Sustaining Support	1.7	N/A
Indirect Costs	0.1	N/A
Total	7.5	0.0

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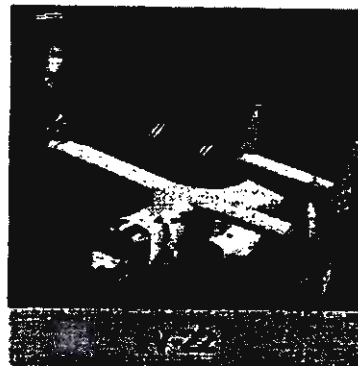
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: V-22 (OSPREY)

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): V-22 JOINT SERVICES ADVANCED
VERTICAL LIFT AIRCRAFT (OSPREY)

2. DoD Component: Navy

Joint Participants:
USMC, USN, USSOCOM, USAF

3. Responsible Office and Telephone Number:

PROGRAM EXECUTIVE OFFICE (PMA-275)
AIR ASW ASSAULT AND SPECIAL MISSION
1421 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22243-5120

COL Robert D. Garner
Assigned: July 16, 1996
DSN 664-4310; COMM (709) 604-4310
GARNERRD.NTRPRS@NAVAIR.NAVY.MIL

4. Program Elements/Procurement Line Items:

RD7&E:

PE 0603203N
PE 0603256N (Shared: Navy Proj. W1557 Project 642973)
PE 0604222A
PE 0604262N (Shared: Navy MLR Proj. W2088 Project H1425)
PE 1110011F (Shared: Proj. 643752)
PE 1160404BB (Shared) Proj. 643752

PROCUREMENT:

APPN 1506 ICN 016300 (Navy)
APPN 3010 ICN (Air Force)
APPN 0300 ICN (DCA/DNA)

MILCON:

PE M62470

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5. References:

SAR Baseline (Development Estimate):
FY 1988/89 President's Budget.

Approved Program:

Approved Acquisition Program Baseline (APB) dated August 21, 1995.

6. Mission and Description:

The V-22 Osprey is a Department of the Navy program for the purpose of developing, testing, evaluating, procuring and fielding a tilt rotor, vertical takeoff and landing aircraft for Joint Service application. The V-22 program is designed to provide an aircraft to meet the amphibious/vertical assault needs of the Marine Corps, the strike rescue needs of the Navy, and the special operations needs of the Air Force. The V-22 will replace the CH-46 and CH-53A/D in the Marine Corps, and the HH-3A in the Navy, and will supplement H-53, H-60 and C-130 in the Air Force. The V-22 will be capable of flying over 2100 nautical miles with a single refueling, giving the services the advantage of a VSTOL aircraft that could rapidly self-deploy to any location in the world.

7. Executive Summary:

The quarterly Selected Acquisition Report submitted in September 1996 reported that there were schedule delays in the CV-22 development portion of the program. To live within constrained FY96 and FY97 RDT&E,N funding, CV-22 efforts were restructured, resulting in delays in Preliminary Design Review (PDR), Critical Design Review (CDR), and completion of Initial Operation Test and Evaluation (IOT&E). CV-22 production start and IOC remain unchanged. A Program Deviation Report and Revised Acquisition Program Baseline (APB) are in process. Additionally, interim requirements definition for CV-22 MILCON has resulted in a cost breach. The APB will not be rebaselined however, until MILCON requirements can more accurately be defined and programmed.

Congressional undistributed reductions and emerging issues in the FY97 RDT&E,N account necessitates reprogramming approximately \$70M from APN to RDT&E,N. Congressional Approval of the Above Threshold Reprogramming is needed in time to ensure funds availability to the Program Office in July/August to fully fund the FY97 increment of the Airframe Engineering Manufacturing Development (EMD) contract and maintain program schedules.

Operational Test (OT-IIC) commenced in October 1996. Austere landing demonstration utilizing aircraft #3 (FSD) and tactics portion utilizing the manned flight simulator have been completed. OT-IIC efforts will continue through September 1997. Control system proof load testing was completed in November 1996. The contract modification to definitize CV-22 EMD efforts was signed in December 1996. First rotor turn on EMD aircraft #7 occurred in December 1996 and first flight was achieved February 5, 1997. A Navy level review to authorize advanced procurement for MV-22 LRIP lot 1 was completed in February 1996. An OSD level program review to authorize full funding of MV-22 LRIP lot 1 and turn on of lot 2 is planned in early April 1997.

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7. Executive Summary (Cont'd):

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	Yes
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

(U) There are two APBA breaches as a result of restructuring necessitated by previous FY96 reductions and FY97 PBD adjustments. The current CV-22 development schedule delays PDR and CDR to accommodate deletion of an additional test article and inserting the remanufacture of aircraft #9. The schedule's current estimate breaches the APBA for CV-22 PDR from a threshold of Jun 97 to Feb 98 and CV-22 CDR from a threshold of Feb 98 to Dec 98. A revised APBA is in process. Additionally, interim requirements definition for CV-22 MILCON has resulted in a cost breach. The APB will not be rebaselined however, until MILCON requirements can more accurately be defined and programmed.

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 0 (DEPSECDEF MEMO)	DEC 81	DEC 81	DEC 81
Milestone I (DSARC I)	DEC 82	DEC 82	DEC 82
Preliminary Design Contract Award	APR 83	APR 83	APR 83
Milestone II (DSARC II)	APR 86	APR 86	APR 86
FSD Contract Award	MAY 86	MAY 86	MAY 86
Production Contract Award (Long Lead AAC)	JAN 89	JAN 89	MAR 89
Operational Testing IIA	AUG 89	N/A	N/A
Milestone IIIA (USMC Pil Prod)	DEC 89	N/A	N/A
Operational Testing IIB	AUG 90	N/A	N/A
Milestone IIIB (All Serv Ltd Prod)	DEC 90	N/A	N/A

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APR)	Current Estimate
Operational Testing IIIC (OPEVAL)	AUG 91	N/A	N/A
Operational Testing IID (AF OPEVAL)	AUG 91	N/A	N/A
First Fleet Deliveries	DEC 91	N/A	N/A
Milestone IIIC (USN/MC/A Full Production)	DEC 91	N/A	N/A
USMC IOC (5 Acft Trng Det)	SEP 92	N/A	N/A
USAF IOC (6 Acft Mission Capable)	SEP 94	N/A	N/A
USA IOC (First Operational Company Equipped)	SEP 95	N/A	N/A
EMD Airframe Contract Award	N/A	OCT 92	OCT 92
EMD Engine Contract Award	N/A	DEC 92	DEC 92
SRR Complete	N/A	AUG 93	AUG 93
EMD Trade Studies Complete	N/A	N/A	JAN 94
PDR Complete	N/A	APR 94	APR 94
MS II Plus Program Review	N/A	SEP 94	SEP 94
CDR Complete	N/A	DEC 94	DEC 94
DAB LRIP REVIEW	N/A	FEB 97	APR 97 (Ch-1)
MV-22 TECHEVAL			
Start	N/A	FEB 99	FEB 99
Complete	N/A	APR 99	MAY 99
MV-22 OPEVAL			
Start	N/A	MAY 99	MAY 99
Complete	N/A	DEC 99	DEC 99
LRIP 1 Contract Award (Long lead \$)	N/A	FEB 96	JUN 96
LRIP 1 First Delivery	N/A	APR 99	MAY 99
LRIP 2 Contract Award (Long lead \$)	N/A	FEB 97	APR 97 (Ch-1)
LRIP 2 First Delivery	N/A	FEB 00	FEB 00
LRIP 3 Contract Award (Long Lead \$)	N/A	FEB 98	FEB 98
LRIP 3 First Delivery	N/A	NOV 00	DEC 00
LRIP 4 Contract Award (Long Lead \$)	N/A	FEB 99	FEB 99
LRIP 4 First Delivery	N/A	OCT 01	JAN 02
Full Rate Production Contract Award (Long lead \$)	N/A	FEB 00	FEB 00
Physical Configuration Audit (PCA)	N/A	DEC 99	DEC 99
MS III	N/A	DEC 00	DEC 00
MV-22 IOC	N/A	APR 01	JUL 01
GSD	N/A	MAR 07	MAR 07
Modification to EMD Contract to Include	N/A	JUN 95	AUG 95
CV-22 Efforts			
CV-22 SRR	N/A	JUN 96	AUG 96
CV-22 PDR	N/A	DEC 96	FEB 98 (Ch-2)
CV-22 CDR	N/A	AUG 97	DEC 98
CV-22 Production Contract Award (Long lead \$)	N/A	FEB 00	FEB 00
CV-22 Flight Test			
Start	N/A	MAR 00	OCT 99
Complete	N/A	AUG 01	FEB 02
CV-22 IOT&E			
Start	N/A	SEP 01	MAR 02

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Complete	N/A	MAR 02	SEP 02
CV-22 First Production Delivery	N/A	MAR 03	MAR 03
IOC-CV	N/A	OCT 05	OCT 05

Milestone 0 through USA IOC (First Operational Company Equipped) reflects the FSD program which was terminated in April 1989.

b. Current Change Explanations --

(Ch-1) The Feb 97 DAB LRIP Program Review was delayed to Apr 97 due to administrative scheduling conflicts. LRIP 2 contract award (long lead \$) was delayed to Apr 97 pending DAB approval.

(Ch-2) There is one SAR schedule delay of 6 months. The previous date for CV-22 PDR was for the hardware PDR only. PDR has been redefined to include software PDR and final executive PDR. The schedule's current estimate changes the previous SAR current estimate for PDR from Aug 97 to Feb 98.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Folded				
Length (ft)	62.24	N/A / N/A	N/A	N/A
Width (ft)	18.42	N/A / N/A	N/A	N/A
Height (ft)	17.98	N/A / N/A	N/A	N/A
UnFolded				
Length (ft)	57.33	N/A / N/A	N/A	N/A
Width (ft)	83.83	N/A / N/A	N/A	N/A
Height (ft)	21.73	N/A / N/A	N/A	N/A
Empty Weight (lbs)	31786	N/A / N/A	N/A	N/A
Readiness, Msn	70	N/A / N/A	N/A	N/A
Capability Rate (% MC)				
Mission Complete Probability, Rate (MFHBMA Design Controllable) (%)	98	N/A / N/A	N/A	N/A
Direct Maintenance Manhours per Flight Hour, Design Controllable:				
Org Level, Unscheduled (corrective)	7.0	N/A / N/A	N/A	N/A
Org Level, Scheduled (preventive)	2.5	N/A / N/A	N/A	N/A

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate	
World-wide	2100	N/A	/	N/A	N/A	
Self-Deployment (nm)						
(minimum distance)						
Continuous Cruise	250	N/A	/	N/A	N/A	
Speed (kts)						
Dash Speed (kts)	275	N/A	/	N/A	N/A	
Instantaneous	N/A	N/A	/	N/A	TBD	
G-Loading						
Plus	4.0	N/A	/	N/A	N/A	
Minus	-1.0	N/A	/	N/A	N/A	
Troop Capacity	24	N/A	/	N/A	N/A	
External Cargo (lbs)	10000	N/A	/	N/A	N/A	
MV-22						
Cruise Speed (kts)	N/A	270	/	240	TBD	240
			/			
Mission Radius (NM)						
Land Trooplift	N/A	200X1	/	200X1	TBD	275X1 (Ch-1)
Land External	N/A	110X1	/	50X1	TBD	50X1 (Ch-1)
Sea Trooplift	N/A	110X2	/	50X2	TBD	71X2 (Ch-1)
Sea External	N/A	110X1	/	50X1	TBD	111X1 (Ch-1)
Payload						
Troops	N/A	24	/	24	TBD	24
External Lift	N/A	15,000	/	10,000	TBD	10,000
(lbs)						
Aerial Refuel	N/A	yes	/	yes	TBD	yes
Capable						
Self-Deployment	N/A	2100 w/	/	2100 w/1	TBD	2565 w/1
(nm)		no	/	aerial		aerial
		refuel	/	refuel		refuel
Shipboard	N/A	yes	/	yes	TBD	yes
Compatible						
V/STOL Capable	N/A	yes	/	yes	TBD	yes
Survivability (nm	N/A	14.5	/	12.7	TBD	12.7
API @90%vel)						
Reliability						
MTBF	N/A	>=2.0	/	>=1.4	TBD	1.4
Mission (%)	N/A	>=85	/	>=85	TBD	85
CV-22						
Cruise Speed (kts)	N/A	250	/	230	TBD	230
Mission Radius (nm)	N/A	750	/	500	TBD	500
Payload - Troops	N/A	24	/	18	TBD	18
Aerial Refuel	N/A	yes	/	yes	TBD	yes
Capable						
Self-Deployment	N/A	2100	/	2100 w/1	TBD	2487 w/1
(nm)		w/o	/	aerial		aerial
		aerial	/	refuel		refuel
		refuel	/			

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Shipboard	N/A	yes / yes	TBD	yes
Compatible				
Operational	N/A	100' / 300'	TBD	300'
Environment		TF/TA, / TF/TA, Day/Nigh/ Day/Nigh t, / t, VMC/IMC / VMC/IMC		TF/TA, . Day/Nigh t , VMC/IMC
Precision	N/A	Locate / Locate	TBD	Locate
Navigation		LZ W/IN / LZ W/IN		LZ W/IN
(diameter @ MAX		1 Rotor / 2X		2X
Combat Radius)		/ Rotor		Rotor
Reliability				
MTBF	N/A	>=2.0 / >=1.4	TBD	1.4
Weapon System (%)	N/A	>=84 / >=77	TBD	77

Performance characteristics for Folded Length through External Cargo (lbs) reflects the program which was terminated in 1989.

b. Current Change Explanations --

(Ch-1) Revised calculations based upon new testing data for rotor performance and engine horsepower.

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	2443.7	5562.5	5598.5
Procurement	20493.1	21441.7	20982.7
Flyaway	(15517.1)		(16486.1)
Other Weapon Systems Cost	(3299.6)		(0.0)
Peculiar Support	(0.0)		(2668.0)
Initial Spares	(1676.4)		(1828.6)
Construction (MILCON)	136.2	24.4	29.2
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 86 Base-Year \$	23073.0	27028.6	26610.4
Escalation	6589.3	25926.8	18917.6
Development (RDT&E)	(181.5)	(1388.5)	(1321.2)
Procurement	(6371.1)	(24515.2)	(17575.0)
Construction (MILCON)	(36.7)	(23.1)	(21.4)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	29662.3	52955.4	45528.0
b. Quantity --			
Development (RDT&E)	0	11	0
Procurement	<u>913</u>	<u>523</u>	<u>523</u>
Total	913	534	523

Note: Excludes 6 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

Note: The revised APB being processed will delete the 11 development aircraft from the baseline because they are not fully configured. The restructuring of the CV-22 necessitated the deletion of an additional test article and insertion of remanufacture of aircraft #9. The LRIP quantities are as follows: 5 (FY97), 5 (FY98), 7 (FY99), and 8 (FY00).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (AUG 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 86 BY\$)	26610.4	27028.6	
(2) Quantity	523	534	
(3) Unit Cost	50.880	50.615	+0.52
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 86 BY\$)	20982.7	21441.7	
(2) Quantity	523	523	
(3) Unit Cost	40.120	40.998	-2.14

13. Cost Variance Analysis:

Summary - All end items

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

	RDTE	PROC	MILCON	TOTAL
Development Estimate	2625.2	26864.2	172.9	29662.3
Previous Changes:				
Economic	-95.2	-5988.2	-4.8	-6088.2
Quantity	-77.0	+15143.2	-	+15066.2
Schedule	+0.6	-43.0	+7.8	-34.6
Engineering	-	-	-	-
Estimating	+4443.4	-135.1	-133.3	+4175.0
Other	-	-	-	-
Support	-	+3819.0	-	+3819.0
Subtotal	+4271.8	+12795.9	-130.3	+16917.4
Current Changes:				
Economic	-4.9	+1568.0	-5.1	+1558.0
Quantity	-	-	-	-
Schedule	+27.6	-1697.3	-	-1669.7
Engineering	-	-	-	-
Estimating	-	+117.6	+13.1	+130.7
Other	-	-	-	-
Support	-	-1090.7	-	-1090.7
Subtotal	+22.7	-1102.4	+8.0	-1071.7
Total Changes	+4294.5	+11693.5	-122.3	+15845.7
Current Estimate	6919.7	38557.7	50.6	45528.0

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

Summary - All end items

Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDTEE	PROC	MILCON	TOTAL
Development Estimate	2443.7	20493.1	136.2	23073.0
Previous Changes:				
Quantity	-72.9	+1076.8	-	+1003.9
Schedule	-	+3.5	-	+3.5
Engineering	-	-	-	-
Estimating	+3210.8	-92.7	-111.8	+3006.3
Other	-	-	-	-
Support	-	-190.7	-	-190.7
Subtotal	+3137.9	+796.9	-111.8	+3823.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	+16.9	-93.6	-	-76.7
Engineering	-	-	-	-
Estimating	-	+75.0	+4.8	+79.8
Other	-	-	-	-
Support	-	-288.7	-	-288.7
Subtotal	+16.9	-307.3	+4.8	-285.6
Total Changes	+3154.8	+489.6	-107.0	+3537.4
Current Estimate	5598.5	20982.7	29.2	26610.4

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2625.2	26864.2	172.9	29662.3
Previous Changes:				
Economic	-95.2	-5988.2	-4.8	-6088.2
Quantity	-77.0	+15143.2	-	+15066.2
Schedule	+0.6	-43.0	+7.8	-34.6
Engineering	-	-	-	-
Estimating	+4443.4	-135.1	-133.3	+4175.0
Other	-	-	-	-
Support	-	+3819.0	-	+3819.0
Subtotal	+4271.8	+12795.9	-130.3	+16937.4
Current Changes:				
Economic	-4.9	+1568.0	-5.1	+1558.0
Quantity	-	-	-	-
Schedule	+27.6	-1697.3	-	-1669.7
Engineering	-	-	-	-
Estimating	-	+117.6	+13.1	+130.7
Other	-	-	-	-
Support	-	-1090.7	-	-1090.7
Subtotal	-22.7	-1102.4	+8.0	-1071.7
Total Changes	+4294.5	+11693.5	-122.3	+15865.7
Current Estimate	6919.7	38557.7	50.6	45528.0

Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2443.7	20493.1	136.2	23073.0
Previous Changes:				
Quantity	-72.9	+1076.8	-	+1003.9
Schedule	-	+3.5	-	+3.5
Engineering	-	-	-	-
Estimating	+3210.8	-92.7	-111.8	+3006.3
Other	-	-	-	-
Support	-	-190.7	-	-190.7
Subtotal	+3137.9	+796.9	-111.8	+3823.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	+16.9	-93.6	-	-76.7
Engineering	-	-	-	-
Estimating	-	+75.0	+4.8	+79.8
Other	-	-	-	-
Support	-	-288.7	-	-288.7
Subtotal	+16.9	-307.3	+4.8	-285.6
Total Changes	+3154.8	+489.6	-107.0	+3537.4
Current Estimate	5598.5	20982.7	29.2	26610.4

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-4.9
The schedule increase reflects replanning of work to live within budget constraints. (Schedule)	+16.9	+27.6
RDT&E Subtotal	<u>+16.9</u>	<u>+22.7</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+1568.0
The schedule decrease reflects an accelerated production schedule. Program production rate ramps to 24 MV-22 aircraft in FY03 and production will now end in FY18 vice FY21. (Schedule)	-93.6	-1697.3
The estimating increase primarily reflects the excess FY97 advanced procurement funds to be reprogrammed to RDT&E.N. (Estimating)	+75.0	+117.6
The support decrease reflects more definition in requirements. (Support)	-288.7	-1090.7
	0.0	0.0
Procurement Subtotal	<u>-307.3</u>	<u>-1102.4</u>
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-5.1
CV-22 requirements have evolved to a point where specific MILCON projects requiring funding in the FYDP can be identified. (Estimating)	+4.8	+13.1
MILCON Subtotal	<u>+4.8</u>	<u>+8.0</u>

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate									
PAUC	Changes								PAUC
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
32.49	-8.66	+53.03	-3.26	--	+8.23	--	+5.22	+54.56	87.05

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate									
PUC	Changes								PUC
Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Cur Est
29.42	-8.45	+50.89	-3.33	--	-0.03	--	+5.22	+44.30	73.72

c. Schedule, Cost, and Quantity History

Item/Event	SAR	SAR	SAR	Current Estimate
	Planning Estimate (PE)	Development Estimate (DE)	Production Estimate (PdE)	
Milestone I	DEC 82	DEC 82	N/A	DEC 82
Milestone II	MAY 85	APR 86	N/A	APR 86
Milestone III	JUL 89	DEC 00	N/A	DEC 00
FJE/IOC	DEC 91	APR 01	N/A	JUL 01
Total Cost	24467	46599.7	N/A	45528
Total Quantity	609	523	N/A	523
Prog Acq Unit Cost	40.18	89.1	N/A	87.05

Note: The current SAR baseline is a Development Estimate (DE); there is no Production Estimate baseline (PdE).

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

Two contracts have reached the 90 percent completion threshold and are no longer reported. They are N00019-91-C-0172, Technology Effort with Bell-Boeing, Fort Worth, TX, and N00019-93-C-0052, EMD (Engine) with Allison Engine Co., Indianapolis, IN.

a. RDT&E --

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15a. Contract Information (Cont'd):

EMD (Airframe):
Bell-Boeing, Arlington, VA
N00019-93-C-0006, CPAF
Award: October 22, 1992
Definitized: May 3, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$2650.0	\$0.0	4

Current Contract Price		
Target	Ceiling	Qty
\$3316.0	\$0.0	4

Estimated Price At Completion	
Contractor	Program Manager
\$3316.0	\$3375.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-34.1	\$-31.4
Cumulative Variances To Date (12/31/96)	\$-42.5	\$-28.7
Net Change	\$-8.4	\$2.7

Explanation of Change:

Unfavorable cost variance increased due to traveled work performed on the airframe by Boeing at Fort Worth rather than Philadelphia, and unplanned effort in achieving first flight. Although the dollar amount of cost variance has increased, the percent cost variance has remained consistently at slightly over 2 percent of the work completed. There is no impact to the Program Manager's Price at Completion.

Unfavorable schedule improved as previously late Airframe Forward, Center and Aft fuselage activities at Boeing were completed and fuselages were shipped to Bell. Bell's behind schedule activities on Wing, Drive and Avionics were also completed. The percent schedule variance improved from over 3 percent to under 1.5 percent in 1996.

The increase in Target Price was primarily due to the award of the CV-22 variant effort in December 1996.

LRIP (Airframe):
BELL-BOEING, ARLINGTON, VA
N00019-96-C-0054, CPIF
Award: June 6, 1996
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$419.5	\$0.0	4

Current Contract Price		
Target	Ceiling	Qty
\$419.5	\$0.0	4

Estimated Price At Completion	
Contractor	Program Manager
\$419.5	\$419.5

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/96)	\$1.1	\$-0.5
Net Change	\$1.1	\$-0.5

Explanation of Change:

Contract effort has just started, and is only 3 percent complete. No significant variances have developed.

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

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

<u>Appropriation</u>	<u>Prior Years (FY82-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-18)</u>	<u>Total</u>
RDT&E	5704.2	529.5	272.7	413.3	6919.7
Procurement	1068.0	570.5	712.5	36206.7	38557.7
MILCON	4.8	-	-	45.8	50.6
O&M	-	-	-	-	-
Total	6777.0	1100.0	985.2	36665.8	45528.0

b. Program Summary -- Total Program

Appropriation: RDT&E - All Sources

<u>Fiscal Year</u>	<u>Flyaway FY86 Dollars Nonrec</u>	<u>Flyaway FY86 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1991			197.1	239.7
1992			617.8	773.0
1993			558.7	715.3
1994			18.1	23.6
1995			340.1	452.7
1996			528.1	717.4
1997			198.1	552.1
1998			373.9	529.5
1999			188.6	272.7
2000			102.2	150.9
2001			68.3	102.9
2002			35.0	53.9
1982			1.5	1.3
1983			37.2	34.4
1984			88.7	85.0

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

Appropriation: RDT&E - All Sources

Fiscal Year	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985			175.0	173.1
1986			517.4	526.1
1987			405.5	424.5
1988			398.1	430.8
1989			267.5	301.6
1990			216.2	253.7
2003			26.5	41.9
2004			19.4	31.4
2005			19.5	32.3
Subtotal			5598.5	6919.7

Appropriation: Procurement - All Sources

Fiscal Year	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	4.3	402.3	580.0	873.1
2001	36.1	731.6	994.3	1529.8
2002	78.5	950.0	1284.2	2022.4
2003	24.1	1099.0	1428.5	2306.0
2004	19.7	1020.8	1405.7	2328.2
2005	19.4	966.7	1296.1	2202.5
2006	19.1	925.2	1254.5	2187.3
2007	19.0	894.0	1124.2	2011.1
1989	196.7		196.7	231.4
1990				
1991				
1992				
1993				
1994				
1995				
1996			34.0	47.1
1997	27.9	382.9	558.4	789.5
1998	22.2	332.4	395.2	570.5
1999	4.1	402.4	483.4	712.5
2008	5.1	814.2	1067.5	1959.3
2009	5.0	655.1	860.4	1620.3
2010	5.3	699.0	953.0	1841.1
2011	5.2	688.6	858.4	1701.6
2012	5.4	705.2	935.5	1902.6
2013	5.3	698.1	996.6	2079.7

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

Appropriation: Procurement - All Sources

Fiscal Year	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2014	5.2	687.6	879.5	1883.1
2015	5.2	679.9	826.8	1816.2
2016	5.7	746.7	855.6	1928.2
2017	5.6	738.4	876.1	2025.8
2018	5.7	746.2	838.1	1988.4
Subtotal	519.8	15966.3	20982.7	38557.7

Appropriation: MILCON - All Sources

Fiscal Year	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000			0.2	0.3
2001			0.5	0.7
2002			3.7	5.9
1990			4.0	4.8
1991				
1992				
1993				
1994				
1995				
1996				
1997				
1998				
1999				
2003			6.2	10.1
2004				
2005				
2006				
2007			5.2	9.4
2008				
2009				
2010			1.4	2.8
2011			1.6	3.1
2012			2.5	5.1
2013			1.9	4.0
2014				
2015			2.0	4.4
Subtotal			29.2	50.6

Appropriation: O&M - All Sources - None

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

Appropriation: O&S - All Sources - None

b. Annual Summary -- V-22 OSPREY

Appropriation: RDT&E - All Sources

Fiscal Year	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991			197.1	239.7
1992			617.8	773.0
1993			558.7	715.3
1994			18.1	23.6
1995			340.1	452.7
1996			528.1	717.4
1997			398.1	552.1
1998			373.9	529.5
1999			188.6	272.7
2000			102.2	150.9
2001			68.3	102.9
2002			35.0	53.9
1982			1.5	1.3
1983			37.2	34.4
1984			88.7	85.0
1985			175.0	173.0
1986			517.4	526.1
1987			405.5	424.5
1988			398.1	430.8
1989			267.5	301.6
1990			216.2	253.7
2003			26.5	41.9
2004			19.4	31.4
2005			19.5	32.3
Subtotal			5598.5	6919.7

Appropriation: Procurement - All Sources

Fiscal Year	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	4.3	402.3	580.0	873.1
2001	36.1	731.6	994.3	1529.8
2002	8.5	950.0	1284.2	2022.4
2003	24.1	1399.0	1428.5	2306.0
2004	19.7	1020.8	1405.7	2328.2
2005	19.4	966.7	1296.1	2202.5
2006	19.1	925.2	1254.5	2187.3
2007	19.0	894.0	1124.2	2011.1
1989	196.7		196.7	231.4

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V-22 (OSPREY), December 31, 1996

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

Appropriation: Procurement - All Sources

Fiscal Year	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				
1991				
1992				
1993				
1994				
1995				
1996			34.0	47.1
1997	27.9	382.9	558.4	789.5
1998	12.2	332.4	395.2	570.5
1999	4.1	402.4	483.4	712.5
2000	5.1	814.2	1067.5	1959.3
2001	5.0	655.1	860.4	1620.3
2002	5.3	699.0	953.0	1841.1
2003	5.2	688.6	858.4	1701.6
2004	5.4	705.2	935.5	1902.6
2005	5.3	698.1	996.6	2079.7
2006	5.2	687.6	879.5	1883.1
2007	5.2	679.9	826.8	1816.2
2008	5.7	746.7	855.6	1928.2
2009	5.6	738.4	876.1	2025.8
2010	5.7	746.2	838.1	1988.4
Subtotal	519.8	15966.3	20982.7	38557.7

Appropriation: MILCON - All Sources

Fiscal Year	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000			0.2	0.3
2001			0.5	0.7
2002			3.7	5.9
1990			4.0	4.8
1991				
1992				
1993				
1994				
1995				
1996				
1997				
1998				
1999				
2003			6.2	10.1
2004				
2005				

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V-22 (OSPREY), December 31, 1996

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

Appropriation: MILCON - All Sources

Fiscal Year	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2006				
2007			5.2	9.4
2008				
2009				
2010			1.4	2.8
2011			1.6	3.1
2012			2.5	5.1
2013			1.9	4.0
2014				
2015			2.0	4.4
Subtotal			29.2	50.6

Appropriation: O&M - All Sources - None

Appropriation: O&S - All Sources - None

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991				6.3	7.7
1992				11.3	14.1
1993					
1994				11.3	14.7
1995					
1996					
1997					
1998					
1999					
2000				6.8	10.0
2001				6.9	10.4
2002				6.6	10.2
2003				7.2	11.4
Subtotal				56.4	78.5

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				1.5	1.3
1983				37.2	34.4

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V-22 (OSPREY), December 31, 1996

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

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				88.7	85.0
1985				174.4	172.4
1986				515.2	523.9
1987				402.7	421.6
1988				375.0	405.8
1989				264.1	297.8
1990				216.2	253.7
1991				190.8	232.0
1992				606.5	758.9
1993				558.7	715.3
1994				6.8	8.9
1995				340.1	452.7
1996				528.1	717.4
1997				398.1	552.1
1998				373.9	529.5
1999				188.6	272.7
2000				95.4	140.9
2001				61.4	92.5
2002				28.4	43.7
2003				19.3	30.5
2004				19.4	31.4
2005				19.5	32.3
Subtotal				5510.0	6806.7

NOTE: FY 1983 \$'s reflect \$29.9M of Army funds (PE 0604222A).

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985				0.6	0.6
1986				2.2	2.2
1987				2.8	2.9
1988				23.1	25.0
1989				3.4	3.8
Subtotal				32.1	34.5

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V-22 (OSPREY), December 31, 1996

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

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				10.2	15.4
2001				18.7	28.8
2002			33.0	91.6	144.2
2003			32.9	91.2	147.3
2004			30.0	40.3	66.8
2005			27.9	40.8	69.4
2006			26.3	46.3	80.7
2007			25.4	33.0	59.1
2008			17.9	21.7	39.9
Subtotal			193.4	393.8	651.6

Quantities for the CV-22 are shown under appropriation 3010. In accordance with the approved program plan, the Air Force is funding the majority of the procurement cost for the CV-22. USSOCOM is funding delta costs above the baseline (MV-22) aircraft for SOF unique equipment.

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989		196.7		196.7	231.4
1990					
1991					
1992					
1993					
1994					
1995					
1996				34.0	47.1
1997	5	27.9	382.9	558.4	789.5
1998	5	12.2	332.4	395.2	570.5
1999	7	4.1	402.4	483.4	712.5
2000	8	4.3	402.3	547.3	823.9
2001	12	36.1	527.4	696.8	1072.1
2002	18	54.3	690.7	879.9	1385.7
2003	24	19.3	828.8	980.9	1583.4
2004	24	14.9	770.4	1083.7	1794.9
2005	24	14.6	730.2	1015.1	1724.9
2006	24	14.3	699.2	937.4	1634.4
2007	24	14.1	675.7	860.4	1539.1
2008	24	5.1	661.5	899.5	1650.9
2009	24	5.0	655.1	860.4	1620.3
2010	26	5.3	699.0	953.0	1841.1
2011	26	5.2	688.6	858.4	1701.6

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

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2012	27	5.4	705.2	935.5	1902.6
2013	27	5.3	698.1	996.6	2079.7
2014	27	5.2	687.6	879.5	1883.1
2015	27	5.2	679.9	826.8	1816.2
2016	30	5.7	746.7	855.6	1928.2
2017	30	5.6	738.4	876.1	2025.8
2018	30	5.7	746.2	838.1	1988.4
Subtotal	473	471.5	14148.7	18448.7	34347.3

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				22.5	33.8
2001	4		204.2	278.8	428.9
2002	6	24.2	226.3	312.7	492.5
2003	7	4.8	237.3	356.4	575.3
2004	7	4.8	220.4	281.7	466.5
2005	7	4.8	208.6	240.2	408.2
2006	7	4.8	199.7	270.8	472.2
2007	7	4.9	192.9	230.8	412.9
2008	5		134.8	146.3	268.5
Subtotal	50	48.3	1624.2	2140.2	3558.8

Appropriation: 0500 Military Construction, Defense Agencies

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				0.2	0.3
2001				0.5	0.7
2002				3.7	5.9
2003				6.2	10.1
Subtotal				10.6	17.0

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V-22 (OSPREY), December 31, 1996

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

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				4.0	4.8
1991					
1992					
1993					
1994					
1995					
1996					
1997					
1998					
1999					
2000					
2001					
2002					
2003					
2004					
2005					
2006					
2007				5.2	9.4
2008					
2009					
2010				1.4	2.8
2011				1.6	3.1
2012				2.5	5.1
2013				1.9	4.0
2014					
2015				2.0	4.4
Subtotal				18.6	33.6

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD			193.4	460.8	747.1
Navy	473	471.5	14148.7	23977.3	41187.6
USAF	50	48.3	1624.2	2172.3	3593.3
Grand Total	523	519.8	15966.3	26610.4	45528.0

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17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	6	6
Procurement	0	0

Percent Total Program Quantities Delivered: 1.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 5025.5

Percent Total Program Expended: 11.0%

Of the 6 aircraft ordered and delivered under the FSD airframe contract, only 2 aircraft remain. Of those 2 aircraft, 1 is in permanent storage and 1 is still being flown as part of the test program at Patuxent River, MD.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The results of the Cost Analysis Improvement Group (CAIG) convened in December 1996 are not yet available. Operating and Support Cost estimates for the V-22 will be reported in the next SAR.

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

Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

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DoD-1 CHEM DEMIL

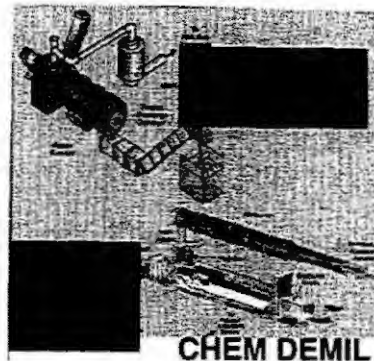
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: Chem Demil

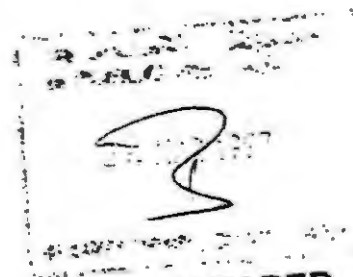
AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Chemical Demilitarization Program
2. DoD Component: Army
3. Responsible Office and Telephone Number:
SFAE-CD-Z MG Robert D. Orton
APG, MD 21010-5401 Assigned: June 12, 1995
DSN 584-3447; COMM 410-671-3447
4. Program Elements/Procurement Line Items:
RDT&E:
PE 0708007D
PROCUREMENT:
APPN 0390 ICN N/A (DCA/DNA)
MILCON:
PE 0708007A
PE 0708007D
O&M:
PE 0708007D



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DEPARTMENT OF DEFENSE

97-C-0038

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5. References:

CSDP

SAR Baseline (Development Estimate):
FY96 President's Budget dated February 6, 1995.

Approved Program:
DAE Approved Acquisition Program Baseline (APB) dated March 29, 1995.

Alternative Technology

SAR Baseline (Planning Estimate):
FY96 President's Budget dated February 6, 1995.

Approved Program:
DAE Approved Acquisition Program Baseline (APB) dated March 29, 1995.

CSEPP

SAR Baseline (Development Estimate):
FY96 President's Budget dated February 6, 1995.

Approved Program:
DAE Approved Acquisition Program Baseline (APB) dated March 29, 1995.

NSCMP

SAR Baseline (Development Estimate):
FY96 President's Budget dated February 6, 1995.

Approved Program:
DAE Approved Acquisition Program Baseline (APB) dated March 29, 1995.

6. Mission and Description:

The Chemical Demilitarization (Chem Demil) Program consists of the Chemical Stockpile Disposal Project (CSDP), the Non-Stockpile Chemical Materiel Project (NSCMP), the Chemical Stockpile Emergency Preparedness Project (CSEPP), and the Alternative Technologies and Approaches Project (ATAP).

The primary mission to be accomplished under the CSDP is the demilitarization of the United States unitary stockpile of lethal chemical agents and munitions stored at eight locations in the Continental United States (CONUS), and Johnston Atoll in the Pacific. The current or baseline program plan uses a reverse-assembly process to separate the components of the chemical weapons followed by the incineration of each component.

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6. Mission and Description (Cont'd):

Efforts to be accomplished under the NSCMP are the identification of locations, types, and quantities of non-stockpile chemical materiel (NSCM); development and implementation of transportation and destruction methods and procedures; and development of schedules, plans, and cost estimates to implement the project. NSCM includes suspected buried chemical materiel; recovered chemical materiel; former chemical weapons production facilities; binary chemical weapons; and miscellaneous chemical warfare materiel.

The CSEPP is an effort complementary to the CSDP to enhance protection of the civilian population, the workers involved in the destruction effort, and the environment during storage activities and destruction of the United States' chemical weapons stockpile. The Army has the lead in the CSEPP to provide emergency response/preparedness to the communities surrounding the eight continental United States storage sites. The Federal Emergency Management Agency participates in this project by providing technical emergency preparedness assistance, as well as a financial structure for transferring funds to the states and counties.

A separate Product Manager for Alternative Technologies and Approaches was established during 1995 with responsibility for identifying alternative technologies project requirements and alternative approaches, planning for the implementation of the requirements, and managing the activities of the various organizations involved.

7. Executive Summary:

This annual Selected Acquisition Report (SAR) is being submitted in accordance with United States Code, Title 10, Section 2432. The report details impacts to cost and schedule since last reported (Sep 96 SAR).

Deferment of approval of the program's proposed Acquisition Program Baseline until the next Defense Acquisition Board (DAB) review in Oct 97 and delays in environmental permitting continue to impact the PM's acquisition reporting requirements in cost and schedule.

CSDP:

Johnston Atoll Chemical Agent Disposal System (JACADS) began processing 155mm GB-filled (nerve agent) projectiles in May 96. As of 19 Mar 97, 79,813 projectiles have been destroyed. Over 63.5% of the agent has been destroyed on Johnston Island. During the current campaign (demilitarization of 155mm GB-filled [nerve agent] projectiles), crystals were found in the chemical agent, necessitating an Environmental Protection Agency (EPA) mandated reduction in processing rates.

At the Tooele Chemical Agent Disposal Facility (TOCDF), as of 19 Mar 97, 11,472 M55 GB-filled rockets, 173 GB-filled ton containers, and more than 191 tons of agent have been destroyed.

On 10 Dec 96, the Army safety evaluation team completed a comprehensive plant safety evaluation. The evaluation was initiated in response to concerns raised

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7. Executive Summary (Cont'd):

by the former general manager of the TOCDF systems contract. The results were briefed to the Utah Citizens' Advisory Commission.

TOCDF successfully completed the Deactivation Furnace System GB (nerve agent) trial burn on 11 Jan 97. During the trial burn, sampling of the feed to the system was increased and the emissions from the system were collected for analysis. Results will be briefed to the Utah Citizens' Advisory Commission when they are received.

"Shakedown" activities for demilitarization of GB-filled ton containers are ongoing. The first GB-filled ton container was processed on 17 Jan 97.

Legal challenges to the Program continue. On 10 Jan 97, the State of Utah Solid and Hazardous Waste Control Board received and granted approval of a request for a two-month delay of the full hearing on the appeal from the Kentucky-based Chemical Weapons Working Group. The hearing is now scheduled to begin 18 Mar 97. The hearing on the second request for a preliminary injunction occurred from 3 through 7 Mar 97.

On 26 Jan 97, a low concentration of agent was detected by an Automatic Continuous Air Monitoring System in an observation corridor surrounding the first floor buffer storage area. No personnel were present in the corridor when the agent was present, and no agent was released to the environment. The low-level readings appeared to be the result of maintenance activities in an area of the facility not associated with ton container processing. A report was submitted to the Utah Department of Environmental Quality on 27 Jan 97. Shakedown operations resumed on 31 Jan 97.

On 14 Mar 97, the Army released its report evaluating the safety of TOCDF. The report detailed the findings of an eight-member team appointed by the Assistant Secretary of the Army on 20 Nov 96 to evaluate the concerns and issues raised by the former general manager of the TOCDF systems contract. The team declared that "The TOCDF is being operated in a safe and environmentally sound manner." The team consisted of safety, engineering, environmental, legal, nuclear, and chemical weapons experts, who were neither previously employed by, nor currently working for, the chemical demilitarization program or the systems contractor. The safety evaluation team concluded that recommendations for improving the TOCDF will not require altering or ceasing operations to make improvements, and confirmed that the facility is safe to operate.

At Anniston Army Depot, the public comment period for the draft environmental permits for the Anniston Chemical Agent Disposal Facility ended 11 Feb 97. The Limited Notice to Proceed (LNTP) for the Westinghouse contract is being extended to Jun 97 to accommodate the public involvement associated with the issuance of the facility's Resource Conservation and Recovery Act and Clean Air Act (RCRA/CAA) permits.

At Umatilla Chemical Depot, the Record of Decision (ROD) on the site-specific Environmental Impact Statement (EIS) was signed on 31 Jan 97. RCRA and CAA permits for the Umatilla Chemical Agent Disposal Facility (UMCDF) were issued by the State of Oregon on 11 Feb 97 with an effective date of 12 Feb 97. The

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7. Executive Summary (Cont'd):

Raytheon Demilitarization Company, was awarded a multi-year contract on 10 Feb 97 for construction, equipment installation, systemization, operation and closure of the facility.

At Pine Bluff Arsenal, the award of the systems contract for the Pine Bluff Chemical Agent Disposal Facility (PBCDF) is scheduled for 3Q FY 97 (Apr-Jun) with a LNTF provision. RCRA and CAA permits are expected to be issued 4Q FY 97 (Jul-Sep) at which time construction will be started.

At Pueblo Chemical Depot and Blue Grass Army Depot, after review and consultation with Army Office of General Counsel regarding the impact from the FY 97 Defense Appropriations Act (Public Law 104-208), it was decided to halt design and engineering support work; however, environmental permitting and National Environmental Policy Act (NEPA) activities for incineration are continuing. The Colorado Department of Public Health and Environment issued a Notice of Deficiencies (NODs) and comments on the RCRA permit application in Dec 96 for the Pueblo Chemical Agent Disposal Facility (PUCDF). Responses will be submitted in 2Q FY 97 (Jan-Mar). The final Health Risk Assessment (HRA) protocol is also expected to be submitted in 2Q FY 97 (Jan-Mar).

As a result of an Overarching Integrated Product Team (OIPT) Milestone I/II review on 6 Dec 96, and the Defense Acquisition Executive (DAE) authorization memorandum on 17 Jan 97, the Army received the following authorization for Edgewood Chemical Activity and Newport Chemical Depot facilities: 1) prepare an environmental impact analysis (NEPA documentation), 2) program the necessary funding, 3) obtain construction permits under the RCRA from Maryland and Indiana and 4) conduct effluent toxicity tests to assure safe disposal of post-treatment streams from implementation of neutralization-based, pilot-plant operations for the destruction of the bulk-only chemical stockpiles at Aberdeen and Newport.

The DAE authorization to "program the necessary funds to construct the pilot plants" occurred after the submission of the FY 98 President's Budget. The Alternative Technologies and Approaches Project (AT&AP) current estimate (as reflected in this SAR) reflects a reprogramming of funds from CSDP to AT&AP in FY 98 and FY 99 and will be revised to incorporate additional reprogramming in FY 00 through FY 03 to support the activities associated with the DAE authorization. After the reprogramming actions are completed, the cost of the AT&AP will be approximately \$1 billion. The cost of the CSDP will be reduced by a like amount and there will be no net increase to total cost of the Chemical Demilitarization Program.

The parameters reflected in the Mar 95 APB do not reflect the current AT&AP program or the reprogramming of funds. The necessary revisions will be incorporated into a revised Acquisition Program Baseline (APB) to be submitted at the next DAB.

NSCMP:

The Non-Stockpile Chemical Materiel Project (NSCMP) life cycle cost estimate has undergone significant refinement since the establishment of the APB which

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Chem Demil, December 31, 1996

7. Executive Summary (Cont'd):

was based on the FY 94 Program Objective Memorandum (POM). As the program progresses, procurement and research, development, test and evaluation (RDT&E) costs have been refined to keep pace with still-evolving requirements, particularly those associated with the Chemical Weapons Convention and its entry into force. With the submission of this years President's Budget, the increase in the Procurement Appropriation for the NSCMP will cause an increase in the Average Procurement Unit Cost (APUC) of 51.4%, resulting in a Nunn-McCurdy breach. Additionally, there is an increase to the RDT&E appropriation of 31.0%. Additional details are provided in Section 8-Threshold Breaches and Section 12-Unit Cost Summary. The approved President's Budget reflects the expected increase to procurement and RDT&E dollars but an overall decrease of approximately 4% to the program cost through 2005. The decrease is in the Operation and Maintenance budget activity.

Other Programmatic Areas:

As part of a continuing, proactive public outreach campaign, Program Manager for Chemical Demilitarization (PMCD) initiated plans to open public outreach offices in the communities surrounding each of the eight chemical stockpile storage locations in the continental United States. The first of these offices opened in Tooele, Utah, in June 95. Since that time, public outreach offices have opened in Anniston, Alabama (Jan 96), Hermiston, Oregon (Mar 96), Pine Bluff, Arkansas (Jun 96), and Richmond, Kentucky (Oct 96).

The Program continues to work closely with the States and the Federal regulatory agencies involved. To this end, the Program Manager, in conjunction with DoD staff, is planning a third Environmental Forum on April 1, 1997 in Birmingham, Alabama. The first two forums, which were held in Denver, CO, and Salt Lake City, UT, were highly successful. The discussions were meaningful to all participants, allowing a continuing dialogue and establishment of effective communication channels. This will help the Chemical Demilitarization Program continue to move forward and safely and rapidly dispose of the chemical stockpile with full consideration for human health and the environment. Similar to Forums I and II, Forum III will be open to the public to allow for maximum participation. The Citizens' Advisory Commission representatives and State environmental principals will extend invitations to members of the public and representatives of nongovernmental organizations.

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8. Threshold Breaches:

CSDP

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

Schedule: The "System Contract Award/Start Construction" milestone for PBCDF has slipped from 1Q FY 97 (Oct-Dec) to 3Q FY 97 (Apr-Jun) due to revisions and resubmission of the Health Risk Assessment (HRA) protocol to the State of Arkansas. This slip will have a ripple effect on the follow-on milestones. A Program Deviation Report (PDR) was submitted.

Other schedule breaches to the APB dated 29 Mar 95 have been reported previously and PDRs were submitted (Jan 96, Apr 96, Jun 96 and Sep 96). The APB will be revised at the next DAB review during calendar year 1997.

Cost: Previous reports reflected a Procurement cost breach to the APB dated 29 Mar 95. A PDR was submitted 2 Apr 96. This breach was due primarily to increases in the estimated cost of acquiring and installing Pollution Abatement System carbon filters for chemical stockpile disposal facilities. The President's Budget realigns a portion of the FY 98 and FY 99 procurement funds to the Alternative Technologies and Approaches Product (AT&AP) effort. The DAE authorization to proceed with pilot testing of neutralization-based technologies at Aberdeen and Newport and "program the necessary funding" enabled PMCD to reprogram procurement funds for CSDP into the R&D account for the AT&AP. This, coupled with the removal of the Pollution Abatement System Filter System (PFS) at several sites, as well as the results of a value engineering review of the PFS, have reduced the procurement estimate for CSDP and negates the previously reported breach.

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8c. Threshold Breaches (Cont'd):
Alternative Technology

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

CSEPP

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

Schedule breaches to the APB dated 29 Mar 95 have been reported previously. The APB will be revised at the next DAB review during calendar year 1997.

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8c. Threshold Breaches (Cont'd):
NSCMP

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	Yes
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	Yes

c. Explanation of Breach:

Schedule:

The Munitions Management Device (MMD) Prototype (w/o Energetics) milestone, "Obtain Environmental Permit" has been delayed to 2Q FY 98 (Jan-Mar). This slip is based on the State of Utah's Notice of Deficiency (NOD) which indicates that additional revisions to the permit will be required. Before the revisions can be finalized, results from the chemistry and toxicology test reports are required. These reports have been delayed, and this will cause the milestone to breach. As a result, the follow-on milestone, "Complete Concept Demonstration" has been delayed from 1Q FY 98 (Oct-Dec) to 2Q FY 98 (Jan-Mar). A PDR was submitted.

Results from the ongoing detailed design of the (MMD) Prototype (w/Energetics) have presented an opportunity to improve system supportability. Support equipment requirements have been revised to provide a single set of support equipment capable of supporting multiple configurations of the MMD (w/Energetics). This design revision will decrease initial fielding costs, however, it will cause a slip to the "Submit Permit Application" milestone and create a ripple effect to follow-on milestones. A PDR has been submitted.

Other schedule breaches to the APB dated 29 Mar 95 have been reported previously and PDRs have been submitted. The APB will be revised at the next DAB review during calendar year 1997.

Cost:

With the submission of the FY 1998 President's Budget, the increase in the Procurement budget activity for the NSCMP has caused an average procurement unit cost (APUC) of 51.4%, resulting in a Nunn-McCurdy breach. Additionally,

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8c. Threshold Breaches (Cont'd):

NSCMP

there is an increase to the R&D budget activity of 31.0%, which is an APB breach.

The current baseline parameters for the NSCMP in the approved Mar 95 APB are obsolete given current mission requirements. The NSCMP life cycle cost estimate has undergone significant refinement since the establishment of the APB. Procurement costs have been refined to keep pace with the still-evolving requirements. Early concepts have been updated based on detailed engineering designs and new procurement requirements have been identified. The President's Budget contains the realignment of NSCMP funds to address the increased procurement requirements and includes funding for: Munitions Management Device (I,II & III), Rapid Response System, Binary Demil Equipment, Interim Holding Facilities, Single Round Containers, and the Mobile Munitions Assessment System.

The approved President's Budget reflects the expected increase to procurement and RDT&E dollars but an overall decrease of approximately 4% to the program cost through 2005. The decrease is in the Operation and Maintenance budget activity.

9. Schedule:

CSDP

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE DISPOSAL PROGRAM			
(CSDP)			
CAMDS Testing	SEP 79	SEP 79	SEP 79
DAB Program Review	MAR 95	MAR 95	MAR 95
JOHNSTON ATOLL (JACADS)			
JACADS Construction	SEP 85	SEP 85	SEP 85
Begin Operations	JUL 90	JUL 90	JUL 90
Begin Closure	MAR 00	MAR 00	AUG 00 (Ch-1)
TOOELE (TOCDF)			
Submit RCRA/CAA Permit Applications	OCT 88	OCT 88	OCT 88
Systems Contract Award/Start Const.	OCT 89	OCT 89	OCT 89
Begin Systemization	SEP 93	SEP 93	SEP 93
Begin Operations	SEP 95	SEP 95	AUG 96
Begin Closure	JAN 02	JAN 02	OCT 03
ANNISTON (ANCDF)			
Submit Updated RCRA/CAA Permit Applications	FEB 95	FEB 95	FEB 95
Systems Contract Award/Start Const.	AUG 95	AUG 95	FEB 96
Begin Systemization	JUN 98	JUN 98	JAN 00 (Ch-2)
Begin Operations	DEC 99	DEC 99	JUL 01
Begin Closure	AUG 03	AUG 03	JAN 05
UMATILLA (UMCDF)			

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9a. Schedule (Cont'd):

CSDP

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Submit Updated RCRA/CAA Permit Applications	MAR 95	MAR 95	SEP 95	
Systems Contract Award/Start Const.	MAR 96	MAR 96	FEB 97	(Ch-3)
Begin Systemization	JAN 99	JAN 99	DEC 99	
Begin Operations	JUL 00	JUL 00	OCT 01	
Begin Closure	SEP 03	SEP 03	JAN 05	
PINE BLUFF (PBCDF)				
Submit RCRA/CAA Permit Applications	JUN 95	JUN 95	JUN 95	
Systems Contract Award/Start Const.	JUN 96	JUN 96	JUN 97	(Ch-4)
Begin Systemization	FEB 99	FEB 99	MAY 00	(Ch-4)
Begin Operations	AUG 00	AUG 00	SEP 01	(Ch-4)
Begin Closure	NOV 03	NOV 03	JAN 05	
PUEBLO (PUCDF)				
Submit Updated RCRA/CAA Permit Applications	SEP 95	SEP 95	OCT 95	
Systems Contract Award/Start Const.	APR 97	APR 97	TBD	
Begin Systemization	FEB 00	FEB 00	TBD	
Begin Operations	AUG 01	AUG 01	TBD	
Begin Closure	AUG 03	AUG 03	TBD	
LEXINGTON BLUE GRASS (BGCDF)				
Submit RCRA/CAA Permit Applications	SEP 95	SEP 95	DEC 95	
Systems Contract Award/Start Const.	JAN 98	JAN 98	TBD	
Begin Systemization	NOV 00	NOV 00	TBD	
Begin Operations	MAY 02	MAY 02	TBD	
Begin Closure	MAR 04	MAR 04	TBD	
ABERDEEN (ABCDF)				
Submit RCRA/CAA Permit Applications	JUL 96	JUL 96	TBD	(Ch-5)
Systems Contract Award/Start Const.	JAN 99	JAN 99	TBD	(Ch-5)
Begin Systemization	JUN 01	JUN 01	TBD	(Ch-5)
Begin Operations	JUN 02	JUN 02	TBD	(Ch-5)
Begin Closure	MAY 03	MAY 03	TBD	(Ch-5)
NEWPORT (NECDF)				
Submit RCRA/CAA Permit Applications	JUL 97	JUL 97	TBD	(Ch-6)
Systems Contract Award/Start Const.	JAN 00	JAN 00	TBD	(Ch-6)
Begin Systemization	JUN 02	JUN 02	TBD	(Ch-6)
Begin Operations	JUN 03	JUN 03	TBD	(Ch-6)
Begin Closure	APR 04	APR 04	TBD	(Ch-6)

Note 1: Principal Pre-Operational Readiness Process Activities include:
 Chemical Stockpile Emergency Preparedness Project
 Safety/Surety/Occupational Health
 Training
 Systemization Oversight Review
 Acceptance T&E Report Review
 Review of Final Environmental Approvals
 Plant Operations Preparation

Note 2: Facilities constructed to carry out chemical demilitarization may

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9a. Schedule (Cont'd):

CSDP

not be used for any purpose other than the destruction of lethal chemical agents and munitions, and when no longer needed to carry out this mission, such facilities shall be cleaned, dismantled, and disposed of in accordance with applicable laws and regulations.

Note 3: As reported previously, design and engineering support work at PUCDF and BGCDF have been placed on hold due to the impacts from the FY 97 Defense Appropriations Act (PL 104-208). We are reporting "TBDs" as the PM's Current Estimate for these facilities because firm dates will not be available until after the SECDEF's Alternative Technology Assessment Report and an assessment of its effects (if any) on PUCDF and BGCDF are determined.

ACRONYMS - in order of appearance:

RCRA - Resource Conservation and Recovery Act
CAA - Clean Air Act
CAMDS - Chemical Agent Munitions Disposal System
JACADS - Johnston Atoll Chemical Agent Disposal System
T&E - Test and Evaluation
TOCDF - Tooele Chemical Agent Disposal Facility
ANCDF - Anniston Chemical Agent Disposal Facility
UMCDF - Umatilla Chemical Agent Disposal Facility
PBCDF - Pine Bluff Chemical Agent Disposal Facility
PUCDF - Pueblo Chemical Agent Disposal Facility
BGCDF - Blue Grass Chemical Agent Disposal Facility
ABCDF - Aberdeen Chemical Agent Disposal Facility
NECDF - Newport Chemical Agent Disposal Facility

b. Current Change Explanations --

(Ch-1) JACADS - During the current campaign (demilitarization of 155mm GB-filled [nerve agent] projectiles), crystals were found in the chemical agent, necessitating an EPA mandated reduction in processing rates. This reduction, coupled with problems encountered in the removal of fuse adapters from some projectiles, has resulted in replanning the current campaign completion date to the 3Q FY97 (Apr-Jun). The replanning added 41 weeks to the total operations schedule which has delayed the "Begin Closure" milestone from Nov 99 to Aug 00.

(Ch-2) ANCDF - The public comment period for the draft environmental permits was delayed in order to resolve discrepancies with the HRA. The public comment period for the draft RCRA and CAA environmental permits began 8 Nov 96 and ended 11 Feb 97. The Westinghouse contract for construction, systemization, operations and closure was awarded with a Limited Notice to Proceed (LNTP) provision which has been extended to Jun 97 to accommodate the public involvement associated with issuance of the facility's RCRA and CAA permits. Because the current estimate for approval of these environmental permits is now 3Q FY 97 (Apr-Jun), the PM's Current Estimate of the milestone "Begin Systemization" has been revised from Sep 99 to Jan 00.

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9b. Schedule (Cont'd):
CSDP

(Ch-3) UMCDF - The Record of Decision (ROD) on the site-specific Environmental Impact Statement (EIS) was signed 31 Jan 97. RCRA/CAA permits were issued on 11 Feb 97 with an effective date of 12 Feb 97. This caused a delay in the "Systems Contract Award/Start Construction" milestone from Jan 97 to Feb 97. The contract was awarded to the Raytheon Demilitarization Company on 10 Feb 97.

(Ch-4) PBCDF - A combined HRA/Environmental Risk Assessment (ERA) is being initiated in support of revision of the final site-specific EIS and ROD. The final EIS has been revised based on lessons learned from TOCDF and advice from Army Office of General Counsel, Environmental Law Division. The ROD should be based on a revised HRA and ERA which considers the simultaneous operation of both the PBCDF and the Pine Bluff Arsenal Central Incinerator Complex. The HRA protocol is being revised and resubmitted to the State in 3Q FY 97 (Apr-Jun). Currently, award of the Systems Contract is scheduled for 3Q FY 97 (Apr-Jun) with a LNTP until 4Q FY 97 (Jul-Sep) when RCRA and CAA permits are expected to be issued. This has resulted in revisions to the following milestones:

MILESTONES	FROM	TO
Sys Cont Awd/Start Const	DEC 96	JUN 97
Begin Systemization	JAN 00	MAY 00
Begin Operations	NOV 01	SEP 01

The "Begin Operations" milestone reflects a revision to the PM's Current Estimate and acceleration of completion of systemization. This is because there are fewer types of munitions stored at this stockpile location which makes the systemization process less complex and of shorter duration.

(Ch-5) ABCDF - The DAE authorized the Army on 17 Jan 97 to prepare an environmental impacts analysis (NEPA documentation) of the proposal to construct pilot plants to demonstrate the neutralization (hydrolysis) process alternative technologies followed by either onsite or offsite post-treatment for nerve agent at Newport Chemical Depot, Indiana, and for mustard at Aberdeen Proving Ground, Maryland. Upon completion of the analysis, the "TBDs" will be replaced with schedule milestones.

MILESTONES	FROM	TO
Submit RCRA/CAA Permit Appl	DEC 96	TBD
Sys Cont Awd/Start Const	JAN 99	TBD
Begin Systemization	JUN 01	TBD
Begin Operations	OCT 02	TBD
Begin Closure	JUL 03	TBD

(Ch-6) NECDF - The Army was authorized to prepare an environmental impact analysis. Upon completion of the analysis, the "TBDs" will be replaced with schedule milestones. See Change 5 for additional information.

MILESTONES	FROM	TO
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9b. Schedule (Cont'd):

CSDP

Submit RCRA/CAA Permit Appl	DEC 97	TBD
Sys Cont Awd/Start Const	JAN 00	TBD
Begin Systemization	JUN 02	TBD
Begin Operations	OCT 03	TBD
Begin Closure	JUN 04	TBD

Alternative Technology

a. Milestones --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
ALTERNATIVE TECHNOLOGIES PROGRAM			
Milestone 0	AUG 94	AUG 94	AUG 94
Milestone I/II (Pilot Scale)	JUL 96	JUL 96	DEC 96

Note 1: The Alternative Technology Overarching Integrated Product Team (OIPT) Milestone I/II review was held 6 Dec 96.

b. Current Change Explanations -- None.

CSEPP

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE EMERGENCY PREPAREDNESS PROGRAM (CSEPP)			
TOOELE (TOCDF)			
ADP	JAN 94	JAN 94	JAN 94
Communications	MAR 94	MAR 94	MAR 94
A&N	JUN 94	JUN 94	JUN 94
Pre-Op/Annual Exercise	AUG 95	AUG 95	NOV 95
ANNISTON (ANCDF)			
A&N	SEP 93	SEP 93	SEP 93
ADP	JUN 94	JUN 94	JUN 94
Communications	OCT 94	OCT 94	OCT 94
Pre-Op/Annual Exercise	MAR 99	MAR 99	MAR 01
UMATILLA (UMCDF)			
ADP	JUN 94	JUN 94	JUN 94
Communications	MAY 95	MAY 95	MAY 95
A&N	DEC 95	DEC 95	DEC 95
Pre-Op/Annual Exercise	MAY 00	MAY 00	MAY 01
PINE BLUFF (PBCDF)			
ADP	FEB 92	FEB 92	FEB 92
A&N	MAY 94	MAY 94	MAY 94
Communications	MAY 94	MAY 94	MAY 94
Pre-OP/Annual Exercise	FEB 00	FEB 00	FEB 01
	N/A	N/A	
PUEBLO (PUCDF)			
ADP	OCT 92	OCT 92	OCT 92

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9a. Schedule (Cont'd):
CSEPP

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Communications	JUN 94	JUN 94	JUN 94	
A&N	DEC 95	DEC 95	DEC 95	
Pre-Op/Annual Exercise	AUG 00	AUG 00	TBD	
	N/A	N/A		
LEXINGTON BLUE GRASS (BGCDF)				
ADP	JUL 93	JUL 93	JUL 93	
A&N	OCT 94	OCT 94	OCT 94	
Communications	OCT 94	OCT 94	OCT 94	
Pre-Op/Annual Exercise	OCT 01	OCT 01	TBD	
	N/A	N/A		
ABERDEEN (ABCDF)				
Communications	APR 95	APR 95	APR 95	
ADP	APR 95	APR 95	APR 95	
A&N	MAY 95	MAY 95	MAY 95	
Pre-Op/Annual Exercise	APR 02	APR 02	TBD	(Ch-1)
NEWPORT (NECDF)				
ADP	AUG 92	AUG 92	AUG 92	
Communications	MAY 94	MAY 94	MAY 94	
A&N	SEP 94	SEP 94	SEP 94	
Pre-Op/Annual Exercise	JUN 02	JUN 02	TBD	(Ch-1)

ACRONYMS: in order of schedule appearance:

A&N - Alert and Notification
ADP - Automatic Data Processing
TOCDF - Tooele Chemical Agent Disposal Facility
ANCDF - Anniston Chemical Agent Disposal Facility
UMCDF - Umatilla Chemical Agent Disposal Facility
PBCDF - Pine Bluff Chemical Agent Disposal Facility
PUCDF - Pueblo Chemical Agent Disposal Facility
BGCDF - Blue Grass Chemical Agent Disposal Facility
ABCDF - Aberdeen Chemical Agent Disposal Facility
NECDF - Newport Chemical Agent Disposal Facility

Note 1: Each site will be exercised on an annual basis in the month agreed upon by the Army and State. Plans and training were completed at each site by Dec 92.

Note 2: The threshold schedule milestone "Pre-Operational Annual Exercise" is defined as the last annual exercise prior to initiating chemical demilitarization operations. Medical preparedness will occur and be evaluated prior to the pre-operational annual exercise.

Note 3: There is no program requirement to hold a Pre-Operational/Annual Exercise in order to begin operations at a particular site. The linkage of these exercises to the CSDP schedule is arbitrary.

b. Current Change Explanations --

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9b. Schedule (Cont'd):

CSEPP

(Ch-1) The exercise prior to the start of operations at a chemical stockpile location is designated as a threshold schedule parameter. The Army was authorized to prepare an environmental impact analysis. Upon completion of the analysis, the "TBDs" will be replaced with schedule milestones.

NSCMP

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
NON-STOCKPILE CHEMICAL MATERIEL PROGRAM (NSCMP)			
Begin the Programmatic Environmental Impact Statement (PEIS)	OCT 94	OCT 94	OCT 94
Obtain the PEIS Record of Decision	NOV 97	NOV 97	NOV 97
WASTE CHARACTERIZATION			
Waste Characterization Complete	AUG 95	AUG 95	AUG 95
HQDA Safety Approval of Waste Characterization for Agents	AUG 95	AUG 95	JAN 96
MUNITIONS MANAGEMENT DEVICE PROTOTYPE (w/o Energetics)			
Submit Permit Application	SEP 95	SEP 95	NOV 95
Obtain Environmental Permit	MAY 96	MAY 96	JAN 98 (Ch-1)
Complete Concept Demonstration	JUN 97	JUN 97	MAY 98 (Ch-1)
MUNITIONS MANAGEMENT DEVICE PROTOTYPE (w/ Energetics)			
Submit Permit Application	APR 97	APR 97	JAN 98 (Ch-2)
Obtain Environmental Permit	FEB 98	FEB 98	DEC 98 (Ch-2)
Complete Concept Demonstration	AUG 98	AUG 98	JUN 99 (Ch-2)
RAPID RESPONSE SYSTEM PROTOTYPE			
Submit Permit Application	AUG 95	AUG 95	JUL 95
Obtain Environmental Permit	JAN 96	JAN 96	APR 97
Complete Concept Demonstration	APR 96	APR 96	NOV 97 (Ch-3)

Note 1: Schedule - Parameters cannot be fully defined until the Chemical Weapons Convention (CWC) has been ratified by the U.S. and treaty entry into force (EIF) occurs. The chemical destruction systems are required to comply with the CWC after EIF and to address risk to public health and the environment due to chemical warfare materiel recovered at formerly used defense sites and active installations. The milestones contained in the APB were predicated on EIF of the CWC in FY 96.

b. Current Change Explanations --

(Ch-1) A Notice of Deficiency (NOD) issued by the State of Utah required additional revisions to the environmental permit which has resulted in delays to the following milestones:

MILESTONES

FROM

TO

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9b. Schedule (Cont'd):

NSCMP

MUNITION MANAGEMENT DEVICE (w/o Energetics)

Obtain Environmental Permit	MAY 97	JAN 98
Complete Concept Demonstration	OCT 97	MAY 98

(Ch-2) System redesign to enhance system supportability has caused a schedule slip, resulting in changes to the following milestones:

MILESTONES	FROM	TO
MUNITION MANAGEMENT DEVICE (w/Energetics)		
Submit Permit Application	APR 97	JAN 98
Obtain Environmental Permit	FEB 98	DEC 98
Complete Concept Demonstration	Aug 98	JUN 99

(Ch-3) Experience gained from training conducted on this prototype indicates slower processing rates than expected. As a result, the PM's Current Estimate of the time required to complete the demonstration has caused a slip to the Rapid Response System Prototype Milestone "Complete Concept Demonstration" from Aug 97 to Nov 97.

10. Performance Characteristics:

CSDP

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE DISPOSAL PROGRAM (CSDP)				
Environmental Performance	Exceed State & Federal Rqmts.	Exceed / Meet State & / State & Federal / Federal Rqmts. / Rqmts.	Meets State & Federal Federal Stds.	Meets State & Federal Federal Rqmts.
Safety and Occupational Laws and Regulations	Exceed State & Federal Stds.	Exceed / Meet State & / State & Federal / Federal Stds. / Stds.	Meets State & Federal Federal Stds.	Meets State & Federal Federal Stds.
Chemical Agent Release	0	0 / 0	0	0
Chemical Agent Exposure	0	0 / 0	0	0
LIC POHC Removal Efficiency	100%	100% / 99.9999%	TBD	99.9999%
Other Furnaces POHC of Agent Removal efficiency	100%	100% / 99.99%	TBD	99.99%

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10a. Performance Characteristics (Cont'd):

CSDP

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
DFS PCB Removal Efficiency	100%	100% / 99.9999%	TBD	99.9999%
PROCESSING RATES (Per/Hour)				
M55 Rockets	24	24 / 24	30	24
M23 Land Mines	36	36 / 36	TBD (not demon- strated during systemi- zation)	36
105mm Projectiles				
Mustard	104	104 / 104	TBD	104
GB	117	117 / 117	123	117
155mm Projectiles				
Mustard	98	98 / 98	132	98
VX & GB	83	83 / 83	106	83
8-inch Projectile	32	32 / 32	TBD	32
4.2inch Mortar	114	114 / 114	122	114
500lb Bomb	4.6	4.6 / 4.6	TBD	4.6
750lb Bomb	4.6	4.6 / 4.6	22	4.6
Weteye Bomb	1.7	1.7 / 1.7	5.8	1.7
Ton Container				
Mustard & GB	0.8	0.8 / 0.8	6.0	0.8
VX	0.5	0.5 / 0.5	6.0	0.5
Spray Tanks	0.6	0.6 / 0.6	7.9	0.6

Acronyms - in order of appearance:

DFS- Deactivation Furnace System
 GB- Nerve Chemical Agent
 H/HD-Mustard Blister Chemical Agents
 LIC- Liquid Incinerator
 mm- millimeter
 PCB -Polychlorinated Biphenyl
 POHC-Principal Organic Hazardous Constituent
 VX - Nerve Chemical Agent
 lb - Pound
 mg/m³ - milligram per cubic meter

Note 1: The demonstrated rates are from the individual demilitarization machine systemization capacity runs and do not include processing in the furnaces. Furnace capacity is demonstrated during the execution of the surrogate trial burns. For TOCDF, successful surrogate trial burns have been completed in the systems required for rocket processing (both LICs and the DFS). Mine processing requires replacement of equipment in the facility and is not conducted during systemization. Munitions listed as

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10a. Performance Characteristics (Cont'd):

CSDP

"TBD" are not stored at Tooele; these munitions will be demonstrated at other CONUS stockpile sites.

Note 2: "Meets State and Federal Requirements" means the facility is operating in compliance with all the conditions specified in environmental permits and applicable laws and regulations. The threshold is breached if violation warrants a stop work order.

Note 3: "Meets State and Federal Standards" means the facility is operating in compliance with the conditions specified in safety and occupational health laws and regulations. The threshold is breached if violation warrants a stop-work order.

Note 4: The term chemical agent release is defined as an event involving:

a. Confirmed agent release outside engineering controls and above the general population limits as measured at a perimeter monitoring station with the disposal facility as the identified source. The general population limits are:

GB - 0.000003 mg/m³
VX - 0.000003 mg/m³
H/HD - 0.0001 mg/m³

b. Confirmed point source (stack) agent release above the allowable stack concentration (ASC). The ASC values are:

GB - 0.0003 mg/m³
VX - 0.0003 mg/m³
H/HD - 0.03 mg/m³

Note 5: A chemical agent exposure refers to an individual exhibiting clinical signs or symptoms of being exposed to chemical agent.

Note 6: Incinerator Performance is defined as the demonstration of POHC and PCB destruction and removal efficiency during trial burns. Incinerator operational conditions are recorded during all incineration activities. Measurements of other incinerator emissions are generally required by permits, but these measurements are typically not limited to just during trial burn periods or when the incinerator is operating at maximum capacity. For example, emissions monitoring of agent is a continuous requirement regardless of throughput rate.

Note 7: Threshold values represent start-up rate demonstrated during systemization eight-hour capacity run. Objective values represent the average full-rate utilized in the calculation of schedule duration.

b. Current Change Explanations -- None.

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10a. Performance Characteristics (Cont'd):
Alternative Technology

a. Performance --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
ALTERNATIVE TECHNOLOGIES PROGRAM	TBD	TBD / TBD	TBD	TBD

b. Current Change Explanations -- None.

CSEPP

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE EMERGENCY PREPAREDNESS PROGRAM (CSEPP)				
Notification of Decisions COMMUNICATIONS Lines	1.5 mbs T1, for onpost, IR2 and state connect	1.5 mbs / 56 kbs T1, for / for onpost, / post, IR2 and / IR2 and state / state connect / connect	NDI Equip: Complies to Commer- cial Stds.	1.5 mbs T1, for on-post, IR2 and state connect
Hardware	Mux equip. compat. w/T1 1.5 mbs lines	Mux / Mux equip. / equip. compat. / compat. w/T1 / w/56 1.5 mbs / kbs lines / lines	NDI Equip: Complies to Commer- cial Stds.	Mux equip. compat. w/T1 1.5 mbs lines
ADP Hardware	Capacity for plan, hazard assmt, A&N, and total chem emerg mgmt	Capacity/ for / for plan, / haz hazard / assmt assmt, / A&N, / and / total / chem / emerg / mgmt /	NDI Equip: Complies to Commer- cial Stds.	Capacity for plan, hazard assmt, A&N, and total chem emerg mgmt

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Software	Identic. onpost/ offpost software at national level	Identic./ Onpost/ onpost/ / offpost offpost / connect software/ at / national/ level /	On-post/ off-post connec- tivity at 8 sites	Identic. on-post/ off-post software at national level
Sirens	Total IRZ cov at 10 dbC over avg ambient levels	Total / Total IRZ cov / IRZ cov at 10 / at 10 dbC / dbC over / over avg / avg ambient / ambient levels / levels	Initial instal- lation complete at 6 of 8 sites	Total IRZ cov at 10 dbC over avg ambient levels
Tone Alert Radios	One per occupied resi- dence within IRZ	One per / One per occupied/ occupied resi- / resi- dence / dence within / within IRZ / IRZ	Instal- lation com- mences summer 1995	One per occupied resi- dence within IRZ.
ANNUAL EXERCISE				
Notify Offpost	5/10	5/10 / 5/10	5/10*	5/10
Notify Public	8	8 / 8	Pending instal- lation of alert systems	8

Acronyms -

ADP - Automatic Data Processing
A&N - Alert & Notification
IRZ - Immediate Response Zone
mbs - megabytes per second
kbs - kilobytes per second
Mux - Multiplex
dbC - Decibel C - weighted network
cov - coverage

* Demonstrated at most sites, working on consistency.

Note 1: The CSEPP applies to the three aspects of storage, transport, and demilitarization efforts pertaining to chemical munitions and facilities. Funding for emergency equipment is provided to the States. The requirements for communications, ADP, sirens and tone alert radios are the benchmarks provided to the States for equipment purchases. All required equipment is commercial off-the-shelf and each State is responsible for

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10a. Performance Characteristics (Cont'd):

CSEPP

purchase and installation IAW state laws and regulations.

Note 2: The time (minutes) it takes on-post personnel to notify the off-post officials of an incident on post (10 minutes time at Pueblo, Umatilla, and TOCDF are based on distance to the population density).

Note 3: The time (minutes) it takes off-post officials to alert and notify the public of an incident on post.

Note 4: Each site will be exercised on an annual basis in the month agreed upon by the Army and State. Plans and training were completed at each site by Dec 92.

b. Current Change Explanations -- None.

NSCMP

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
NON-STOCKPILE				
CHEMICAL MATERIEL				
PROGRAM (NSCMP)				
Comply CWC provisions	Yes	Yes / Yes	TBD	Yes
Characterize Waste	N/A	TBD / TBD	TBD	TBD
Munition Management Device Prototype (w/o energetics)	N/A	TBD / TBD	TBD	TBD
Munition Management Device Prototype (with Energetics)	N/A	TBD / TBD	TBD	TBD
Rapid Response System Prototype	N/A	TBD / TBD	TBD	TBD

Note 1: Performance - The NSCMP performance characteristics will reflect "TBD" until CWC EIF occurs and chemical destruction concepts for the Munition Management Device and Rapid Response System Prototypes are demonstrated. Until then, specific performance parameters and requirements cannot be fully identified.

b. Current Change Explanations -- None.

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

CSDP

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	67.0	67.0	66.2
Procurement	2280.0	2280.0	2309.9
Chem Demil	(2280.0)		(2309.9)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	1240.1	1240.1	1373.5
Acquisition O&M	5823.6	5823.6	6197.7
Total FY 94 Base-Year \$	9410.7	9410.7	9947.3
Escalation	1293.8	1293.8	1392.0
Development (RDT&E)	(-6.4)	(-6.4)	(-6.0)
Procurement	(196.8)	(196.8)	(222.2)
Construction (MILCON)	(133.5)	(133.5)	(139.5)
Acquisition O&M	(969.9)	(969.9)	(1036.3)
Total Then Year \$	10704.5	10704.5	11339.3

German retrograde and Johnston Atoll leave are included in O&M funding.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	9	9	9
Total	9	9	9

Note: Total quantity is defined as 9 (8 CONUS plants and Johnston Atoll).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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

	Planning <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	189.0	189.0	212.8
Procurement	0.0	N/A	
Total Flyaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 94 Base-Year \$	<u>189.0</u>	<u>189.0</u>	<u>212.8</u>
Escalation	34.8	34.8	25.6
Development (RDT&E)	(34.8)	(34.8)	(25.6)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>223.8</u>	<u>223.8</u>	<u>236.4</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	N/A	0
Total	<u>0</u>	<u>0</u>	<u>0</u>

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	254.9	254.9	232.4
CSEPP	(254.9)		(232.4)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	628.2	628.2	690.3
Total FY 94 Base-Year \$	883.1	883.1	922.7
Escalation	91.6	91.6	87.7
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(14.4)	(14.4)	(5.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(77.2)	(77.2)	(82.7)
Total Then Year \$	974.7	974.7	1010.4
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	8	8	8
Total	8	8	8

Note: Total quantity is defined as 8 CONUS CSEPP sites.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	134.8	134.8	176.6
Procurement	84.1	84.1	127.3
NSCMP	(84.1)		(127.3)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	772.8	772.8	646.1
Total FY 94 Base-Year \$	991.7	991.7	950.0
Escalation	215.9	215.9	181.9
Development (RDT&E)	(19.8)	(19.8)	(23.1)
Procurement	(11.1)	(11.1)	(22.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(185.0)	(185.0)	(136.7)
Total Then Year \$	1207.6	1207.6	1131.9
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	1	1	1
Total	1	1	1

A nominal quantity of "one" is being used to represent the NSCMP because of the complexity of the NSCMP mission to dispose of non-stockpile chemical materiel (NSCM) in a safe, environmentally sound and cost effective manner. NSCM includes miscellaneous chemical warfare materiel, recovered chemical weapons, former production facilities, and binary chemical weapons. Procurement dollars include requirements for: Munitions Management Device (I, II & III), Rapid Response System, Binary Demil Equipment, Interim Holding Facilities, Single Round Containers, and Mobile Munitions Assessment System.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

CSDP

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	9947.3	9410.7	
(2) Quantity	9	9	
(3) Unit Cost	1105.256	1045.633	+5.70
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	2309.9	2280.0	
(2) Quantity	9	9	
(3) Unit Cost	256.656	253.333	+1.31

Alternative Technology

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

CSEPP

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	922.7	883.1	
(2) Quantity	8	8	
(3) Unit Cost	115.338	110.388	+4.48
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	232.4	254.9	
(2) Quantity	8	8	
(3) Unit Cost	29.050	31.863	-8.83

NSCMP

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	950.0	991.7	
(2) Quantity	1	1	
(3) Unit Cost	950.000	991.700	-4.20
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	127.3	84.1	
(2) Quantity	1	1	
(3) Unit Cost	127.300	84.100	+51.37

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

NSCMP

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 95 APB)	Percent Change
c. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (TY\$)	1131.9	1207.6	
(2) Unit Cost	1131.900	1207.600	-6.27
d. Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	149.4	95.2	
(2) Unit Cost	149.400	95.200	+56.93
e. Changes from Previous SAR (SEP 96)	Dollars/Qty	Percent	
(1) PAUC (BY\$)	-39.000	-3.94	
(2) APUC (BY\$)	43.600	+52.09	
(3) PAUC Quantity	0	N/A	
(4) PAUC (TY\$)	-26.500	-2.29	
(5) APUC (TY\$)	56.900	+61.51	
f. Initial SAR Information			
Initial SAR Date (DEC 94):			
(1) Program Acquisition Cost (BY\$)	991.7		
(2) Program Acquisition Cost (TY\$)	1207.6		
g. Unit Cost PAUC Changes --			
The FY 1998 President's Budget results in a decrease to the NSCMP program cost through 2005 as compared to the program cost baseline in the Mar 95 APB. This is achieved through cost avoidance in the O&M account.			
Unit Cost APUC Changes --			
The NSCMP life cycle cost estimate has undergone significant refinement since the establishment of the APB. Procurement costs have been refined to keep pace with the still-evolving requirements. Early concepts have been updated based on detailed engineering designs and new procurement requirements have been identified. The President's Budget contains the realignment of NSCMP funds to address the increased procurement requirements and includes funding for: Munitions Management Device (I,II & III), Rapid Response System, Binary Demil Equipment, Interim Holding Facilities, Single Round Containers, and Mobile Munitions Assessment System.			
h. Impact of Perf or Sched Changes --			
None.			
i. Program Management & Control --			
The Chemical Demilitarization Program Manager is MG Robert D. Orton. The Deputy Program Manager for Business Management is COL Edward A. Fisher. The Deputy Program Manager for Operations is Mr. James Bacon. The Project Manager for Non-Stockpile Chemical Materiel is COL Robert E. Hilliard.			
j. Cost Control Actions --			

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

NSCMP

The NSCMP is utilizing existing commercial technology, alternative commercial processes, multi-year procurement strategies, integrated testing, modeling and simulation to achieve greater cost efficiencies in the Project. Additionally, the Project is upgrading existing cost estimates in preparation for review and approval by Army Cost Review Board and OSD Cost Analysis Improvement Group.

k. Contract Information (In Millions of Then-Year Dollars) -- None.

l. Contracts exceeding Contract Cost Baseline Thresholds -- None.

m. General Comments -- None.

13. Cost Variance Analysis:

CSDP

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	60.6	2476.8	1373.6	6793.5	10704.5
Previous Changes:					
Economic	+0.3	-50.0	-45.6	-227.2	-322.5
Quantity	-	-	-	-	-
Schedule	-	+37.7	-	+327.2	+364.9
Engineering	-	+237.5	-	-	+237.5
Estimating	-0.7	-16.8	+185.0	+33.1	+200.6
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-0.4	+208.4	+139.4	+133.1	+480.5
Current Changes:					
Economic	-	+29.9	-2.6	+119.5	+146.8
Quantity	-	-	-	-	-
Schedule	-	+33.9	+21.4	+214.5	+269.8
Engineering	-	-221.7	-51.8	-23.2	-296.7
Estimating	-	+4.8	+33.0	-3.4	+34.4
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-153.1	-	+307.4	+154.3
Total Changes	-0.4	+55.3	+139.4	+440.5	+634.8
Current Estimate	60.2	2532.1	1513.0	7234.0	11339.3

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

Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	67.0	2280.0	1240.1	5823.6	9410.7
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	+3.8	-	+272.4	+276.2
Engineering	-	+209.8	-	-	+209.8
Estimating	-0.8	-16.6	+155.1	-8.5	+129.2
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-0.8	+197.0	+155.1	+263.9	+615.2
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	+23.0	+12.2	+133.6	+168.8
Engineering	-	-196.9	-42.9	-23.5	-263.3
Estimating	-	+6.8	+9.0	+0.1	+15.9
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-167.1	-21.7	+110.2	-78.6
Total Changes	-0.8	+29.9	+133.4	+374.1	+536.6
Current Estimate	66.2	2309.9	1373.5	6197.7	9947.3

b. Current Change Explanations --

(1)		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+28.9
	Economic adjustment for negative program change. (Economic)	N/A	+1.0
	Delay in environmental permit approval at multiple sites and FY97 legislative impacts to PUCDF and BGCDF (Schedule)	+23.0	+33.9
	Eliminated supplemental carbon filtration systems at TOCDF, ABCDF, and NECDF, and systems redesign at remaining sites (Engineering)	-164.3	-186.0
	Addition of thaw boxes for mustard conditioning (Engineering)	+31.4	+38.9
	Addition of design changes for the processing of Lewissite (Engineering)	+2.2	+2.6
	Experience-based reduction to JACADS equipment modification estimates (Estimating)	-8.6	-9.8
	Reprogrammed ABCDF and NECDF funds to enable demonstration of neutralization (hydrolysis) process alternative technologies (Engineering)	-66.2	-77.2

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Estimating)	+0.9	+0.9
Revised estimate to incorporate system contractor costs for installation/systemization at ANCDF and UMCDF (Estimating)	+4.7	+5.0
Adjustment for prior year actuals (Estimating)	+9.8	+9.4
Revision of estimated program cost (Estimating)	0.0	-0.7
Procurement Subtotal	-167.1	-153.1
(2) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-5.0
Economic adjustment for negative program change. (Economic)	N/A	+2.4
Delays in environmental permit approval at multiple sites and FY97 legislative impacts to PUCDF and BGCDF (Schedule)	+12.2	+21.4
Reprogrammed ABCDF and NECDF funds to enable demonstration of neutralization (hydrolysis) process alternative technologies (Engineering)	-42.9	-51.8
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
Additional cost for activities related to obtaining environmental permits for UMCDF (Estimating)	+1.9	+2.1
Adjustment for prior year actuals (Estimating)	+0.2	+0.2
Revised estimate of program cost (Estimating)	+6.4	+30.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
MILCON Subtotal	-21.7	0.0
(3) <u>O&M</u>		
Revised escalation indices. (Economic)	N/A	+114.9
Economic adjustment for negative program change. (Economic)	N/A	+4.6
Delays in environmental permit approval at multiple sites and FY97 legislative impacts to PUCDF and BGCDF (Schedule)	+31.1	+91.2
Eliminated supplemental carbon filtration systems at TOCDF, ABCDF, and NECDF, and systems redesign at remaining sites (Engineering)	-32.6	-36.2
Addition of thaw boxes for mustard conditioning (Engineering)	+19.0	+24.6

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment to throughput rates extends JACADS operations schedule (Schedule)	+73.8	+90.0
Adjustment to incorporate additional time for Lewisite processing (Schedule)	+28.7	+33.3
Revision to account for less complex processes at facilities with no projectiles (Estimating)	-14.2	-17.5
Reprogrammed ABCDF and NECDF funds to enable demonstration of neutralization (hydrolysis) process alternative technologies (Engineering)	-9.9	-11.6
Adjustment for Current and Prior Inflation. (Estimating)	+1.3	+1.4
Adjustments for prior year actuals (Estimating)	+2.2	+2.3
Revision based on historical experience (efficiencies in consumables) (Estimating)	-62.4	-80.0
Additional cost for activities related to obtaining environmental permits for UMCDF (Estimating)	+39.6	+53.4
Reduced schedule at ABCDF/NECDF due to stockpile declassification (Estimating)	-18.1	-24.3
Incorporated system contractor negotiated costs for installation/systemization at ANCDF/UMCDF (Estimating)	+58.0	+68.4
Revision of estimated program cost (Estimating)	-6.3	-7.1
O&M Subtotal	+110.2	+307.4

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13. Cost Variance Analysis (Cont'd):
Alternative Technology

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	223.8	-	-	223.8
Previous Changes:				
Economic	-7.0	-	-	-7.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+22.0	-	-	+22.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+15.0	-	-	+15.0
Current Changes:				
Economic	+3.4	-	-	+3.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.8	-	-	-3.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.4	-	-	-0.4
Total Changes	+14.6	-	-	+14.6
Current Estimate	238.4	-	-	238.4

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

Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	189.0	-	-	189.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.5	-	-	+19.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+19.5	-	-	+19.5
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+4.3	-	-	+4.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.3	-	-	+4.3
Total Changes	+23.8	-	-	+23.8
Current Estimate	212.8	-	-	212.8

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	+3.4
	\$ 40M added for PM for Assembled Chemical Weapon Assessment (Estimating)	+36.6	+40.0
	Reprogrammed ABCDF and NECDF funds to enable demonstration of neutralization (hydrolysis) process alternative technologies (Estimating)	+82.2	+95.4
	Eliminate pilot plant testing at CAMDS (Estimating)	-106.0	-125.7
	Reduction of estimated program cost (Estimating)	-8.5	-13.5
	RDT&E Subtotal	+4.3	-0.4

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13. Cost Variance Analysis (Cont'd):

CSEPP

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	-	269.3	-	705.4	974.7
Previous Changes:					
Economic	-	-1.8	-	-17.1	-18.9
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-25.6	-	+87.3	+61.7
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-27.4	-	+70.2	+42.8
Current Changes:					
Economic	-	+1.3	-	+9.5	+10.8
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-5.8	-	-12.1	-17.9
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-4.5	-	-2.6	-7.1
Total Changes	-	-31.9	-	+67.6	+35.7
Current Estimate	-	237.4	-	773.0	1010.4

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Chem Demil, December 31, 1996

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

Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	-	254.9	-	628.2	883.1
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-17.9	-	+71.3	+53.4
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-17.9	-	+71.3	+53.4
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-4.6	-	-9.2	-13.8
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-4.6	-	-9.2	-13.8
Total Changes	-	-22.5	-	+62.1	+39.6
Current Estimate	-	232.4	-	690.3	922.7

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) Procurement		
Revised escalation indices. (Economic)	N/A	+1.2
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Revised estimated program cost (Estimating)	-4.7	-5.9
Procurement Subtotal	-4.6	-4.5
(2) O&M		
Revised escalation indices. (Economic)	N/A	+9.3
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Adjustment for prior year actuals (Estimating)	0.0	+0.1
Revised estimated program cost (Estimating)	-9.4	-12.4
O&M Subtotal	-9.2	-2.6

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Chem Demil, December 31, 1996

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

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	154.6	95.2	-	957.8	1207.6
Previous Changes:					
Economic	-4.2	-2.3	-	-40.4	-46.9
Quantity	-	-	-	-	-
Schedule	-	-1.0	-	+0.4	-0.6
Engineering	+1.2	-	-	-	+1.2
Estimating	-5.4	+0.6	-	+1.9	-2.9
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-8.4	-2.7	-	-38.1	-49.2
Current Changes:					
Economic	+1.3	+0.9	-	+22.5	+24.7
Quantity	-	-	-	-	-
Schedule	-	-	-	-159.5	-159.5
Engineering	+53.3	+29.5	-	-	+82.8
Estimating	-1.1	+26.5	-	+0.1	+25.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+53.5	+56.9	-	-136.9	-26.5
Total Changes	+45.1	+54.2	-	-175.0	-75.7
Current Estimate	199.7	149.4	-	782.8	1131.9

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Chem Demil, December 31, 1996

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

Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	134.8	84.1	-	772.8	991.7
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-1.1	-	-0.4	-1.5
Engineering	+1.4	-	-	-	+1.4
Estimating	-5.1	+0.7	-	+1.8	-2.6
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-3.7	-0.4	-	+1.4	-2.7
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-128.2	-128.2
Engineering	+46.4	+24.1	-	-	+70.5
Estimating	-0.9	+19.5	-	+0.1	+18.7
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+45.5	+43.6	-	-128.1	-39.0
Total Changes	+41.8	+43.2	-	-126.7	-41.7
Current Estimate	176.6	127.3	-	646.1	950.0

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	+1.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Additional new requirements (innovative access methods, multi-agent chemical air monitoring and destruction system modification) (Engineering)	+46.4	+53.3
Revised estimated program cost (Estimating)	-1.0	-1.2
RDT&E Subtotal	+45.5	+53.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+0.9
Modification to mobile treatment system (Engineering)	+24.1	+29.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Increased destruction system replacement costs. (Estimating)	+20.0	+27.9

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
Revised estimated program cost (Estimating)		-0.6	-1.5
Procurement Subtotal		+43.6	+56.9
(3) O&M			
Revised escalation indices. (Economic)		N/A	+18.9
Economic adjustment for negative program change. (Economic)		N/A	+3.6
Delay in fielding of original systems have shifted operational requirements beyond the baselined program date of FY05. Future years requirements will be validated by the CAIG at the next DAB (Schedule)		-128.2	-159.5
Adjustment for Current and Prior Inflation. (Estimating)		+0.1	+0.1
O&M Subtotal		-128.1	-136.9

14. Unit Cost and Other History (Then-Year Dollars in Millions):
CSDP

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1189.39	-19.52	--	+70.52	-6.58	+26.11	--	--	+70.53	1259.92

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
275.20	-2.23	-0.02	+7.96	+1.76	-1.33	--	--	+6.14	281.34

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14c. Unit Cost and Other History (Cont'd):

CSDP

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	SEP 95	N/A	AUG 96
Total Cost	N/A	10704.5	N/A	11339.3
Total Quantity	N/A	9	N/A	9
Prog Acq Unit Cost	N/A	1189.39	N/A	1259.92

Alternative Technology

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

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JUL 96	N/A	N/A	DEC 96
Milestone II	JUL 96	N/A	N/A	DEC 96
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	223.8	N/A	N/A	238.4
Total Quantity	N/A	N/A	N/A	N/A
Prog Acq Unit Cost	N/A	N/A	N/A	N/A

CSEPP

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Changes									PAUC Cur Est
PAUC Dev Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
121.84	-1.01	--	--	--	+5.47	--	--	+4.46	126.30

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14b. Unit Cost and Other History (Cont'd):
CSEPP

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
33.66	-0.06	+0.01	--	--	-3.93	--	--	-3.98	29.68

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	974.7	N/A	1010.4
Total Quantity	N/A	8	N/A	8
Prog Acq Unit Cost	N/A	121.84	N/A	126.3

NSCMP

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1207.60	-22.20	--	-160.10	+84.00	+22.60	--	--	-75.70	1131.90

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
95.20	-1.40	--	-1.00	+29.50	+27.10	--	--	+54.20	149.40

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14c. Unit Cost and Other History (Cont'd):

NSCMP

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	1207.6	N/A	1131.9
Total Quantity	N/A	1	N/A	1
Prog Acq Unit Cost	N/A	1207.6	N/A	1131.9

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

a. Procurement --
TOCDF Sys Contractor:
 EG&G Defense Mat Div, San Diego CA
 DACA87-89-C-0076, CPAF
 Award: July 21, 1989
 Definitized: July 21, 1989

Initial Contract Price		
Target	Ceiling	Qty
\$211.0	N/A	1

Current Contract Price		
Target	Ceiling	Qty
\$857.3	N/A	1

Estimated Price At Completion	
Contractor	Program Manager
\$857.3	\$857.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-4.8	\$0.0
Cumulative Variances To Date	\$-10.4	\$-1.9
Net Change	\$-5.6	\$-1.9

Explanation of Change:

The unfavorable cost variance reflects incorporating engineering change proposals, change orders, and the Davis-Bacon Wage General Decision.

The unfavorable schedule variance reflects unanticipated interruptions in processing M55 GB-filled rockets.

The target price has increased from \$855.0M to \$857.3M. This is the current contract value through MOD P00154 including fee.

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15. Contract Information (Cont'd):

<u>Equipment Acquisition:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Bechtel National, INC, San Francisco CA	\$284.3	N/A	9		
DACA87-89-C-0007, CPFF					
Award: December 1, 1988					
Definitized: December 1, 1988					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$228.6	N/A	6	\$228.6	N/A

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

This contract does not have Earned Value Management (EVM) requirements; therefore, cost and schedule variances are not reported.

Contract Comments:

This contract covers procurement of processing equipment for the Chem Demil Training Facility (CDTF) and eight demilitarization facilities: TOCDF, ANCDF, UMCDF, PBCDF, PUCDF, BGCDF, ABCDF, and NECDF.

The initial contract was negotiated and awarded to cover procurement of equipment based on the approved schedule. It has been incrementally funded each year to support the programmatic schedule and the construction requirements. The current price reflects management and passthrough costs for fully funding CDTF and TOCDF; and partial funding of long-lead items for the ANCDF, UMCDF, PBCDF, and PUCDF.

<u>Design & Sytems Integ:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Parsons Infrastructure Te, Pasadena CA	\$52.4	N/A	9		
DACA87-86-C-0084, CPFF					
Award: July 1, 1986					
Definitized: July 1, 1986					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$233.2	N/A	9	\$233.2	N/A

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

This contract does not have EVM requirements; therefore, cost and schedule variances are not reported.

Contract Comments:

The design engineering contract includes all eight CONUS demilitarization facilities: TOCDF, ANCDF, UMCDF, PBCDF, PUCDF, BGCDF, ABCDF, NECDF, and the Chemical Demilitarization Training Facility (CDTF). Initial contract award amount only included criteria development efforts; no design work was initially awarded. Design work has been completed for CDTF and TOCDF. Design and engineering support work is continuing on ANCDF, UMCDF and PBCDF. Work is being halted on ABCDF, NECDF, BGCDF and PUCDF due to impacts from activities related to development of alternatives to baseline incineration.

The current contract price reflects contract modifications for design development, on-site post-design support, and engineering change proposals (ECPs) necessary to maintain configuration control and to reflect changes in environmental, health and safety requirements since the contract was awarded as well as process equipment improvements arising from lessons learned at JACADS and TOCDF.

<u>Equipment Installation:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Engrs & Construc, Denver CO			
DACA87-84-C-0081, CPFF	\$50.5	N/A	1
Award: September 1, 1984			
Definitized: September 1, 1984			

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$336.0	N/A	6	\$336.0	N/A

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

This contract does not have EVM requirements; therefore, cost and schedule variances are not reported.

Contract Comments:

This contract covers procurement of furnaces, pollution abatement system

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15. Contract Information (Cont'd):

(PAS) equipment, and control equipment for the CDTF and nine demilitarization facilities: JACADS, TOCDF, ANCDF, UMCDF, PBCDF, PUCDF, BGCDF, ABCDF, and NECDF.

The initial contract was awarded to cover the procurement and installation of equipment for JACADS. Subsequent modifications have been made to completely fund the procurement of specialty equipment for CDTF, TOCDF, ANCDF, and UMCDF, and for long-lead items for PBCDF. Funds for PUCDF were deobligated due to FY 97 Defense Appropriations Act language.

<u>ANCDF Systems Contract:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Westinghouse Elec Corp., Monroeville PA			\$575.8	\$0.0	1
DAA-09-96-C-0018, FFP/CPAF					
Award: N/A					
Definitized: N/A					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$575.8	\$0.0	1	\$0.0	\$0.0	

<u>Previous Cumulative Variances</u>	<u>Cost Variance</u>	<u>Schedule Variance</u>
<u>Cumulative Variances To Date</u>	\$0.0	\$0.0
<u>Net Change</u>	\$0.0	\$0.0

Explanation of Change:

None.

Contract Comments:

The limited notice to proceed (LNTP) for the Westinghouse contract was extended to accommodate the public comment period associated with issuance of the facility's RCRA/CAA permits. Because the current estimate for approval of the environmental permits is now 3Q FY 97 (Apr-Jun), the LNTP is being extended through 3Q FY 97 (Apr-Jun). Implementation of EVM, and development of management and systemization plans continue. Contract cost reporting will be initiated at the start of construction.

<u>b. O&M --</u>			<u>Initial Contract Price</u>		
<u>JACADS Operator & Maint.:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Eng. & Constr., Honolulu HI			\$9.3	\$0.0	1
DAAA09-96-C-0081, CPAF					
Award: September 28, 1996					
Definitized: September 28, 1996					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$99.7	\$	1	\$94.9	\$94.9	

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15b. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$-1.3	\$-5.2
Net Change	\$-1.3	\$-5.2

Explanation of Change:

The unfavorable cost and schedule variances are the result of problems caused by crystals found in agent and the need to redesign The Nose Closure Removal Station.

The contract is currently negotiated through FY97 and negotiations are underway for the remainder of the period of performance (FY 01)

EVM reporting has been instituted on this contract. Integrated Baseline Review (IBR) and EVM validation have been rescheduled resulting from the need to replan the current and follow on campaign activities.

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

Total Program

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

<u>Appropriation</u>	<u>Prior Years (FY88-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-05)</u>	<u>Total</u>
RDT&E	250.2	66.3	112.4	69.4	498.3
Procurement	1418.5	82.2	403.7	1014.5	2918.9
MILCON	628.6	120.5	131.6	632.3	1513.0
O&M	2498.0	472.2	578.1	5241.5	8789.8
Total	4795.3	741.2	1225.8	6957.7	13720.0

CSDP

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

<u>Appropriation</u>	<u>Prior Years (FY88-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-05)</u>	<u>Total</u>
RDT&E	60.2	-	-	-	60.2
Procurement	1211.3	51.6	346.6	922.6	2532.1
MILCON	628.6	120.5	131.6	632.3	1513.0
O&M	2071.9	356.3	442.7	4363.1	7234.0
Total	3972.0	528.4	920.9	5918.0	11339.3

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

Alternative Technology

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

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RDT&E	110.0	25.5	83.3	19.6	238.4
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	110.0	25.5	83.3	19.6	238.4

CSEPP

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

<u>Appropriation</u>	<u>Prior Years (FY88-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-04)</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	177.6	30.4	3.7	25.7	237.4
MILCON	-	-	-	-	-
O&M	336.4	64.7	63.9	308.0	773.0
Total	514.0	95.1	67.6	333.7	1010.4

NSCMP

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

<u>Appropriation</u>	<u>Prior Years (FY92-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-05)</u>	<u>Total</u>
RDT&E	80.0	40.8	29.1	49.8	199.7
Procurement	29.6	0.2	53.4	66.2	149.4
MILCON	-	-	-	-	-
O&M	89.7	51.2	71.5	570.4	782.8
Total	199.3	92.2	154.0	686.4	1131.9

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

b. Annual Summary -- CSDP

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				5.8	4.8
1989				20.6	17.6
1990				8.9	7.9
1991				5.7	5.3
1992				14.4	13.8
1993				6.6	6.5
1994				4.2	4.3
Subtotal				66.2	60.2

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988			116.8	116.8	96.0
1989			42.2	42.2	36.1
1990	1		47.5	47.5	42.3
1991			104.7	104.7	97.3
1992			142.8	142.8	136.7
1993			207.8	207.8	203.7
1994			21.7	21.7	22.1
1995			186.0	186.0	193.4
1996	1		213.6	213.6	225.0
1997			145.2	145.2	158.7
1998			45.2	45.2	51.6
1999			297.2	297.2	346.6
2000			316.4	316.4	377.3
2001	2		84.1	84.1	102.6
2002	1		44.5	44.5	55.6
2003	1		20.5	20.5	26.3
2004	3		253.7	253.7	333.8
2005			20.0	20.0	27.0
2006					
Subtotal	9		2309.9	2309.9	2532.1

There are recurring flyaway dollars for years with no quantities due to the complexity of the program and the length of time it takes to procure a demilitarization facility.

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Chem Demil, December 31, 1996

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

CSDP

Appropriation: 0500 Military Construction, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				32.2	34.2
1996				12.0	13.0
1997				103.4	114.1
1998				107.0	120.5
1999				114.4	131.6
2000				190.3	223.7
2001				96.6	116.1
2002				21.0	25.8
2003					
2004				206.1	266.7
Subtotal				883.0	1045.7

Appropriation: 2050 Military Construction, Army

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				3.7	3.0
1989				81.3	69.6
1990				7.2	6.4
1991				103.5	96.2
1992				150.1	143.7
1993				25.5	25.0
1994				119.2	123.4
Subtotal				490.5	467.3

Appropriation: 0100 Operation & Maintenance, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				113.8	93.5
1989				130.6	111.8
1990				177.2	157.9
1991				161.2	149.8
1992				188.6	180.6
1993				213.1	208.9
1994				218.1	222.4
1995				279.1	290.2
1996				256.1	269.7
1997				354.3	387.1

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Chem Demil, December 31, 1996

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

CSDP

Appropriation: 0100 Operation & Maintenance, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				312.2	356.3
1999				379.6	442.7
2000				441.2	526.2
2001				484.9	591.7
2002				514.5	643.2
2003				561.8	720.4
2004				685.7	902.1
2005				725.7	979.5
2006					
2007					
Subtotal				6197.7	7234.0

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	9		2309.9	9456.8	10872.0
Army				490.5	467.3
Grand Total	9		2309.9	9947.3	11339.3

b. Annual Summary -- Alternative Technology

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				22.0	22.4
1995				9.0	9.4
1996				21.1	22.2
1997				51.2	56.0
1998				22.3	25.5
1999				71.4	83.3
2000				4.1	4.9
2001				4.0	4.9
2002				3.9	4.9
2003				3.8	4.9
2004					
Subtotal				212.8	238.4

1997 - added 40/M added per Pm for assembled munitions

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Chem Demil, December 31, 1996

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

Alternative Technology

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				212.8	238.4

b. Annual Summary -- CSEPP

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989			9.2	9.2	7.9
1990			33.4	33.4	29.8
1991			19.0	19.0	17.7
1992			15.7	15.7	15.0
1993			36.7	36.7	36.0
1994			23.8	23.8	24.3
1995			2.2	2.2	2.3
1996	1		21.7	21.7	22.9
1997			19.9	19.9	21.7
1998			26.6	26.6	30.4
1999			3.2	3.2	3.7
2000			9.0	9.0	10.7
2001	2		5.7	5.7	7.0
2002	1		3.4	3.4	4.3
2003	1		2.9	2.9	3.7
2004	3				
2005					
Subtotal	8		232.4	232.4	237.4

Appropriation: 0100 Operation & Maintenance, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				3.0	2.5
1989				4.0	3.4
1990				15.6	13.9
1991				21.5	20.0
1992				26.5	25.4
1993				52.8	51.8
1994				46.7	47.6
1995				52.1	54.2
1996				54.1	57.0
1997				55.5	60.6
1998				56.7	64.7
1999				54.8	63.9

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

CSEPP

Appropriation: 0100 Operation & Maintenance, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000				54.2	64.6
2001				53.8	65.7
2002				52.1	65.1
2003				49.7	63.7
2004				37.2	48.9
2005					
Subtotal				690.3	773.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	8		232.4	922.7	1010.4

b. Annual Summary -- NSCMP

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				5.6	5.7
1995				10.9	11.3
1996				29.2	30.8
1997				29.5	32.2
1998				35.7	40.8
1999				25.0	29.1
2000				19.4	23.1
2001				8.4	10.3
2002				6.7	8.4
2003				6.2	8.0
2004					
2005					
Subtotal				176.6	199.7

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994			4.5	4.5	4.6
1995			3.2	3.2	3.3

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Chem Demil, December 31, 1996

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

NSCMP

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996			10.5	10.5	11.1
1997			9.7	9.7	10.6
1998			0.2	0.2	0.2
1999	1		45.8	45.8	53.4
2000			10.1	10.1	12.0
2001			13.8	13.8	16.8
2002			14.2	14.2	17.8
2003			14.2	14.2	18.2
2004			1.1	1.1	1.4
Subtotal	1		127.3	127.3	149.4

Appropriation: 0100 Operation & Maintenance, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				2.3	2.2
1993				6.4	6.3
1994				20.9	21.3
1995				10.9	11.3
1996				16.9	17.8
1997				28.2	30.8
1998				44.9	51.2
1999				61.3	71.5
2000				64.6	77.1
2001				102.6	125.2
2002				105.3	131.6
2003				105.4	135.1
2004				50.1	65.9
2005				26.3	35.5
Subtotal				646.1	782.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		127.3	950.0	1131.9

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17. Delivery/Expenditure Information:

CSDP

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	9	2

Percent Total Program Quantities Delivered: 22.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2428.2

Percent Total Program Expended: 21.4%

N/A

Alternative Technology

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 47.2

Percent Total Program Expended: 19.8%

N/A

CSEPP

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	1	1

Percent Total Program Quantities Delivered: 12.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 321.5

Percent Total Program Expended: 31.8%

N/A

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Chem Demil, December 31, 1996

17. Delivery/Expenditure Information (Cont'd):

NSCMP

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 75.8

Percent Total Program Expended: 6.7%

N/A

18. Operating and Support Costs:

CSDP

a. Assumptions and Ground Rules --

O & S costs are an integral part of the Chem Demil Program and as such are reported in sections 11, 12, 13, and 16 in this report.

b. Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	Actual Annual Cost FY88-FY95	To Complete Program FY96-FY05
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	0.0	0.0

Alternative Technology

Not applicable for Pre-Milestone II programs.

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

CSEPP

a. Assumptions and Ground Rules --

O & S costs are an integral part of the Chem Demil Program and as such are reported in sections 11, 12, 13, and 16 in this report.

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

Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

NSCMP

a. Assumptions and Ground Rules --

O & S costs are an integral part of the Chem Demil Program and as such are reported in sections 11, 12, 13, and 16 in this report.

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

Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

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N-12 LHD 1

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

PROGRAM: LHD - 1

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): LHD 1 Amphibious Assault Ship
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
AMPHIBIOUS WARFARE PROGRAM OFFICE CAPT. T.H. GORSKI
PROGRAM EXECUTIVE OFFICE, CARRIERS, Assigned: June 21, 1996
LITTORAL WARFARE & AUXILIARY SHIPS DSN 332-8511; COMM (703) 602-8511
ARLINGTON, VA 22242-5171 GORSKI_THOMAS_CAPT@HQ.NAVSEA.NAVY.M
IL
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0603564N (Shared) Project 0408
(U) PE 0604567N (Shared) Project 01803, S0857
PROCUREMENT:
(U) APPN 1611 ICN 3035 (Navy)

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FOR OPEN PUBLICATION

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Ann J. Anderson
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5. (U) References:

SAR Baseline (Development Estimate):

(U) SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP"; LHD 1 Class NDCP dated 15 August 1985.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated February 11, 1994.

6. (U) Mission and Description:

(U) The ship's primary amphibious mission is to embark, deploy and land elements of a Marine landing force in an assault by helicopters, landing craft amphibious vehicles, and by combinations of these methods. LHD 1 Class has a secondary/convertible mission for sea control and power projection. The LHD is a modification of the LHA Class design, with significant upgrades in combat systems, medical spaces, chemical biological radiological defense, aviation ordnance handling, and landing craft handling capabilities. The LHD will partially offset the loss in lift capacity resulting from block retirements of aging amphibious ships in the 1990's.

7. (U) Executive Summary:

(U) The LHD Program began in FY 1981 as part of an overall program to address impending block obsolescence of the Navy's amphibious lift capability. In June 1981, SECNAV proposed that the LHD have a convertible sea control mission; and, in November, directed that the Program be a modified LHA design.

A sole-source detail design and construction contract was awarded to Ingalls Shipbuilding Incorporated (ISI) in February 1984 for LHD 1. The ship was delivered in May 1989.

A competitive contract for LHD 2, with options for LHD 3 and 4 was awarded to ISI in September 1986. The options for LHD 3 and 4 were exercised November 1987 and October 1988, respectively. LHD 2, 3 and 4 were delivered to the Navy July 1992, August 1993 and November 1994, respectively.

A competitive contract for the LHD 5, with unevaluated and undefinitized options for LHD 6 and 7, was awarded to ISI in December 1991 and construction began 25 July 1994. The options for LHD 6 and 7 were exercised on a sole source basis on 11 December 92 and 28 December 95, respectively.

LHD 5 was launched on 15 March 1996 and christened 18 May 1996. LHD 7 construction began 3 September 1996.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I	OCT 81	OCT 81	OCT 81
Milestone II SAIP	JUL 82	JUL 82	JUL 82
Start Contract Design	AUG 82	AUG 82	AUG 82
Milestone IIIA Production-Decision	JUN 83	JUN 83	JUN 83
Award Lead Ship Contract	DEC 83	FEB 84	FEB 84
Milestone IIIB Production-Decision	JUL 85	AUG 85	AUG 85
Approve Full-Production (AFP)	AUG 85	AUG 85	AUG 85
Launch First Ship	AUG 87	AUG 87	AUG 87
Acceptance Trials (Lead Ship)	FEB 89	FEB 89	MAR 89
Lead Ship Delivery	MAR 89	MAR 89	MAY 89
Material Support Date	MAR 89	MAR 89	JUL 89
Naval Support Date	MAY 90	MAR 93	MAR 93
IOC	MAY 90	MAY 90	NOV 90

(U) IOC - Reflects date the lead ship is ready for operational deployment.

b. (U) Current Change Explanations --

NONE

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10. (U) Performance Characteristics:

a. Performance --	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Troops	1873	1873 / 1873	1894	1894
Vehicle Square (ft^2)	22900	22900 / 22900	22900	22900
Cargo Cube (ft^3)	109000	109000 / 109000	109000	109000
LCAC	3	3 / 3	3	3
Length (ft)	840	844 / 844	844	844
Beam (ft)	106	106 / 106	106	106
Draft (full load) (ft/inches)	26'	26'8" / 26'8"	26'8"	26'8"
Displacement (full load)	39400	40533 / 40533	40533	40533
Offload Capability (tons/hr)	300	300 / 300	300	300
Propulsion	Steam	Steam / Steam	Steam	Steam
Shaft Horsepower	70000	70000 / 70000	70000	70000
No. of Screws	2	2 / 2	2	2
Medical Facilities (operating rooms)	6	6 / 6	6	6
Speed (knots)	22	22 / 22	22	22

(b)(1)

Armament:

Close in Weapon System	3	3 / 3	3	3
Self Defense Missile System	2	2 / 2	2	2

b. (U) Current Change Explanations --
NONE

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	39.9	48.9	42.8
Procurement	2891.9	6432.1	5998.6
Sailaway	(2872.5)		(5976.4)
Total Other Wpn Sys			(0.0)
Peculiar Support	(10.1)		(11.5)
Initial Spares	(9.3)		(10.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 82 Base-Year \$	2931.8	6481.0	6041.4
Escalation	1519.2	1943.2	1844.6
Development (RDT&E)	(3.7)	(6.0)	(5.5)
Procurement	(1515.5)	(1937.2)	(1839.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4451.0	8424.2	7886.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	3	7	7
Total	3	7	7

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (FEB 94 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 82 BY\$)	6041.4	6481.0	
(2) Quantity	7	7	
(3) Unit Cost	863.057	925.857	-6.78
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 82 BY\$)	5998.6	6432.1	
(2) Quantity	7	7	
(3) Unit Cost	856.943	918.871	-6.74

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	43.6	4407.4	-	4451.0
Previous Changes:				
Economic	-0.4	-1283.3	-	-1283.7
Quantity	-	+5552.1	-	+5552.1
Schedule	+4.5	-332.7	-	-328.2
Engineering	-	+14.3	-	+14.3
Estimating	+0.6	-498.2	-	-497.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.7	+3452.2	-	+3456.9
Current Changes:				
Economic	-	-16.0	-	-16.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-5.9	-	-5.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-21.9	-	-21.9
Total Changes	+4.7	+3430.3	-	+3435.0
Current Estimate	48.3	7837.7	-	7886.0

(U) Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	39.9	2891.9	-	2931.8
Previous Changes:				
Quantity	-	+3395.2	-	+3395.2
Schedule	+3.4	+80.7	-	+84.1
Engineering	-	+9.0	-	+9.0
Estimating	-0.5	-380.2	-	-380.7
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+2.9	+3107.5	-	+3110.4
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-0.8	-	-0.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-0.8	-	-0.8
Total Changes	+2.9	+3106.7	-	+3109.6
Current Estimate	42.8	5998.6	-	6041.4

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-18.0
Economic adjustment for negative program change. (Economic)	N/A	+2.0
Adjustment for Current and Prior Inflation. (Estimating)	+11.5	+17.3
Actual cost on completed portion of program. (Estimating)	-4.0	-4.9
Insurance claim for major fires on LHD 5. (Estimating)	+6.9	+9.4
Escalation reduction to FY94 and FY96 program. (Estimating)	-8.1	-12.0
Restored from BOSNIA supported effort. (Estimating)	+11.9	+18.0
Reduction and rescoping of GFE requirements on LHD 7. (Estimating)	-4.0	-6.0
Revised Outfitting and Post Delivery cost estimates for FY99 and prior. (Estimating)	-10.6	-19.6
Revised cost estimate for cables, foundations and other miscellaneous electronics. (Estimating)	-4.4	-8.1
Procurement Subtotal	<u>-0.8</u>	<u>-21.9</u>

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1483.67	-185.67	-54.65	-46.89	+2.04	-71.93	--	--	-357.10	1126.57

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1469.13	-185.61	-46.35	-47.53	+2.04	-72.01	--	--	-349.46	1119.67

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	OCT 81	N/A	OCT 81
Milestone II	N/A	JUL 82	N/A	JUL 82
Milestone III	N/A	AUG 85	N/A	AUG 85
FUE/IOC	N/A	MAY 90	N/A	NOV 90
Total Cost	N/A	4451	N/A	7886
Total Quantity	N/A	3	N/A	7
Prog Acq Unit Cost	N/A	1483.67	N/A	1126.57

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

a. Procurement --

(U) LHD 5 CONSTRUCTION:
INGALLS SHIPBUILDING, INC, PASCAGOULA MS
N00024-92-C-2204, FPI
Award: December 20, 1991
Definitized: December 20, 1991

Initial Contract Price		
Target	Ceiling	Qty
\$707.0	\$808.0	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$750.4	\$853.6	1	\$818.3	\$817.8

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$15.5	\$-13.1
Cumulative Variances To Date (12/31/96)	\$-3.7	\$-13.6
Net Change	\$-19.2	\$-0.5

Explanation of Change:

(U) Cost Variance - The majority of unfavorable variance reported by the contractor is primarily identified with construction labor, overhead, material and G&A growth.

Schedule Variance - The majority of unfavorable variance reported by the contractor results from late material received offset by construction related recoveries.

The PM's Estimated Price at Completion takes these variances into consideration.

(U) Contract Comments:

The Program Manager's Estimated Price at Completion is based on the Government's share of a projected total overrun of \$134.8M, which would result in a net contractor profit of \$22.7M.

The Current Contract Price includes an additional \$24.3M of Firm Fixed

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

Price Construction Contract Line Items (CLINS), while the Initial Contract Price reflects only the Construction CLIN.

(U) <u>LHD 6 CONSTRUCTION:</u>			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
INGALLS SHIPBUILDING, INC, PASCAGOULA MS					
N00024-92-C-2204, FPI			\$760.9	\$779.2	1
Award: December 11, 1992					
Definitized: December 11, 1992					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$785.0	\$803.1	1	\$758.0	\$773.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$28.9	\$0.9
Cumulative Variances To Date (12/31/96)	\$59.3	\$-10.5
Net Change	\$30.4	\$-11.4

Explanation of Change:

(U) Cost Variance: The majority of favorable variance reported by the Contractor is identified with construction and material related savings partially offset by G&A growth.

Schedule Variance: The majority of unfavorable variance reported by the Contractor is primarily identified with material resulting from late receipt of major procurement and INCO Spares offset by construction labor related recoveries.

The PM's Estimated Price at Completion takes these variances into consideration.

(U) Contract Comments:

The Program Manager's Estimated Price at Completion is based on the Government's share of a projected total underrun of \$-24.0M, which would result in a net contractor profit of \$125.8M.

(U) <u>LHD 7 CONSTRUCTION:</u>			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
INGALLS SHIPBUILDING, INC, PASCAGOULA, MS					
N00024-92-C-2204, FPI			\$771.8	\$791.5	1
Award: December 28, 1995					
Definitized: December 28, 1995					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$793.8	\$813.1	1	\$795.1	\$801.8

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/96)	\$-6.2	\$17.8
Net Change	\$-6.2	\$17.8

Explanation of Change:

(U) Cost Variance: The majority of unfavorable variance reported by the contractor is identified with material.

Schedule Variance: The majority of unfavorable variance reported by the contractor is identified with late receipt of material.

The PM's Estimated Price at Completion takes these variances into consideration.

(U) Contract Comments:

The Program Manager's Estimated Price at Completion is based on the Government's share of a projected total overrun of \$16.2M which would result in a net contractor profit of \$114.0.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY81-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-02)	<u>Total</u>
RDT&E	48.3	-	-	-	48.3
Procurement	7745.3	19.1	12.3	61.0	7837.7
MILCON	-	-	-	-	-
OSM	-	-	-	-	-
Total	7793.6	19.1	12.3	61.0	7886.0

b. Annual Summary -- LHD

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY82 Dollars Nonrec</u>	<u>Flyaway FY82 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1981				0.9	0.9
1982				11.1	11.4
1983				17.9	19.2
1984				0.8	0.9
1985				1.7	2.0
1986				0.3	0.4
1987				0.5	0.6

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

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY82 Dollars Nonrec	Flyaway FY82 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				0.6	0.8
1989				2.8	3.7
1990				5.5	7.4
1991				0.7	1.0
Subtotal				42.8	48.3

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY82 Dollars Nonrec	Flyaway FY82 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				41.3	45.0
1983				48.4	53.7
1984	1	150.0	1110.9	1159.2	1310.1
1985				34.0	39.2
1986	1		766.5	705.9	832.8
1987				29.8	35.9
1988	1		634.8	613.1	761.3
1989	1		614.2	590.9	756.0
1990				35.8	47.1
1991	1		920.5	882.3	1195.3
1992				20.5	28.6
1993				239.0	337.5
1994	1		853.3	649.8	948.3
1995				41.3	61.5
1996	1		926.2	843.4	1280.8
1997				7.9	12.2
1998				12.1	19.1
1999				7.6	12.3
2000				13.5	22.3
2001				21.8	36.9
2002				1.0	1.8
2003					
2004					
Subtotal	7	150.0	5826.4	5998.6	7837.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	7	150.0	5826.4	6041.4	7886.0

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17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	4	4

(U) Percent Total Program Quantities Delivered: 57.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 5716.9

(U) Percent Total Program Expended: 72.5%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
O&S costs for LHD 1 Class ships were developed from historical (VAMOS) data for the antecedent LHA 1 Class as well as limited data that has come from the operations of LHD 1. Greater emphasis is still being placed on LHA 1 data for two reasons: the limited size of the LHD 1 data, and a belief that the first few years of operations of a lead ship are not representative of the ship's future, "normal" operating costs.

Personnel retirement costs are included as part of indirect costs and are based on 29.5 percent of officer and enlisted direct personnel costs.

Assumed service life is stated as 40 years for ships of the LHD 1 Class. All costs are in FY82 constant dollars, the year of the first construction contract for an LHD 1 Class ship.
(Cost estimate dated February 1996.)

b. (U) Costs -- (FY 1982 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per LHD 1	Avg Annual Cost Per LHA 1 (Antecedent)
Mission Pay & Allowances	25.6	21.8
Unit Level Consumption	6.4	5.6
Intermediate Maintenance	0.3	0.3
Depot Maintenance	16.8	16.8
Contractor Support	0.0	0.0
Sustaining Support	4.9	5.0
Indirect Costs	1.5	1.1
Total	55.5	50.6

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A-6 ATIRCM/CMWS

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: ATIRCM/CMWS

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AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Advanced Threat Infrared Countermeasure/Common Missile Warning System (ATIRCM/CMWS).

2. (U) DoD Component: Army

Joint Participants:

U.S. Navy/U.S. Marine Corps, U.S. Air Force

3. (U) Responsible Office and Telephone Number:

Aviation Electronic Combat PMO

Col Roy P. Oler

ATTN: SFAE-AV-AEC

Assigned: August 1, 1994

4300 Goodfellow Boulevard

DSN 693-5527; COM 314-263-5527

Saint Louis, MO 63120-1798

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

RDT&E:

(U) PE 64270A Project 2VT, D665 (Shared)

(U) PE 64270F

(U) PE 64270N

PROCUREMENT:

(U) APPN 3010 ICN 3010 (Air Force)

(U) APPN 2031 ICN AA0720 (Army) (Shared)

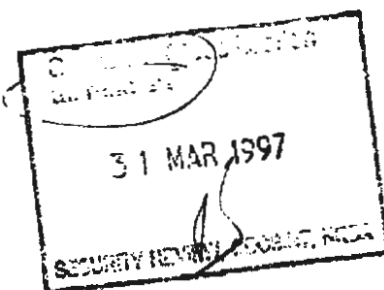
(U) APPN 2031 ICN AA0976 (Army) (Shared)

(U) APPN 1506 ICN APN-1 (Navy)

(U) APPN 1506 ICN APN-5 (Navy)

(U) APPN 1506 ICN APN-6 (Navy)

(U) APPN 2031 ICN AZ3507 (Army) (Shared)



~~Classified by: DDC for ATIRCM/CMWS dated 2 October 1996~~
~~Downgrade instructions:~~
~~Declassify on: OADR~~

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5. (U) References:

SAR Baseline (Development Estimate):

(U) Approved Acquisition Program Baseline dated March 29, 1996.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated March 29, 1996.

6. (U) Mission and Description:

(U) The ATIRCM/CMWS is a U.S. Army program to develop, test, and integrate defensive infrared (IR) countermeasures capabilities into existing, current generation host platforms for more effective protection against a greater number of IR guided missile threats than afforded by currently fielded IR countermeasures. The CMWS component system is a joint U.S. Army, U.S. Navy, U.S. Marine Corps, and U.S. Air Force program to develop, test, and integrate common missile warning system on tactical aircraft and rotorcraft for protection against IR guided missile threat (warning). The ATIRCM/CMWS is the core system of the U.S. Army's modular Suite of Integrated Infrared Countermeasures (SIIRCM).

For the Army, the current Infrared Countermeasure (IRCM) configuration for the fleet helicopter consists of the AN/ALQ-144A for the AH-64 and the UH/MH-60 and the AN/ALQ-156 missile detector and M-130 flare/chaff dispenser for the CH/MH-47 and the AN/ALQ-144A, AND/ALQ-156 and M-130 on the EH-60. The ATIRCM/CMWS will selectively replace the AN/ALQ-144A, AN/ALQ-156 or AN/AAR-47, and the M-130. For the Navy and the Air Force, no existing equivalent systems exist.

7. (U) Executive Summary:

(U) Preliminary tests of the DEMVAL prototype version of the ATIRCM during 1994 indicated successful performance against a variety of missiles. During 1994, the Services considered merging the ACAT II U.S. Navy/U.S. Air Force MAWS program with the ACAT III U.S. Army ATIRCM program. Because the previous ACAT III ATIRCM program became an ACAT IC ATIRCM/CMWS program within six months of the Milestone II ASARC date, acceptable and approved streamlining has been applied.

In January 1995, the Undersecretary of Defense for Acquisition and Technology (USD(A&T)), approved: (1) the recommendation from the Service Acquisition Executives to jointly develop a CMWS as a component system of the U.S. Army ATIRCM program, and (2) the proposed streamlined joint program acquisition strategy. The USD(A&T) designated the U.S. Army as the lead Service, and designated the U.S. Army Acquisition Executive as the Milestone Decision Authority, in consultation with the other Service Executives.

The Milestone II decision review occurred on June 23, 1995. The Operational Requirements Document(ORD) was approved in September 1995, and the Test and Evaluation Master Plan (TEMP) was coordinated with the Integrated Product Team (IPT) in December 1995. The Milestone II Engineering and Manufacturing Development (EMD) contract was awarded to Sanders, a Lockheed-Martin company on September 27, 1995. The System Design Review (SDR) was held February 23, 1996 and all actions closed out by the end of March 1996. The Preliminary Design Review (PDR) was held June 3, 1996-June 7, 1996. All actions were closed out by the end of July 1996. An EMD contract modification has been initiated, which changes the

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7. (U) Executive Summary (Cont'd):

Critical Design Review (CDR) and follow on events from schedule driven to event driven in keeping with acquisition streamlining. This change will allow the contractor additional time to complete the design process. The additional time is needed due to the increased complexity of the design as a result of incorporating requirements for all services' aircraft. To minimize the impact to the schedule, IPT CDRs (ICDRs) were held for each component and subsystem. All 32 ICDRs have been completed as of January 31, 1997. Hardware was released for fabrication based on the ICDRs completion.

The CDR was completed February 27, 1997. Several issues related to the CMWS sensor design, in particular the ability to withstand a severe thermal environment, will require resolution. Courses of action have been established. Answers and closure to all of the issues are expected by May 1997.

Concurrent with the contract change, which results in a five month slip of the CDR, is the addition of a risk reduction test phase and a refined definition of contractor qualification test. The end result is a six month slip in delivery of systems to aircraft contractors for integration and test on their aircraft. This would cause a threshold breach for the Milestone III date.

The tri-service test community has recommended the approved TEMP be revised, resulting in six additional months of developmental and operational test. The combination of the two schedule extensions results in a schedule breach for completion of operational test and the Milestone III decision. This necessitates the recommended schedule change.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

A combination of the extension of the development contractor's design schedule and the extension of the operational test schedule results in a 13 month slip of

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8c. (U) Threshold Breaches (Cont'd):

Milestone III. A Program Deviation Report (PDR) and a revised APB reflecting the proposed change to the milestone dates has been submitted.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
	SEP 91	SEP 91	SEP 91
DEMVAL Contract Award			
Technical Test			
Start	JUL 94	JUL 94	JAN 94
Complete	DEC 95	DEC 95	JUN 94
Milestone I/II	JUN 95	JUN 95	JUN 95
EMD Contract Award	SEP 95	SEP 95	SEP 95
Preliminary Design Review Complete	JUN 96	JUN 96	JUN 96
Critical Design Review Complete	SEP 96	SEP 96	FEB 97 (Ch-1)
First Prototype Delivery	JUL 97	JUL 97	JUN 98 (Ch-1)
Developmental Testing			
Start	MAY 98	MAY 98	SEP 98 (Ch-1)
Complete	FEB 99	FEB 99	JUN 99 (Ch-1)
Operational Testing			
Start	JAN 99	JAN 99	AUG 99 (Ch-1)
Complete	JAN 00	JAN 00	DEC 00 (Ch-2)
Milestone III	FEB 00	FEB 00	MAR 01 (Ch-2)
Production Contract Award	APR 00	APR 00	MAY 01 (Ch-2)
First Production Delivery	APR 01	APR 01	MAY 02 (Ch-2)
First Unit Equipped without	NOV 01	NOV 01	DEC 03 (Ch-2)
Obstacle Avoidance System			
Organic Support Available	FEB 05	FEB 05	MAR 06 (Ch-2)
Depot Level Maintenance Support	FEB 05	FEB 05	MAR 06 (Ch-2)
Established			

(b)(1)

(b)(1)

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9b (b)(1)

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (CAP)	Approved Program (APB) Est./Threshold	Demon- strated Est.	Current Est.
(b)(1)				
ATIRCM/CMWS Jamming Capability System Weight (lb)	125	125 / 125	TBD	125
CMWS Missile Warning Sensor Weight (lbs)	3.5	3.5 / 3.75	TBD	3.5
CMWS Processor Weight (lbs)	22	22 / 22	TBD	22
CMWS Missile Warning Sensor Size (Length and diameter) (in)	4.25/ 4.75	4.25/ 4.75 / 4.25/ 4.75	TBD	4.25/ 4.75
CMWS Processor Size (in)	11x9.8x 5.5	11x9.8x / 11x9.8x 5.5 / 5.5	TBD	11x9.8x 5.5
(b)(1)				

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

	Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

CMWS Mission	99.0	99.0	/ 97.5	TBD	99.0
Reliability					

b. Current Change Explanations -- None.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	516.4	516.4	445.5
Procurement	2112.0	2112.0	1832.4
Recurring Flyaway	(1772.2)		(1618.8)
Nonrecurring Flyaway	(142.6)		(89.1)
Total Flyaway	(1914.8)		(1707.9)
Other Wpn System Costs	(131.0)		(57.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(66.2)		(66.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	2628.4	2628.4	2277.9
Escalation	733.2	733.2	585.8
Development (RDT&E)	(43.4)	(43.4)	(23.0)
Procurement	(689.8)	(689.8)	(562.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3361.6	3361.6	2863.7
b. (U) Quantity --			
Development (RDT&E)	25	25	25
Procurement	3069	3069	2673
Total	3094	3094	2698

Note: Excludes 15 RDTE prototypes from the SAR Baseline and 15 from the Current Estimate that are not considered fully configured.

(U) The unit of measure reflects the number of ATIRCM/CMWS units that will be installed on aircraft.

There are no LRIP quantities approved for this program.

c. (U) Foreign Military Sales --

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

None.

d. (U) Nuclear Costs --
None.

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	2277.9	2628.4	
(2) Quantity	2698	3094	
(3) Unit Cost	0.844	0.850	-0.71
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	1832.4	2112.0	
(2) Quantity	2673	3069	
(3) Unit Cost	0.686	0.688	-0.29

(U) Requirements to install the CMWS on the Air Force F-15 Aircraft have been deleted, as well as associated RDTE and procurement funding, in the FY98 President's Budget. The Air Force production quantity has now been reduced in the President's Budget by 396. The unit price is an average unit price of all components of the ATIRCM/CMWS and the components of the CMWS per aircraft. The deletion of the Air Force F-15 funding, to include funding for integration as well as other associated costs, reduces the average unit price for the ATIRCM/CMWS for the remaining aircraft platforms.

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	559.8	2801.8	-	3361.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.1	+23.3	-	+14.2
Other	-	-	-	-
Support	-	+2.4	-	+2.4
Subtotal	-9.1	+25.7	-	+16.6
Current Changes:				
Economic	-8.7	-62.9	-	-71.6
Quantity	-	-342.3	-	-342.3
Schedule	-	+41.0	-	+41.0
Engineering	-	-	-	-
Estimating	-73.5	-2.0	-	-75.5
Other	-	-	-	-
Support	-	-66.1	-	-66.1
Subtotal	-82.2	-432.3	-	-514.5
Total Changes	-91.3	-406.6	-	-497.9
Current Estimate	468.5	2395.2	-	2863.7

(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	516.4	2112.0	-	2628.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-8.8	+17.4	-	+8.6
Other	-	-	-	-
Support	-	+1.8	-	+1.8
Subtotal	-8.8	+19.2	-	+10.4
Current Changes:				
Economic	-	-	-	-
Quantity	-	-221.1	-	-221.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-62.1	-3.2	-	-65.3
Other	-	-	-	-
Support	-	-74.5	-	-74.5
Subtotal	-62.1	-298.8	-	-360.9
Total Changes	-70.9	-279.6	-	-350.5
Current Estimate	445.5	1832.4	-	2277.9

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ATIRCM/CMWS, December 31, 1996 .

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-12.1
Economic adjustment for negative program change. (Economic)	N/A	+3.4
Adjustment for Current and Prior Inflation. (Estimating)	+1.2	+1.2
Revised estimate to delete funds in FY00-03 for the ATIRCM/CMWS joint development program. (Estimating)	-4.7	-9.9
Reduced funding to delete funds for Air Force F-15 aircraft. (Estimating)	-58.6	-64.8
<u>RDT&E Subtotal</u>	<u>-62.1</u>	<u>-82.2</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-97.8
Economic adjustment for negative program change. (Economic)	N/A	+34.9
Total variance associated with decrease of 396 units.	-226.2	-349.4
Quantity decrease of 396 units from 3069 to 2673. (Quantity)	-221.1	-342.3
Allocation to estimating variance resulting from Quantity change. (Estimating)	-5.1	-7.1
Stretchout of annual procurement buy profile. (Schedule)	0.0	+41.0
Revised estimate for Army's FY97 budget in support of the ATIRCM/CMWS integration on the AH-64 and MH-60 aircraft. (Estimating)	+1.9	+5.1
Revised estimate to delete funding FY99-03 for associated support costs. (Support)	-74.5	-66.1
<u>Procurement Subtotal</u>	<u>-298.8</u>	<u>-432.3</u>

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ATIRCM/CMWS, December 31, 1996

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.09	-0.03	+0.02	+0.02	--	-0.02	--	-0.02	-0.03	1.06

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.91	-0.02	--	+0.02	--	+0.01	--	-0.02	-0.01	0.90

(b)(1)

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

a. RDT&E --

(U) ATIRCM/CMWS Black Boxes:
Lockheed Sanders Inc, Nashua, NH
DAAB07-95-C-D606, CPAF
Award: September 27, 1995
Definitized: September 27, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$64.8	N/A	40

Current Contract Price		
Target	Ceiling	Qty
\$71.7	N/A	40

Estimated Price At Completion	
Contractor	Program Manager
\$71.7	\$71.7

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.1	\$-0.7
Cumulative Variances To Date (01/24/97)	\$-3.1	\$-0.9
Net Change	\$-3.2	\$-0.2

Explanation of Change:

(U) Cost Variance:

Lockheed Sanders is currently running 9.3% over planned labor hours due to Electrical Engineering and Mechanical Engineering. Electrical Engineering will not recover to their current cost budgets, and the EAC impact based on the de-staff plan is estimated at \$1M. Sanders is also not meeting the 50 hour per drawing budget established for the Design/Drafting re-plan effort. To minimize this overrun, the contractor has assigned a Program Manager to help prioritize drawings and push to resolve engineering issues that arise.

Schedule Variance:

Subcontractor has reported an SPI of 2.83 for the month of January 1997. The favorable variance is driven by a \$500K material re-plan since the December 1996 Cost Performance Report. The subcontractor has incorrectly scheduled material during their re-plan which was effective November 1996. The material has been re-spread.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY90-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-15)	<u>Total</u>
RDT&E	217.3	75.2	78.9	97.1	468.5
Procurement	9.2	4.4	35.2	2346.4	2395.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	226.5	79.6	114.1	2443.5	2863.7

b. Annual Summary -- ATIRCM/CMWS

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY96 Dollars Nonrec</u>	<u>Flyaway FY96 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				12.7	12.6
1996				12.4	12.6
1997				24.0	24.9
1998				17.5	18.6
1999				13.6	14.8
2000				5.1	5.6
2001				2.8	3.2

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15b. (U) Program Funding Summary (Cont'd):

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				1.3	1.5
2003					
Subtotal				89.4	93.8

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				0.6	0.5
1991				2.9	2.7
1992				15.5	14.5
1993				8.3	8.0
1994				7.7	7.5
1995				7.7	7.7
1996				15.5	15.8
1997				18.2	18.9
1998				26.8	28.4
1999				26.5	28.7
2000				1.3	1.4
2001				0.9	1.0
Subtotal	25			131.9	135.1

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				21.5	21.4
1996				34.4	35.0
1997				33.9	35.2
1998				26.6	28.2
1999				32.7	35.4
2000				35.6	39.3
2001				15.1	17.0
2002				24.4	28.1
2003					
Subtotal				224.2	239.6

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ATIRCM/CMWS, December 31, 1996

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

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				4.1	4.4
1999	30	0.4	18.0	13.9	15.4
2000	41	0.1	34.1	34.2	38.7
2001	46	0.1	26.8	26.9	31.1
2002	86	0.2	37.4	37.6	43.7
2003	43	0.1	40.8	40.9	49.4
2004	43	0.1	24.2	26.5	32.7
2005	69	0.1	36.9	40.3	50.9
2006	48	0.1	27.5	30.6	39.5
2007	48	0.1	26.3	29.3	38.6
2008	48	0.1	26.2	29.4	39.6
2009	48		26.1	29.5	40.6
2010	48		26.0	26.2	41.7
2011	48		26.0	26.1	42.8
2012	48		25.9	26.0	43.9
2013	48		25.8	26.0	45.1
2014	18		12.2	11.6	20.8
2015				1.0	1.9
Subtotal	760	1.4	440.2	460.1	620.8

Appropriation: 2031 Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				8.7	9.2
1998					
1999	4	12.1	6.4	10.9	12.0
2000	9	9.7	13.9	25.5	28.7
2001	7	9.6	13.3	24.9	28.7
2002	41	8.4	55.6	68.5	80.7
2003	57	4.0	61.0	70.0	84.5
2004	106	4.7	101.9	113.5	140.6
2005	117	2.0	97.2	105.3	133.9
2006	100	10.6	75.5	92.7	120.9
2007	107	3.4	79.3	88.6	118.6
2008	73	1.6	50.1	55.3	75.9
2009	74	1.3	48.5	53.2	75.0
2010	60	8.7	43.5	55.6	80.3
2011	125	3.2	46.5	53.6	79.5
2012	127	1.2	46.4	51.6	78.5
2013	40	4.0	30.4	33.4	52.1
2014				2.8	4.5
Subtotal	1047	84.5	769.5	914.1	1203.6

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ATIRCM/CMWS, December 31, 1996

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

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	27		7.0	7.0	7.8
2000	65		24.2	24.9	28.3
2001	92		41.8	44.6	51.9
2002	139	0.8	57.9	64.3	76.7
2003	160	1.6	78.0	85.9	105.0
2004	110	0.8	58.6	67.2	84.3
2005	130		55.1	62.5	80.4
2006	122		55.6	58.9	77.8
2007	21		30.9	29.6	40.1
2008				11.4	15.8
2009				1.9	2.7
Subtotal	866	3.2	409.1	458.2	570.8

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	760	1.4	440.2	549.5	714.6
Army	1072	84.5	769.5	1046.0	1338.7
USAF	866	3.2	409.1	682.4	810.4
Grand Total	2698	89.1	1618.8	2277.9	2863.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 148.2

(U) Percent Total Program Expended: 5.2%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Average of twenty year operational life of 3069 baseline quantity. Baseline quantity assumes system composite configuration for the sum of the airframes. Includes all O&M funded human resource requirements not identified in development or procurement. Total ATIRCM system Mean Time Between Failure (MTBF) of 1000 hours. No airframe (group-A) operations and support costs are associated with the system (group-B).

Source of estimate is the methodology approved by the Army Cost Board June 1995.

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ATIRCM/CMWS, December 31, 1996

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

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Aircraft Composite System	No Antecedent System
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	5.9	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	5.9	0.0

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: C-130J

INDEX

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): C-130J Hercules2. DoD Component: USAF3. Responsible Office and Telephone Number:

WR-ALC/LB

Robins AFB, GA 31098-1647

Col Gregory Siegel

Assigned: March 14, 1996

DSN 468-2322; COMM 912-926-2322

4. Program Elements/Procurement Line Items:

RDT&E:

PE 63852F

PROCUREMENT:

APPN 3010 ICN C-130J (Air Force)

CLEARED
 FOR OPEN PUBLICATION

MAR 4 1997 18

5. References:SAR Baseline (Production Estimate):

AFAE Approved Acquisition Program Baseline dated October 25, 1996.

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

BAF/PAS

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated October 25, 1996.

97-010

6. Mission and Description:

CONGRESSION

The C-130 Hercules is a medium-range, tactical airlift aircraft designed primarily for transport of cargo and personnel within a theater of operations. Variants of the C-130 perform other missions, including close-air support, rescue and recovery, special operations, and weather reconnaissance. Since 1954, over 1,000 C-130s have been delivered to the US Air Force, making it the

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C-130J, December 31, 1996

6. Mission and Description (Cont'd):
"workhorse of the Air Force".

The C-130 can carry more than 40,000 pounds of cargo (up to six pallets or a varied number of wheeled vehicles). The cargo area can be quickly adapted to accommodate any combination of passenger, cargo, or aeromedical airlift mission.

The C-130 can deliver personnel, equipment, or supplies either by landing or by various aerial delivery modes. The two primary methods of aerial delivery used for equipment delivery are parachutes pulling the load from the aircraft, and the Container Delivery system which uses the force of gravity to pull the supplies from the aircraft.

Each of four turboprop engines on the C-130J drive a six-blade, constant-speed, reversible-pitch propeller with feathering capability. The Hercules can operate on as little as 3,000 feet of dirt runway.

7. Executive Summary:

This is the initial SAR.

In 1992, Lockheed Martin began a C-130J development program funded by themselves and their supplier team. The C-130J design resulted from applying the latest technology and focusing on the wealth of experience in operating an already successful aircraft. The objective for the C-130J program was a cargo transport superior to earlier C-130s with substantial reduction of life cycle costs. Its upgrades include a modern flight station with modern displays and digital avionics, computerized management of aircraft functions, three-person flight crews (a two person reduction from the previous five-person crew), improved cargo handling and delivery system. The C-130J will provide performance improvements and improved operations efficiencies.

The C-130H was used extensively during Desert Shield/Storm and Bosnia Because of its ability to operate on a short austere airfield and the C-130J is expected to continue this role.

The C-130J program provides a one-for-one replacement of C-130Es and C-130Hs as they reach their service life. Since the C-130J has enhanced capabilities over the C-130E, Qualification Operational Test and Evaluation (QOT&E), starting Mar 97, and Follow-on Test and Evaluation (FOT&E) will be accomplished by HQ Air Force Operational Test and Evaluation Center (AFOTEC) and HQ ACC.

The C-130 modernization program is currently not defined. The Department of Defense is assessing requirements and alternatives.

Air Force plans to reduce the APB from eleven to eight C-130J aircraft.

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C-130J, December 31, 1996

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Program Initiation	JUN 96	JUN 96	JUN 96
FY96 Basic Aircraft Contract	NOV 96	NOV 96	NOV 96
First Delivery	OCT 97	OCT 97	OCT 97

b. Current Change Explanations -- None.

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demonstrated Perf	Current Estimate
Cockpit Crew (All Missions)	2	2 / 2	TBD	2
Maximum Payload (lbs)	39311	39311 / 38910	TBD	38910
Normal Maximum Take-off Gross Weight (lbs)	155000	155000 / 155000	TBD	155000
Design Landing Gross Weight (lbs)	130000	130000 / 130000	TBD	130000

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10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Take-off Distance at Max Take-off Weight over 50 ft Obstacle (ft)	4530	4530 / 5142	TBD	5142
Landing Distance at Design Landing Weight Over 50 ft Obstacle (ft)	2500	2500 / 2550	TBD	2550
Shortfield Capability Assault Take-off Distance (Take- off Ground Roll) (ft)	2700	2700 / 2700	TBD	2700
Assault Landing Distance (Ground Roll) (ft)	1800	1800 / 1800	TBD	1800
IMC Airdrop Accuracy - Total System Error (ft)	158	158 / 158	TBD	158
Cruising Speed at 100,000 lbs 825,000 ft (KTAS)	342	342 / 315	TBD	315
Max Range with 42,764 lbs fuel & 29,722 lbs Payload (NM)	3070	3070 / 2350 / /	TBD	2350
Environmental Factors - Operational Ambient Temperature (deg F)	-40 - +120	-40 - +120 / +120 /	TBD	-40/+120
Sortie Reliability (SR) (%)	95.4	95.4 / 94.2 /	TBD	94.2
Mission Capable Rate (MC) (%)	84.0	84.0 / 81.0 /	TBD	81.0
Mean Repair Time (hrs)	6.3	6.3 / 7.4 / □	TBD	7.4
Mean Time Between Repair (MTBR) (hrs)	4.6	4.6 / 3.8 /	TBD	3.8
Mean-Time Between Maintenance Corrective Actions (MTBMC) (hrs)	1.2	1.2 / 1.0 / □	TBD	1.0

b. Current Change Explanations -- None.

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C-130J, December 31, 1996

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	8.9	8.9	8.9
Procurement	721.8	721.8	514.1
Airframe	(540.1)		(374.9)
Other Wpn System Costs	(122.2)		(92.9)
Peculiar Support	(9.4)		(6.9)
Initial Spares	(50.1)		(39.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	730.7	730.7	523.0
Escalation	109.0	109.0	77.5
Development (RDT&E)	(0.3)	(0.3)	(0.2)
Procurement	(108.7)	(108.7)	(77.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	839.7	839.7	600.5
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	11	11	8
Total	11	11	8

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 96 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	523.0	730.7	
(2) Quantity	8	11	
(3) Unit Cost	65.375	66.427	-1.58
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	514.1	721.8	
(2) Quantity	8	11	
(3) Unit Cost	64.263	65.618	-2.06

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C-130J, December 31, 1996

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	9.2	830.5	-	839.7
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.1	-	-	-0.1
Quantity	-	-177.4	-	-177.4
Schedule	-	-156.4	-	-156.4
Engineering	-	-	-	-
Estimating	-	+129.6	-	+129.6
Other	-	-	-	-
Support	-	-34.9	-	-34.9
Subtotal	-0.1	-239.1	-	-239.2
Total Changes	-0.1	-239.1	-	-239.2
Current Estimate	9.1	591.4	-	600.5

Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	8.9	721.8	-	730.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-152.7	-	-152.7
Schedule	-	-165.7	-	-165.7
Engineering	-	-	-	-
Estimating	-	+153.2	-	+153.2
Other	-	-	-	-
Support	-	-42.5	-	-42.5
Subtotal	-	-207.7	-	-207.7
Total Changes	-	-207.7	-	-207.7
Current Estimate	8.9	514.1	-	523.0

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

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.1
	RDT&E Subtotal	0.0	-0.1
(2)	<u>Procurement</u>		
	Change in planned procurement from 11 C-130J aircraft to 8 C-130J aircraft. (Quantity)	-152.7	-177.4
	The revised schedule deleted 7 aircraft from FY 98-01 and added 2 aircraft in FY 02 and 03, a net reduction of 3 aircraft. (Schedule)	-165.7	-156.4
	Reduction is a result of fewer aircraft requiring support. (Support)	-42.5	-34.9
	Refinement of program estimate based on improved contract information. (Estimating)	+153.2	+129.6
	Procurement Subtotal	-207.7	-239.1

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
76.34	-0.01	+6.44	-19.55	--	+16.20	--	-4.36	-1.28	75.06

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
75.50	--	+6.13	-19.55	--	+16.20	--	-4.36	-1.58	73.92

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14c. Unit Cost and Other History (Cont'd):

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	N/A	839.7	600.5
Total Quantity	N/A	N/A	11	8
Prog Acq Unit Cost	N/A	N/A	76.34	75.06

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

a. RDT&E --
Test Option:
 Lockheed Martin, Marietta, GA
 F33657-90-C-0071, FFP
 Award: September 30, 1996
 Definitized: September 30, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$0.3	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$0.3	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$0.3	\$0.3

Previous Cumulative Variances
 Cumulative Variances To Date
 Net Change

Cost Variance	Schedule Variance
\$	\$
\$	\$
\$	\$

Explanation of Change:

None.

b. Procurement --
C-130J - Production:
 Lockheed Martin, Marietta, GA
 F33657-95-C-2055, FFP
 Award: November 6, 1996
 Definitized: November 6, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$115.0	N/A	2

Current Contract Price		
Target	Ceiling	Qty
\$115.0	N/A	2

Estimated Price At Completion	
Contractor	Program Manager
\$	\$

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C-130J, December 31, 1996

15b. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

None.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY95-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-03)	<u>Total</u>
RDT&E	5.1	4.0	-	-	9.1
Procurement	175.2	50.6	-	365.6	591.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	180.3	54.6	-	365.6	600.5

b. Annual Summary -- C-130J

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				5.1	5.1
1996					
1997					
1998				3.8	4.0
Subtotal				8.9	9.1

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	2		86.0	101.4	106.4
1997	1		45.1	64.2	68.8
1998	1		45.5	46.2	50.6
1999					
2000					
2001					

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C-130J, December 31, 1996

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

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	2		98.8	143.4	171.4
2003	2		99.5	158.9	194.2
Subtotal	8		374.9	514.1	591.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	8		374.9	523.0	600.5

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E Procurement	0	0

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 10

Percent Total Program Expended: 1.7%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The information for Operating and Support (O&S) costs is based on the June 1996 program office developed estimates for the C-130J life cycle costs which formed the basis for the Air Force Cost Analysis Improvement Group report:

- Estimates are based on commercial buy prices, as applicable.
- O&S costs are based on sustainment of 135 C-130J aircraft through FY 2043.
- Two level maintenance is planned.
- Interim Contractor Support (ICS) will be required for the first ten years after contract award.
- The depot will be fully activated by the end of the ICS period.
- Estimates do not include requirements for congressionally added C-130J aircraft or their support.

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C-130J, December 31, 1996

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

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	C-130J Hercules O&S Cost/Squadron per Year	None
Mission Pay & Allowances	18.3	N/A
Unit Level Consumption	12.2	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	1.8	N/A
Contractor Support	0.0	N/A
Sustaining Support	6.0	N/A
Indirect Costs	8.9	N/A
Total	47.2	N/A

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AF-1 ABL

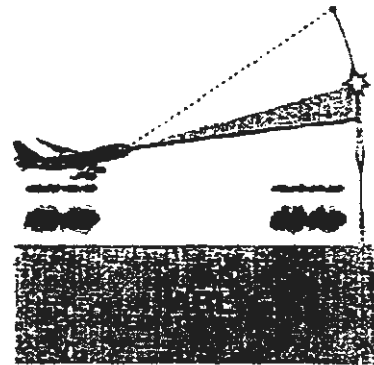
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: Airborne Laser

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AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): YAL-1A Attack Laser Aircraft (Airborne Laser)
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:
SMC/TM Col Michael Booen
3550 Aberdeen Ave SE Bldg 760 Assigned: December 31, 1996
Kirtland AFB DSN 246-2102; COMM 505-846-2102
Albuquerque, NM 87117-5776 booenm@plk.af.mil
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 63319F

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Airborne Laser, December 31, 1996

5. (U) References:

SAR Baseline (Planning Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated January 29, 1997.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated January 29, 1997.

6. (U) Mission and Description:

(U) The Airborne Laser (ABL) is an ACAT ID program which will provide a rapidly deployable airborne platform equipped with a long range laser weapon, capable of autonomously detecting, acquiring, tracking, identifying, and negating both liquid and solid-fueled Theater Ballistic Missiles (TBMs) during the boost phase of flight. The system will have a multi-megawatt Chemical Oxygen Iodine Laser (COIL) integrated into a Boeing 747 aircraft to kill TBMs at ranges in excess of several hundred kilometers. It will have an autonomous, 360 degree threat detection capability with on-board infrared sensors and a wide laser field of view. The system will also have a salvo engagement capability and carry enough chemical fuel to destroy 20 to 40 enemy missiles before refueling. The ABL does not replace any other defense system.

7. (U) Executive Summary:

(U) This is the initial SAR for the ABL program, an RDT&E only SAR in accordance with Title 10, United States Code, Section 2432.

The ABL program leverages over 25 years of high-energy laser, atmospheric measurement, fire control, lethality, precision pointing and tracking, adaptive optics, and high performance optical coatings/component development and test experience in both the DoD and Department of Energy. Since 1992, a focused technology program has proven all technologies specifically needed for Program Definition and Risk Reduction (PDRR) and Engineering and Manufacturing Development (EMD), including TBM lethality mechanisms; upper atmospheric turbulence conditions; high energy laser output power, chemical laser efficiencies, lightweighting; and active laser tracking of boosting TBMs.

The ABL program successfully completed a Milestone I review in November 96 and was authorized to proceed into PDRR. The Air Force awarded the ABL PDRR contract to the Boeing (Seattle) team in Nov 96, who will design, fabricate, integrate and test the ABL prototype. Developmental Test and Evaluation will begin in 3QFY01.

During the PDRR program, several potential adjunct missions will be studied, to include: cruise missile defense, protection of high value airborne assets, suppression of enemy air defenses, and imaging surveillance. Should these missions prove practical and useful, they will be incorporated into the EMD design.

The PDRR phase culminates with a lethality demonstration against a boosting TBM

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Airborne Laser, December 31, 1996

10. (U) Performance Characteristics:

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Interoperability	N/A	JTIDS/ / JTIDS/ LINK-16 / LINK-16	TBD	JTIDS/ LINK-16 4/
On-Station Availability	N/A	90% of a/ 24hr CAP/	85% of a 24hr CAP	TBD
MTBCF (hrs)	N/A	100 / 60	TBD	78 5/

(b)(1)

(b)(1)

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Airborne Laser, December 31, 1996

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

(b)(1)

4/ (ORD Key Performance Parameter)

5/ On-Station Availability is an ORD Key Performance Parameter. The USD(A&T) has determined that Mean Time Between Critical Failure (MTBCF), a component of On-Station Availability, is a more appropriate baseline parameter because it is a system design parameter under control of the Program Manager. The Program Manager will be responsible for meeting MTBCF.

b. Current Change Explanations -- None.

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

a. (U) Cost --	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	2210.9	2210.9	2238.1
Procurement	0.0	N/A	
Total Flyaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 97 Base-Year \$	2210.9	2210.9	2238.1
Escalation	288.3	288.3	286.6
Development (RDT&E)	(288.3)	(288.3)	(286.6)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2499.2	2499.2	2524.7
b. (U) Quantity --			
Development (RDT&E)	2	2	2
Procurement	N/A	N/A	N/A
Total	2	2	2

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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Airborne Laser, December 31, 1996

12. (U) Unit Cost Summary:

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

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2499.2	-	-	2499.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-6.3	-	-	-6.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+31.8	-	-	+31.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+25.5	-	-	+25.5
Total Changes	+25.5	-	-	+25.5
Current Estimate	2524.7	-	-	2524.7

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Airborne Laser, December 31, 1996

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

(U) Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2210.9	-	-	2210.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+27.2	-	-	+27.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+27.2	-	-	+27.2
Total Changes	+27.2	-	-	+27.2
Current Estimate	2238.1	-	-	2238.1

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1) RDT&E			
Revised Inflation Indices (Economic)		N/A	-6.3
Congressionally-directed reductions, pro-rata share (Small Business Innovative Research, etc.) (Estimating)		-2.6	-2.6
Refinement of in-house estimate due to downselect to a single PDRR contractor. (Estimating)		+29.8	+34.4
RDT&E Subtotal		+27.2	+25.5

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Airborne Laser, December 31, 1996

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

- a. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.
- b. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	NOV 96	N/A	N/A	NOV 96
Milestone II	MAR 03	N/A	N/A	MAR 03
Milestone III	MAR 05	N/A	N/A	MAR 05
FUE/IOC	SEP 06	N/A	N/A	SEP 06
Total Cost	2524.7	N/A	N/A	2524.7
Total Quantity	2	N/A	N/A	2
Prog Acq Unit Cost	1262.35	N/A	N/A	1262.35

(U) Total Cost, Total Quantity, and Program Acquisition Unit Cost are not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

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

a. RDT&E --			Initial Contract Price		
(U) ABL PDRR Contract:			Target	Ceiling	Qty
Boeing Defense and Space, Seattle WA					
F29601-97-C-0001, CPAF			\$1118.0	N/A	1
Award: November 12, 1996					
Definitized: November 12, 1996					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$1118.0	N/A	1	\$1118.0	\$1118.0	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
Cumulative Variances To Date			N/A	N/A	
Net Change			\$0.0	\$0.0	
			\$0.0	\$0.0	

Explanation of Change:

None.

(U) Contract Comments:

The PDRR contract is a Cost Plus Award Fee (CPAF) contract with two fixed priced (subject to escalation) Contract Line Items (CLINS) for the acquisition of the commercial aircraft. Of the \$1118.0M shown above, \$296.1M represents the fixed price amount for the commercial aircraft. In addition, the award fee pool is included as a part of the target price of

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Airborne Laser, December 31, 1996

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

\$1118.0M. There is no ceiling price for a CPAF or fixed price contract; therefore, we have annotated ceiling price N/A.

The Program Manager's Estimate at Completion is the same as the negotiated value of the contract since the contract was recently awarded. However, the program office has budgeted for risk areas identified in the source selection process for contract changes/engineering changes in the future. This funding is included in the FY98 President's Budget and will be put on contract as necessary.

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

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

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-05)</u>	<u>Total</u>
RDT&E	97.5	157.1	296.6	1973.5	2524.7
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	97.5	157.1	296.6	1973.5	2524.7

b. Annual Summary -- Airborne Laser

Appropriation: 3600 Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY97 Dollars Nonrec</u>	<u>Flyaway FY97 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994		1.9		1.9	1.8
1995		21.8		21.8	21.3
1996		20.3		20.3	20.2
1997		53.3		53.3	54.2
1998		151.5		151.5	157.1
1999		280.1		280.1	296.6
2000		298.2		298.2	322.6
2001		141.8		141.8	156.7
2002		162.4		162.4	183.3
2003		384.9		384.9	444.6
2004		368.9		368.9	437.1
2005		353.0		353.0	429.2
Subtotal	2	2238.1		2238.1	2524.7

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Airborne Laser, December 31, 1996

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2	2238.1		2238.1	2524.7

17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 50.8

(U) Percent Total Program Expended: 2.0%

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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A-20 SINGARS

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: SINGARS

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Single Channel Ground and Airborne Radio System (SINGARS)

2. DoD Component:

3. Responsible Office and Telephone Number:

Project Manager, Tactical Radio	COL Lalit Piplani
Communication Systems	Assigned: July 31, 1994
ATTN: SFAE-C3S-TRC	DSN 987-3063; COMM (908) 427-3063
Fort Monmouth, NJ	07703-5505

4. Program Elements/Procurement Line Items:

RDT&E:

PE 63746 (Shared) Project D555 (Shared)
PE 64805 Project D098, D282

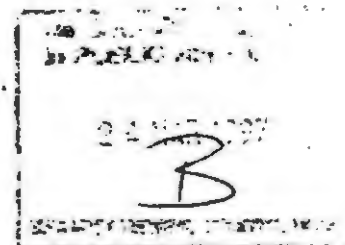
PROCUREMENT:

APPN 1109 ICN 043638 (Navy)
APPN 1810 ICN 068342 (Navy)
APPN 1810 ICN 068892 (Navy)
APPN 0350 ICN 101025 (NGRE)
APPN 0350 ICN 104000 (NGRE)
APPN 0350 ICN 104025 (NGRE)
APPN 0350 ICN 107000 (NGRE)
APPN 0350 ICN 222000 (NGRE) (Shared)
APPN 0350 ICN 230000 (NGRE)
APPN 1810 ICN 24163N (Navy)
APPN 3080 ICN 27423F (Air Force)
APPN 2031 ICN AA0974 (Army) (Shared)
APPN 2031 ICN AZ3500 (Army)
APPN 2035 ICN B00500 (Army)
APPN 2035 ICN B00508 (Army)
APPN 2035 ICN B45500 (Army) (Shared)
APPN 2035 ICN BA9102 (Army) (Shared)

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SINGGARS, December 31, 199:

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

APPN 2035 ICN BA9520 (Army) (Shared)
APPN 2035 ICN BA9722 (Army)
APPN 2035 ICN BS9722 (Army)
APPN 2035 ICN BW0006 (Army)
APPN 2035 ICN J30500 (Army)
APPN 2035 ICN MA9722 (Army)
APPN 2035 ICN T99500 (Army) (Shared)
APPN 2035 ICN Z16800 (Army)

5. References:

SAR Baseline (Production Estimate):

Draft Decision Coordinating Paper (DCP) #156, dated September 1983 for the Single Channel Ground and Airborne Radio System.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated August 18, 1993.

6. Mission and Description:

SINGGARS is a family of VHF-FM combat net radios which provides the primary means of command and control for Infantry, Armor and Artillery Units. The SINGGARS system is designed on a modular basis to achieve maximum commonality among the various ground and airborne system configurations. A common receiver-transmitter (RT) is used in the manpack and all vehicular configurations. The SINGGARS family of radios has the capability to transmit and receive voice, tactical data and record traffic messages and is consistent with NATO interoperability requirements. The system operates on any of the 2320 channels between 30-88 Megahertz and is designed to survive in a nuclear environment. Communication Security (COMSEC) for the basic (non-ICOM) radio is provided by use of the VINSON device. An Integrated COMSEC (ICOM) version of the SINGGARS is the currently produced version. The SINGGARS system is operable in a hostile environment through use of electronic counter-counter measures (ECCM). System Improvements continue as part of the planned evolution of the SINGGARS radio. Improvements include Global Position System Interface, Improved data capability, Improved Forward Error Correction for low-speed data modes, Automated Interface in the Automated Common User System, Internet Controller (INC) software development, and improved MANPRINT to include the Hand-held Remote Control Unit. SINGGARS is replacing the currently standard manpack and vehicular radios, the AN/PRC-77 and the AN/VRC-12 family, respectively. An airborne version of the SINGGARS radio is replacing the currently standard aircraft radios, the AN/ARC-114 and AN/ARC-131.

7. Executive Summary:

The Department of the Army approved the Single Channel Ground and Airborne Radio System (SINGGARS) Required Operation Capability (ROC) in Dec 74. In Jun 77, the Vice Chief of Staff, US Army (VCSA) direction resulted in a decision to proceed from Advanced Development (AD) directly into production. The SINGGARS ground radio production hardware was type classified standard at ASARC III in Sep 83.

A single year production contract was awarded in Dec 83, Option 1 in Nov 84, Option 2 in May 85, Option 3 in Jun 89, and Option 4 in Dec 90 to ITT

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SINGGARS, December 31, 1996

7. Executive Summary (Cont'd):

Aerospace/Communication Division (A/CD), Ft. Wayne, IN. The initial SINGGARS airborne production contract was awarded to ITT in May 85, Option 1 in Apr 88, Option 2 Apr 89, and Option 3 in Jan 91. The alternative source strategy was approved and documented in a Feb 87 Secretary of Defense Decision Memorandum (SDDM) to independently select and manage a second source which would be a form, fit, function equivalent to the ITT A/CD Integrated COMSEC (ICOM) SINGGARS at the Line Replaceable Unit (LRU) level. Award of the second source ground production contract was made to General Dynamics (GD) in Jul 88 with Option 1 awarded in Mar 91, Option 2 in Nov 92, and Option 3 in Aug 93.

A Milestone IIIB review in Dec 90 approved full-rate production awards for the ITT ground and airborne radios in Dec 90 and Jan 91 respectively. A sole-source single year contract was awarded to ITT in Mar 92 with Option 1 awarded in Mar 93 to align with GD for head-to-head competition commencing in FY94. An Aug 93 program review resulted in Defense Acquisition Executive (DAE) approval for award of General Dynamics Option 3 at full-rate production and reclassification of the SINGGARS program from Acquisition Category 1D (DAB) to 1C (Component).

Head-to-head competition between ITT and GD commenced in FY94 with ITT receiving a 60% share and GD receiving a 40% share of total quantities. In FY95, ITT received a 55% share and GD received a 45% share. In FY96, ITT received a 60% share and GD received a 40% share. On 9 Oct 96, the Army Acquisition Executive (AAE) approved revision of the ground radio acquisition strategy from dual to single source commencing with the FY97 acquisition and continuing through completion of the program for the balance of the ground radio major components.

System Improvements continue as part of the planned evolution of the SINGGARS radio. Improvements include Global Position System Interface, Improved data capability, Improved Forward Error Correction for low-speed data modes, Automated Interface in the Automated Common User System, Internet Controller (INC) software development, and improved MANPRINT to include the Hand-held Remote Control Unit.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

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SINGARS, December 31, 1996

8. Threshold Breaches (Cont'd):

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 0 (ROC Approval)	DEC 74	N/A	DEC 74
ASARC I	OCT 75	N/A	OCT 75
Milestone I (DSARC I)	FEB 76	N/A	FEB 76
Award AD Contracts	APR 78	N/A	APR 78
Milestone IIIA	SEP 83	SEP 83	SEP 83
Complete DT/OT -- I/II	DEC 83	N/A	DEC 83
Complete Limited DT/OT	DEC 82	N/A	DEC 82
Complete Maturity DT/OT	DEC 83	N/A	DEC 83
Initial Ground (ITT) Production	DEC 83	DEC 83	DEC 83
Contract Award			
Initial Airborne Production Contract	N/A	MAY 85	MAY 85
Award			
JRMB - Level Program Review	N/A	DEC 86	DEC 86
Ground (ITT) FAT			
Complete	JUN 85	JAN 88	JAN 88
Ground (ITT) Production Delivery Begins	AUG 85	JAN 88	JAN 88
Airborne Option I Award	N/A	APR 88	APR 88
Ground (ITT) Option I Delivery Begins	N/A	MAY 88	MAY 88
Initial Ground (GD) Award	N/A	JUL 88	JUL 88
Airborne FAT			
Complete	N/A	SEP 88	SEP 88
Airborne Production Delivery Begins	N/A	NOV 88	NOV 88
ICOM EUT&E	N/A	NOV 88	NOV 88
Milestone IIIB -- ITT Full Rate	N/A	MAR 89	MAR 89
Production (Non-ICOM)			
Airborne Option 2 Award	N/A	APR 89	APR 89
Ground (ITT) Option 3 Award	N/A	JUN 89	JUN 89
Ground (ITT) Option 2 Delivery Begins	N/A	JUN 89	JUN 89
Airborne Option 1 Delivery Begins	N/A	AUG 89	AUG 89
Airborne Option 2 Delivery Begins	N/A	APR 90	APR 90
ICOM IOT&E (ITT)	N/A	JUN 90	JUN 90
Ground (ITT) Option 3 Delivery Begins	N/A	JUL 90	JUL 90
Milestone IIIB -- ITT Full Rate (ICOM)	N/A	DEC 90	DEC 90
and GD Low Rate Option I			
Ground (ITT) Option 4 Award	N/A	DEC 90	DEC 90
IOC (1st Div Equipped)	OCT 87	DEC 90	DEC 90
Airborne Option 3 Award	N/A	DEC 90	JAN 91
Ground (GD) Option 1 Award	N/A	DEC 90	MAR 91
Ground (GD) FAT			
Complete	N/A	DEC 91	JUN 92
Airborne Option 3 Delivery Begins	N/A	JAN 92	JAN 92

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9a. Schedule (Cont'd):

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Ground (ITT) Option 4 Delivery Begins	N/A	JAN 92	JAN 92
Ground (GD) Production Delivery Begins	N/A	FEB 92	JUL 92
Ground (GD) Option 2 Award	N/A	JUN 92	NOV 92
Ground (GD) Option 1 Delivery Begins	N/A	DEC 92	DEC 92
ICOM FOT&E (GD)	N/A	FEB 93	FEB 93
ITT Sole-Source (Basic) Award	N/A	MAR 92	MAR 92
ITT Sole-Source (Basic) Delivery Begins	N/A	JUN 93	JUN 93
Second Source (GD) Full Rate Production	N/A	JUN 93	AUG 93
Program Review			
Organic Support Capability (ITT ICOM)	N/A	FEB 92	FEB 92
Depot Support Capability	N/A	N/A	
ITT	N/A	FEB 92	FEB 92
GD	N/A	MAR 94	MAR 94
ITT Sole-Source (Option) Award	N/A	MAR 93	MAR 93
Ground (GD) Option 3 Award	N/A	JUN 93	AUG 93
Organic Support Capability (GD ICOM)	N/A	JUL 93	JUL 93
Ground (GD) Option 2 Delivery Begins	N/A	NOV 93	NOV 93
ITT Competitive (Basic) Award	N/A	MAR 94	APR 94
GD Competitive (Basic) Award	N/A	MAR 94	APR 94
ITT Sole-Source (Option) Delivery Begins	N/A	JUN 94	JUN 94
Ground (GD) Option 3 Delivery Begins	N/A	OCT 94	OCT 94
ITT Competitive (Basic) Delivery Begins	N/A	JUN 95	JUN 95
GD Competitive (Basic) Delivery Begins	N/A	NOV 95	NOV 95

b. Current Change Explanations --
None

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Frequency Band (MHz)	30 -	30 - / 30 -	30 -	30 -
	87.975	87.975 / 87.975	87.975	87.975
Number of Channels	2320	2320 / 2320	2320	2320
Channel Spacing (KHz)	25	25 / 25	25	25
Weight (Manpack + ICOM (lbs))	22.5	22.5 / 22.5	18.8	22.5
Power Requirements (Vdc)	28	28 / 28	28	28
Communications Range: (KM)				
(Voice & Analog Data)				
Manpack (above 40 MHz)	8	8 / 8	8	8
Vehicular	35	35 / 35	35	35
Airborne (@ 1000 ft)	N/A	35 / 35	60	35

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10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(Data @ 16 kbps @ 10 ⁻³ Ber)					
Manpack (above 40 MHz)	4.5	4	/ 4	4	4
Vehicular	17.5	17	/ 17	27	17
Mean Time Between Failure Operational Environment (MTBFOE) (Hrs)					
Ground					
Non-ICOM (less ECCM, DRA)	N/A	1250	/ 1250	7588	1250
ICOM	N/A	1250	/ 1250	8382	1250
Airborne	750	750	/ 750	7345	750
ECCM (Hrs)	3500	N/A	/ N/A	8382	3500
Mean Time To Repair (MTTR) (Min)					
Organizational	15	15	/ 15	2.9	15
Level					
Direct Support (DS)					
Non-ICOM	N/A	60	/ 60	52.2	45/60
ICOM	N/A	45	/ 45	16	45
General Support (GS) (Hrs)	2	N/A	/ N/A	1.78	2

PERFORMANCE CHARACTERISTICS AS DISPLAYED ARE SUBJECT TO THE FOLLOWING CONDITIONS:

- Data for specified performance characteristics demonstrated performance on production models is available from First Article Test and Follow-on Evaluations including operational testing.
- Performance characteristic parameters are point values not ranges.
- Measurement conditions for Communications Range: rolling plains, antenna not buried in foliage, average soil conditions, 10% bit error rate (ber).
- Since Manpack and Vehicular have the same value for MTBF, they have been combined and designated as Ground.
- The SINGARS reliability requirement as approved in 1974 has no MTBF requirement or DCP threshold. This means that only radio hardware failures are counted, but under field test rather than in a lab. Demonstrated performance results are expressed on a point estimate basis on the AN/VRC-90 or 1477A airborne R/T system basis.
- Direct support Mean Time to Repair (MTTR) is not a cumulative requirement and does not include Organizational Level MTTR.

b. Current Change Explanations --
None.

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	154.4	220.2	209.2
Procurement	4013.3	3089.8	2636.0
Major System Equipment	(3151.8)		(2346.3)
Ancillary Equipment	(431.8)		(123.0)
Total Flyaway	(3583.6)		(2469.3)
Total Other Weapon Syst	(25.9)		(142.4)
Airborne Retrofit Kits			(6.0)
Total Other Wpn Sys	(25.9)		(148.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(403.8)		(18.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 84 Base-Year \$	4167.7	3310.0	2845.2
Escalation	1444.0	1312.6	985.9
Development (RDT&E)	(-19.0)	(4.5)	(2.7)
Procurement	(1463.0)	(1308.1)	(983.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5611.7	4622.6	3831.1
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	292853	246845	258896
Total	292853	246845	258896

Note: Excludes 123 RDTE prototypes from the SAR Baseline and 123 from the Current Estimate that are not considered fully configured.

The unit of measure is the Receiver-Transmitter, the major component contained in the ground and airborne radio.

c. Foreign Military Sales --			
Recipient Country	Case ID	Quantity	*Estimated Cost
Bahrain	BA-B-JAT/JAH	73	1.2M
Finland	FI-B-YBG	6	.1M
SANG	SI-B-JBP	3,370	88.0M
SANG	SI-B-WFW	501	6.3M
SDAF	N/A	318	6.7M
Spain	SP-N-LDE	4	.1M
Kuwait (Army)	KU-B-JAT	575	7.6M
Kuwait (AF)	KU-B-UGO	40	.5M
Hellenic Republic	GR-B-JAX	128	1.6M
Bahrain	BA-B-JBO	6	.1M
SHAPE Tech Ctr	A2-B-UBB	3	.03M

* Estimated cost includes Total Package Fielding services/supplies

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

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (AUG 93 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 84 BY\$)	2845.2	3310.0	
(2) Quantity	258896	246845	
(3) Unit Cost	0.011	0.013	-15.38
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 84 BY\$)	2636.0	3089.8	
(2) Quantity	258896	246845	
(3) Unit Cost	0.010	0.013	-23.08

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	135.4	5476.3	-	5611.7
Previous Changes:				
Economic	+0.6	-67.9	-	-67.3
Quantity	+11.6	-945.5	-	-933.9
Schedule	+2.2	+742.4	-	+744.6
Engineering	+46.4	-	-	+46.4
Estimating	+15.7	-1278.5	-	-1262.8
Other	-	-	-	-
Support	-	-332.5	-	-332.5
Subtotal	+76.5	-1882.0	-	-1805.5
Current Changes:				
Economic	-	+19.1	-	+19.1
Quantity	-	+32.2	-	+32.2
Schedule	-	+17.9	-	+17.9
Engineering	-	-	-	-
Estimating	-	-52.7	-	-52.7
Other	-	-	-	-
Support	-	+8.4	-	+8.4
Subtotal	-	+24.9	-	+24.9
Total Changes	+76.5	-1857.1	-	-1780.6
Current Estimate	211.9	3619.2	-	3831.1

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

Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	154.4	4013.3	-	4167.7
Previous Changes:				
Quantity	+9.7	-452.8	-	-443.1
Schedule	-	+41.5	-	+41.5
Engineering	+35.0	-	-	+35.0
Estimating	+10.0	-717.7	-	-707.7
Other	-	-	-	-
Support	-	-268.5	-	-268.5
Subtotal	+54.7	-1397.5	-	-1342.8
Current Changes:				
Economic	-	-	-	-
Quantity	-	+29.1	-	+29.1
Schedule	-	+7.6	-	+7.6
Engineering	-	-	-	-
Estimating	+0.1	-22.0	-	-21.9
Other	-	-	-	-
Support	-	+5.5	-	+5.5
Subtotal	+0.1	+20.2	-	+20.3
Total Changes	+54.8	-1377.3	-	-1322.5
Current Estimate	209.2	2636.0	-	2845.2

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Adjustment to actual program costs. (Estimating)	+0.1	0.0
	RDT&E Subtotal	+0.1	0.0
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-4.7
	Economic adjustment for negative program change. (Economic)	N/A	+23.8
		0.0	0.0
	Total variance associated with increase of 3024 units, from 255,872 to 258,896.	+22.3	+21.7
	Quantity increase to Active Army requirement of 5367 units, from 204,624 to 209,991. (Quantity)	+52.6	+80.7
	Quantity decrease to special requirement for Army National Guard and Army Reserve of 676 units, from 12,653 to 11,977. (Quantity)	-6.7	-15.0
	Quantity decrease to Marine Corps requirement of 1548 units, from 32,755 to 31,207. (Quantity)	-15.6	-28.6

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

b. Current Change Explanations --

(Dollars in Millions)		
	<u>Base-Year</u>	<u>Then-Year</u>
Quantity decrease to Navy requirement of 119 units, from 3541 to 3422. (Quantity)	-1.2	-4.9
Allocation to schedule variance resulting from quantity change. (Schedule)	+7.6	+19.4
Allocation to estimating variance resulting from quantity change. (Estimating)	-14.4	-29.9
	0.0	0.0
Acceleration of annual procurement buy profile. (Schedule)	0.0	-1.5
Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+2.4
Revised estimate based on actual program costs. (Estimating)	+36.8	+56.6
Revised estimate due to change in acquisition strategy (Estimating)	-45.8	-81.8
Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
Revised estimate for Initial Spares based on actual program costs. (Support)	-0.1	-0.1
Revised estimate for Other Weapon System based on actual program costs. (Support)	-0.7	-1.0
New requirement for Airborne Radio retrofit kits after fielding. (Support)	+6.0	+9.2
Procurement Subtotal	+20.2	+24.9

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.02	--	--	--	--	-0.01	--	--	-0.01	0.01

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.02	--	--	--	--	-0.01	--	--	-0.01	0.01

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14c. Unit Cost and Other History (Cont'd):

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	FEB 76	FEB 76
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	MAR 89	MAR 89
FUE/IOC	N/A	N/A	DEC 90	DEC 90
Total Cost	N/A	N/A	5611.7	3831.1
Total Quantity	N/A	N/A	292853	256896
Prog Acq Unit Cost	N/A	N/A	0.02	0.01

Additional Milestone III information:

Milestone IIIA Non-ICOM Sep 83; Milestone IIIB Non-ICOM Mar 89; Milestone IIIB ICOM Dec 90; and Milestone IIIB Second Source Aug 93.

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

a. Procurement --

SINGGARS Ground PY5:
GENERAL DYNAMICS, Tallahassee, FL
DAAB07-94-C-C402, FPAF
Award: April 29, 1994
Definitized: April 29, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$116.0	N/A	11369

Current Contract Price		
Target	Ceiling	Qty
\$137.1	N/A	11369

Estimated Price At Completion	
Contractor	Program Manager
\$137.1	\$137.1

	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:

The target price increase of \$2.7M from the December 1995 SAR is due to award of earned reliability award fees.

Contract Comments:

Cost and schedule variance reporting not required for this FPAF contract.

This will be the last time this contract will appear in the SAR.

Authority - 90% complete.

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15. Contract Information (Cont'd):

SINGARS Ground PY8:
ITT CORPORATION, Fort Wayne, IN
DAAB07-94-C-C401, FPAF
Award: April 29, 1994
Definitized: April 29, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$127.2	N/A	17053

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$135.3	N/A	17053

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$135.3	\$135.3

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

The target price increase of \$6.4M from the December 1995 SAR is due to the award of earned reliability award fees.

Contract Comments:

Cost and schedule variance reporting not required for this FPAF contract.

This will be the last time this contract will appear in the SAR.

Authority - 90% complete.

SINGARS Ground PY6:
GENERAL DYNAMICS, Tallahassee, FL
DAAB07-95-C-C502, FPAF
Award: March 30, 1995
Definitized: March 30, 1995

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$128.5	N/A	15219

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$133.4	N/A	15219

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$133.4	\$141.0

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

The target price increase of \$4.9M since initial award is due to the incorporation of modifications for procurement of additional spares and award of earned reliability award fees. The contractor's EAC does not include reliability award fee yet to be earned.

Contract Comments:

Cost and schedule variance reporting not required for this FPAF contract.

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15. Contract Information (Cont'd):

This is the first time this contract appears in the SAR.

SINGARS Ground PY 9:
ITT CORPORATION, Fort Wayne, IN
DAAB07-95-C-C503, FPAF
Award: March 30, 1995
Definitized: March 30, 1995

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$145.8	N/A	18601

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$160.2	N/A	18601

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$160.2	\$169.5

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

The target price increase of \$14.4M since initial award is due to the incorporation of modifications to upgrade the Vehicular Amplifier Adapter to System Improved (SIP) capability. The contractor's EAC does not include reliability award fee yet to be earned.

Contract Comments:

Cost and schedule variance reporting not required for this FPAF contract.

This is the first time this contract appears in the SAR.

SINGARS Ground PY10:
ITT CORPORATION, Fort Wayne, IN
DAAB07-96-C-C501, FPAF
Award: April 19, 1996
Definitized: April 19, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$153.8	N/A	16501

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$160.5	N/A	16501

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$160.5	\$168.8

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

The target price increase of \$6.7M since initial award is due to incorporation of modification to exercise option for additional spares. The contractor's EAC does not include reliability award fee yet to be earned.

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15. Contract Information (Cont'd):

Contract Comments:

Cost and schedule variance reporting not required for this FPAF contract.

This is the first time this contract appears in the SAR.

SINGGARS Ground FY7:
GENERAL DYNAMICS, Tallahassee, FL
DAAB07-96-C-C502, FPAF
Award: April 19, 1996
Definitized: April 19, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$107.0	N/A	11001

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$107.4	N/A	11001

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$107.4	\$112.9

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

The target price increase of \$0.4M since initial award is due to incorporation of modification to procure additional hardware for customer.

Contract Comments:

Cost and schedule variance reporting not required for this FPAF contract.

This is the first time this contract appears in the SAR.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY76-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00)	<u>Total</u>
RDT&E	211.9	-	-	-	211.9
Procurement	3296.8	293.6	14.9	13.9	3619.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3508.7	293.6	14.9	13.9	3831.1

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

b. Annual Summary -- SINGARS

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1976				0.7	0.4
1977				0.3	0.2
1977				3.2	2.0
1978				9.2	6.2
1979				16.6	12.4
1980				24.4	20.0
1981				27.3	24.4
1982				13.9	13.2
1983				12.0	11.8
1984				10.1	10.3
1985				9.9	10.4
1986				11.1	12.0
1987				13.2	14.8
1988				14.2	16.5
1989				7.6	9.2
1990				10.2	12.8
1991				2.1	2.7
1992				1.3	1.7
1993				5.3	7.2
1994				3.9	5.4
1995				3.0	4.2
1996				5.0	7.2
1997				4.7	6.9
Subtotal				209.2	211.9

Appropriation: 0350 National Guard & Reserve Equipm, Defense

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991	1511		10.7	10.7	14.3
1992	2394		17.1	17.1	23.3
1993	4522		30.4	30.4	42.4
1994	3150		24.8	24.8	35.1
1995					
1996	400		2.9	2.9	4.2
1997					
1998					
Subtotal	11977		85.9	85.9	119.3

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

Appropriation: 1109 Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989	2300		21.8	21.8	27.4
1990					
1991					
1992	4100		38.4	38.4	52.4
1993	5450		37.6	37.6	52.5
1994	4539		32.5	32.5	46.1
1995	7100		36.2	36.2	52.6
1996	3606		30.1	30.1	44.3
1997	4112		25.9	25.9	39.0
Subtotal	31207		222.5	222.5	314.3

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985	332		1.8	1.8	2.0
1986					
1987					
1988					
1989	100		0.6	0.6	0.8
1990					
1991	586		4.3	4.3	5.7
1992	378		2.9	2.9	4.0
1993	948		8.3	8.3	11.6
1994	405		3.7	3.7	5.3
1995	221		1.5	1.5	2.2
1996	128		1.0	1.0	1.4
1997	126		0.8	0.8	1.2
1998	198		1.2	1.2	1.9
Subtotal	3422		26.1	26.1	36.1

Appropriation: 2031 Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985	150	4.3	10.6	17.5	19.0
Subtotal	150	4.3	10.6	17.5	19.0

OPA inflation indices were used since the Airborne radios are Communications-Electronics equipment. All requirements for the Airborne radio are funded in the OPA appropriation beginning in FY88.

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

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1983	175	1.2	17.3	19.8	20.3
1984	1325	3.1	56.7	63.4	66.9
1985	10268	0.1	131.5	133.7	145.5
1986	400	0.4	76.8	76.5	85.6
1987				11.2	13.0
1988	720		29.1	26.7	32.2
1989	13599	3.1	155.4	179.2	225.6
1990	2925	5.4	64.7	62.2	80.8
1991	15328	1.0	200.2	201.3	269.1
1992	16580	5.5	179.1	200.2	273.4
1993	18157	0.6	135.1	148.7	207.4
1994	24219	0.1	229.8	242.8	344.1
1995	23850	0.1	223.5	238.7	346.6
1996	23797	0.1	221.1	243.8	358.8
1997	30093	0.1	195.5	213.3	321.0
1998	28555	0.1	169.0	190.1	291.7
1999				9.5	14.9
2000				8.7	13.9
Subtotal	209991	20.9	2084.8	2269.8	3110.8

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991	375		2.1	2.1	2.8
1992	974		5.6	5.6	7.7
1993	137		1.1	1.1	1.5
1994	485		4.1	4.1	5.8
1995	178		1.3	1.3	1.9
Subtotal	2149		14.2	14.2	19.7

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	210141	25.2	2095.4	2496.5	3341.7
OSD	11977		85.9	85.9	119.3
Navy	34629		248.6	248.6	350.4
USAF	2149		14.2	14.2	19.7
Grand Total	258896	25.2	2444.1	2845.2	3831.1

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SINGGARS, December 31, 1996

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	123	123
Procurement	146638	146324

Percent Total Program Quantities Delivered: 56.6%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2587

Percent Total Program Expended: 67.5%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

SINGGARS is the VHF-FM radio communication system which provides the primary means of command and control for infantry, artillery and armor units. Since SINGGARS will be fielded to every type of unit in the Army, there is no "typical" division set; however, 4,500 receiver-transmitters (RTs) are used as an average division quantity. Ninety-eight per cent of the total buy will be fielded; costs shown are based on fielded divisions. SINGGARS does not require a dedicated operator except for an average of 1200 retransmission operators needed for specific missions. Operating tempo (peacetime) varies depending on the theater in which the radio is deployed and ranges from 177 hours per year for Reserve Units to 1638 hours per year in Europe. No depot overhaul is scheduled. Operating and Maintenance (O&M) (consumable) repair parts includes batteries. Maintenance includes depot maintenance, civilian field maintenance labor, and interim contractor support. Other Operating and Support (O&S) costs include training, transportation, System/Project Management and other sustaining support costs. The operating life of SINGGARS is 20 years. No operating and support cost data are currently available for the antecedent system, AN/PRC-77 and AN/VRC-12 family of radios.

SINGGARS Program Life Cycle Cost Estimate validated April 5, 1993.

b. Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Division (4500 RTs)	Avg Annual Cost Per (Antecedent)
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	2.6	0.0
Intermediate Maintenance	0.1	0.0
Depot Maintenance	0.1	0.0
Contractor Support	0.9	0.0
Sustaining Support	0.1	0.0
Indirect Costs	N/A	N/A
Total	3.8	0.0

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

PROGRAM: STANDARD MISSILE-2

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): STANDARD Missile-2 MEDIUM RANGE/EXTENDED RANGE

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

PMS422
THEATER AIR DEFENSE
2521 JEFFERSON DAVIS HIGHWAY
ARLINGTON,, VA 22242-5170

CAPT R. L. WILSON
Assigned: July 1, 1993
DSN 332-0662; COMM (703) 602-0662

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

RDT&E:
(U) PE 0603318N Project U01632,
(U) PE 0604366N Project U00439

PROCUREMENT:
(U) APPN 1507 ICN 2234 (Navy)

MILCON:
(U) PE 0702096N

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5. (U) References:

SM-2 BLK I\II\III\A\B

SAR Baseline (Production Estimate):

(U) SM-2 Block II Milestone IIIIE NPDM of 17 December 1986. Block III Milestone IIIB NAVY ARB of May 12, 1988.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated July 10, 1996.

SM-2 BLK IV

SAR Baseline (Development Estimate):

(U) NAE Approved Acquisition Program Baseline dated November 20, 1990.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated November 6, 1996.

6. (U) Mission and Description:

(U) The STANDARD Missile Medium Range (SM-2 MR) and Extended Range (SM-2 ER) are solid propellant, tail controlled surface-to-air missiles with mid-course guidance, semi-active homing guidance and home-on jam capability. The SM-2 Block I ER missile was produced in FY 76 thru FY 83. The SM-2 Block I MR missile was produced in FY 80 thru FY 83. Both missiles incorporated command guidance, inertial reference system and monopulse receiver to improve range, accuracy and electronic countermeasure (ECM) resistance over the SM-1 missile.

(U) Block II SM-2 is a variation of Block I SM-2. Block II Medium Range (MR) and Extended Range (ER) Missiles incorporate increased kinematics, new conventional warhead, improved fuzing, and improved guidance to provide enhanced capability against high flying, steep diving anti-ship missiles (ASMs). Due to the addition of a MK-104 Dual Thrust Rocket Motor, Block II MR missile range is double that of Block I MR missiles and approximates range of Block II ER missiles. The SM-2 Block II MR is deployed on TARTAR New Threat Upgrade ships and AEGIS CG-47/51 Cruisers and AEGIS DDG-51 Destroyers. The SM-2 Block II ER is deployed on all 31 TERRIER Guided Missile Cruisers and Destroyers.

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7. (U) Executive Summary:

(U) The STANDARD Missile-2 Block I (RIM-67), Extended Range Development program was initiated in August 1976. The Block II is an improved missile with capability to counter high speed, higher altitude anti-ship missiles in an advanced ECM environment.

(U) The STANDARD Missile-2, Medium Range, Block II (RIM/66H) is a derivative of the STANDARD Missile-2, Block II Extended Range that incorporated a new rocket motor and a modified airframe for compatibility with the vertical launcher system. The SM-2 BLK II MR and ER variants are no longer in production.

(U) Approval for production of the Block III, which includes a guidance section upgrade to increase capability against low altitude targets, was received May 12, 1988 by the Navy Acquisition Review Board. The Block III achieved IOC in August 1990. The Block IIIA which includes an upgraded ordnance section, completed OPEVAL in August 1991 with eleven out of twelve successful firings and achieved IOC in January, 1994 with the missile loadout of USS Vicksburg (CG 69).

(U) The new SM-2 Block IIIB TEMP was approved by OUSD(A&T) on April 26, 1994. A new APB for the SM-2 Block I/II/III/A/B was approved on June 28, 1994. On October 21, 1994, the first fully successful test flight of the SM-2 Block IIIB occurred. In July, 1994 the first at-sea firings of SM-2 Block IV were conducted, with 4 of the 5 flights successful. The unsuccessful mission was repeated on October 5, 1994 and was an unqualified success. The new TEMP for the SM-2 Block IV was approved by OUSD(A&T) on August 2, 1994. The SM-2 Block IV GTV series was completed in November, 1994 with 7 of 8 flights successful. On October 6, 1994, DT/IOT&E was completed for SM-2 Block IV onboard USS Lake Erie (CG 70) with 4 of 6 flights successful. The SM-2 Block IV ARB was held on January 9, 1995 and the program was certified to proceed to the NPDM.

(U) On June 15, 1995, the SM-2 Block IIIB completed its initial phase of flight testing at WSMR, with the successful intercept of a Vandal target simulating

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7. (U) Executive Summary (Cont'd):

the prime threat. On May 1, 1995 the SM-2 Block IV received DAB approval for LRIP. A new APB for the SM-2 Block IV was approved on May 4, 1995.

(U) On October 16, 1995, the SM-2 Block IIIB received approval to proceed to LRIP. A new APB for the SM-2 Block I/II/III/A/B was approved on October 31, 1995. On November 20, 1995 the ADM was signed. The at-sea DT for the SM-2 Block IIIB was successfully completed on December 8, 1995.

(U) The SM-2 Block IIIB at-sea OPEVAL was successfully completed on April 15, 1996, and full rate production was approved at a MSIII NPDM on July 15, 1996. The SM-2 Block IIIB ADM was signed September 19, 1996. A new APB for the SM-2 Block Block I/II/III/A/B was approved on July 10, 1996. New APB's for the SM-2 Block IV were approved on July 10, 1996, and November 6, 1996. This system will satisfy mission requirements.

(U) On January 16, 1997, Raytheon entered into definitive agreements with Hughes Electronics Corporation (parent of Hughes Missile Systems Company) to bring about the merger of the Hughes Electronics defense operation and Raytheon.

8. (U) Threshold Breaches:

SM-2 BLK I/II/III/A/B

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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8. (U) Threshold Breaches (Cont'd):

SM-2 BLK IV

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

SM-2 BLK I\II\III\A\B

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate	
BLOCK II MR				
First Flt Test (development test)	FEB 83	FEB 83	FEB 83	
Pilot Production Approved	JUN 83	JUN 83	JUN 83	
Lot 1 Approval for Limited Prod	FEB 84	FEB 84	FEB 84	
DT/OT and OPEVAL	SEP 84	SEP 84	SEP 84	
Lot 2 Approval for Limited Prod	JUN 85	JUN 85	JUN 85	
FOT&E USS VINCENNES CG-49	NOV 85	NOV 85	NOV 85	(Ch-1)
Lot 3 ALP	APR 86	APR 86	APR 86	(Ch-1)
Milestone IIIIE (AFP)	DEC 84	DEC 86	DEC 86	
BLOCK II ER				
FOT&E Vertical Launch Cruiser CG 54	DEC 86	N/A	APR 88	
USS Antietam (Blk II MR)				
OPEVAL Complete	MAR 83	MAR 83	MAR 83	
Pilot Production Approved	APR 82	APR 82	APR 82	
Lot 1 Approval for Limited Production	JUN 83	JUN 83	JUN 83	
Lot 2 Approval for Limited Production	FEB 84	FEB 84	FEB 84	
Lot 3 Approval for Limited Production	MAR 85	MAR 85	MAR 85	
FOT&E USS MAHAN DDG 42	MAR 85	MAR 85	MAR 85	
Lot 4 Approval for Limited Production	APR 86	APR 86	MAY 86	
Milestone IIIIE (AFP)	DEC 84	DEC 84	DEC 86	
FOT&E USS Scott DDG 995 (Blk II ER)	DEC 86	N/A	DEC 89	
BLOCK III				
Milestone II	JUN 85	JUN 85	JUN 85	

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

SM-2 BLK I\II\III\A\B

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Prelim Design Review	JUN 85	JUN 85	JUN 85
Critical Design Review	JUN 86	JUN 86	JUN 86
Developmental Test			
Start	SEP 87	SEP 87	SEP 87
Complete	JUN 88	JUN 88	JUN 88
Release to Production	JUN 88	JUN 88	JUN 88
IOC	SEP 90	SEP 90	AUG 90
BLOCK IIIA			
Milestone II	JUN 85	JUN 85	JUN 85
Prelim Design Review	DEC 87	DEC 87	DEC 87
Critical Design Review	MAR 90	MAR 90	MAR 90
Developmental Test	JUN 91	JUN 91	JUL 91 (Ch-1)
Operational Test	JUN 91	JUN 91	AUG 91
Milestone III	SEP 91	SEP 91	FEB 92
IOC	SEP 93	SEP 93	JAN 94
BLOCK IIIB			
Milestone II	JUN 89	JUN 89	JUN 89
Prelim Design Review	SEP 89	SEP 89	SEP 89
Critical Design Review	JUN 91	FEB 92	APR 92 (Ch-1)
Milestone IIIA	SEP 91	N/A	OCT 95 (Ch-1)
LRIP Program Decision	N/A	OCT 95	N/A (Ch-1)
Developmental Test (WSMR)	DEC 91	DEC 93	JUN 94
ARB (Kit Release)	SEP 92	N/A	N/A
Developmental Test (at Sea)	MAR 93	DEC 95	DEC 95

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

SM-2 BLK IV

Development Approved Current

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(U) Note: At the LRIP Program Decision quantities of 106 were approved with provision for more LRIP quantities should the program not transition to the SM-2 Block IVA as planned.

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10. (U) Performance Characteristics:

SM-2 BLK I\II\III\A\B

a. Performance --

Production Approved Demon- Current
Estimate (SAR) Program (APB) strated Estimate
Obi/Threshold Perf

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

SM-2 BLK I\II\III\A\B

Production	Approved Program (APB)	Demon- strated	Current
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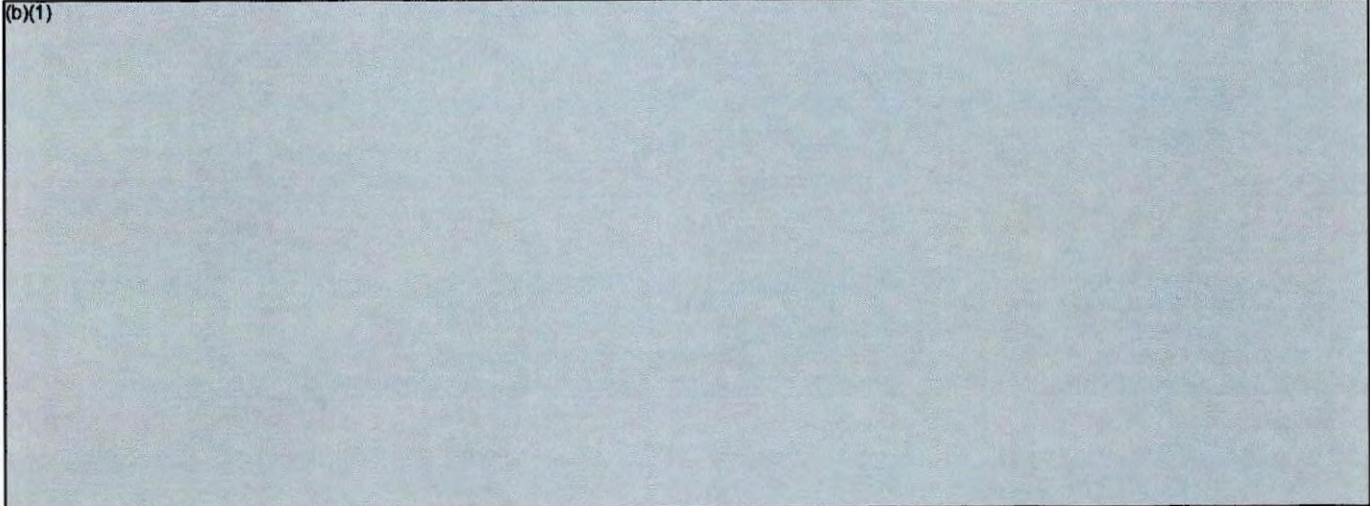
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10a. ~~(C)~~ Performance Characteristics (Cont'd):
SM-2 BLK IV

a. Performance --

Development	Approved Program (APB)	Demon- strated	Current
-------------	---------------------------	-------------------	---------



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

SM-2 BLK I\II\III\A\B

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	648.4	770.6	781.3
Procurement	5923.2	6432.1	6280.8
AUR Hardware	(4510.5)		(4366.4)
Other Flyaway	(500.0)		(948.5)
Total Flyaway	(5010.5)		(5314.9)
Non-recurring Support	(388.9)		(477.4)
Fleet Support	(330.9)		(345.0)
Total Other Wpn Sys	(719.8)		(822.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(192.9)		(143.5)
Construction (MILCON)	0.0	34.0	34.2
Acquisition O&M	0.0	0.0	0.0
Total FY 84 Base-Year \$	6571.6	7236.7	7096.3
Escalation	1481.2	1536.0	1391.0
Development (RDT&E)	(53.2)	(86.6)	(81.2)
Procurement	(1428.0)	(1440.6)	(1301.2)
Construction (MILCON)	(0.0)	(8.8)	(8.6)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	8052.8	8772.7	8487.3
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	10778	11504	11505
Total	10778	11504	11505

(U) Excludes 88 RDT&E units that are not considered fully configured.

c. (U) Foreign Military Sales --

Commitments to date are: In FY88, Canada procured 22 SM-2 Block II missiles for \$8.5M. In FY89, Canada procured 74 SM-2 Block IIs for \$34.3M, and Japan 41 SM-2 Block IIs for \$15.8M. In FY92, Canada procured 10 SM-2 Block IIs for \$5.6M, and Japan 85 SM-2 Block II and 19 Block III missiles for \$67.8M. In FY94, Japan purchased 22 SM-2 Block II and 65 Block III missiles for \$58.8M. In FY96, Canada ordered 21 SM-2 Block III missiles for \$11.9M, and Japan 87 Block III missiles for \$58.4M. In FY97, we project Canada will order 12 SM-2 Block IIIA missiles and Japan will order 26 SM-2 Block III missiles.

d. Nuclear Costs -- None.

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11a. (U) Total Program Cost and Quantity (Cont'd):
SM-2 BLK IV

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	283.9	319.8	320.0
Procurement	1914.6	314.8	279.1
AUR Hardware	(1551.7)		(171.0)
Other Flyaway	(207.0)		(58.3)
Total Flyaway	(1758.7)		(229.3)
Fleet Support	(60.1)		(18.4)
Non-recurring Support	(66.8)		(23.7)
Total Other Wpn Sys	(126.9)		(42.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(29.0)		(7.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 84 Base-Year \$	2198.5	634.6	599.1
Escalation	815.9	230.1	208.8
Development (RDT&E)	(56.2)	(72.1)	(71.9)
Procurement	(759.7)	(158.0)	(136.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3014.4	864.7	807.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	3000	160	153
Total	3000	160	153

(U) Note: At the LRIP Program Decision quantities of 106 were approved with provision for more LRIP quantities should the program not transition to the SM-2 Block IVA as planned.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

SM-2 BLK I\II\III\A\B

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 84 BY\$)	7096.3	7236.7	
(2) Quantity	11505	11504	
(3) Unit Cost	0.617	0.629	-1.91
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 84 BY\$)	6280.8	6432.1	
(2) Quantity	11505	11504	
(3) Unit Cost	0.546	0.559	-2.33

SM-2 BLK IV

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAY 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 84 BY\$)	599.1	634.6	
(2) Quantity	153	160	
(3) Unit Cost	3.916	3.966	-1.26
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 84 BY\$)	279.1	314.8	
(2) Quantity	153	160	
(3) Unit Cost	1.824	1.968	-7.32

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13. (U) Cost Variance Analysis:

SM-2 BLK I\II\III\A\B

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	701.6	7351.2	-	8052.8
Previous Changes:				
Economic	-32.5	-826.9	+1.6	-857.8
Quantity	-	+271.6	-	+271.6
Schedule	-	+730.6	-	+730.6
Engineering	+5.1	+202.1	-	+207.2
Estimating	+169.8	+121.3	+41.2	+332.3
Other	-	-	-	-
Support	-	+22.8	-	+22.8
Subtotal	+142.4	+521.5	+42.8	+706.7
Current Changes:				
Economic	-	+10.7	-	+10.7
Quantity	-	-	-	-
Schedule	-	-149.3	-	-149.3
Engineering	-	-	-	-
Estimating	+18.5	-88.4	-	-69.9
Other	-	-	-	-
Support	-	-63.7	-	-63.7
Subtotal	+18.5	-290.7	-	-272.2
Total Changes	+160.9	+230.8	+42.8	+434.5
Current Estimate	862.5	7582.0	42.8	8487.3

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13a. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK I\II\III\A\B

(U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Production Estimate	648.4	5923.2	-	6571.6
Previous Changes:				
Quantity	-	+289.6	-	+289.6
Schedule	-	+184.5	-	+184.5
Engineering	+16.1	+161.7	-	+177.8
Estimating	+105.8	-212.4	+34.2	-72.4
Other	-	-	-	-
Support	-	+85.5	-	+85.5
Subtotal	+121.9	+508.9	+34.2	+665.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-68.4	-	-68.4
Engineering	-	-	-	-
Estimating	+11.0	-50.6	-	-39.6
Other	-	-	-	-
Support	-	-32.3	-	-32.3
Subtotal	+11.0	-151.3	-	-140.3
Total Changes	+132.9	+357.6	+34.2	+524.7
Current Estimate	781.3	6280.8	34.2	7096.3

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDTE</u>		
	Increase due to Congressional adjustment for SM targets program. (Estimating)	+5.4	+8.0
	Decrease due to execution adjustment. (Estimating)	-0.5	-0.7
	Decrease due to DBOF rate adjustment. (Estimating)	-1.1	-1.4
	Increase due to identification of FY02-FY09 program requirements. (Estimating)	+7.2	+12.6
	Revised escalation indices. (Economic)	N/A	0.0
	<u>RDTE Subtotal</u>	<u>+11.0</u>	<u>+16.5</u>
(2)	<u>Procurement</u>		
	Decrease due to projected BRAC Savings (Estimating)	-13.3	-21.5
	Decrease due to adjustments for Non-Pay purchases. (Estimating)	-3.8	-6.2
	Decrease due to DBOF rate adjustments. (Estimating)	-2.1	-3.1

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13b. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK I/II/III/A/B

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase due to rate adjustments at Weapon Stations. (Estimating)	+1.6	+2.4
Decrease due to execution adjustment. (Estimating)	-0.6	-0.9
Revised escalation indices. (Economic)	N/A	+10.7
Correction to align flyaway and support. (Estimating)	+32.4	+63.9
Increase due to Program Rebalancing. (Estimating)	+3.4	+5.9
Decrease due to reduced spares requirements (Estimating)	-13.1	-24.5
Adjustment for current and prior escalation (Estimating)	+0.5	+0.7
Decrease due to program support fixed costs FY96-FY09. (Estimating)	-55.6	-105.1
Correction to align flyaway and support. (Support)	-32.4	-63.9
Adjustment for current and prior escalation. (Support)	+0.1	+0.2
Decrease due to adjusted procurement schedule. Increased annual procurement quantities in FY97-FY01; decreased annual procurement quantities FY02-FY09 (Schedule)	-68.4	-149.3
Procurement Subtotal	-151.3	-290.7

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STANDARD MISSILE-2, December 31, 1996

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

SM-2 BLK IV

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	340.1	2674.3	-	3014.4
Previous Changes:				
Economic	+1.1	-1.8	-	-0.7
Quantity	-	-3016.3	-	-3016.3
Schedule	-	+970.2	-	+970.2
Engineering	-	+123.0	-	+123.0
Estimating	+50.7	-132.3	-	-81.6
Other	-	-	-	-
Support	-	-144.3	-	-144.3
Subtotal	+51.8	-2201.5	-	-2149.7
Current Changes:				
Economic	-	-2.0	-	-2.0
Quantity	-	-28.5	-	-28.5
Schedule	-	+22.5	-	+22.5
Engineering	-	-	-	-
Estimating	-	-40.4	-	-40.4
Other	-	-	-	-
Support	-	-8.4	-	-8.4
Subtotal	-	-56.8	-	-56.8
Total Changes	+51.8	-2258.3	-	-2206.5
Current Estimate	391.9	416.0	-	807.9

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STANDARD MISSILE-2, December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK IV

(U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	283.9	1914.6	-	2198.5
Previous Changes:				
Quantity	-	-1731.7	-	-1731.7
Schedule	-	+211.1	-	+211.1
Engineering	+41.2	-	-	+41.2
Estimating	-5.1	+21.8	-	+16.7
Other	-	-	-	-
Support	-	-101.0	-	-101.0
Subtotal	+36.1	-1599.8	-	-1563.7
Current Changes:				
Economic	-	-	-	-
Quantity	-	-18.0	-	-18.0
Schedule	-	+14.9	-	+14.9
Engineering	-	-	-	-
Estimating	-	-27.5	-	-27.5
Other	-	-	-	-
Support	-	-5.1	-	-5.1
Subtotal	-	-35.7	-	-35.7
Total Changes	+36.1	-1635.5	-	-1599.4
Current Estimate	320.0	279.1	-	599.1

b. (U) Current Change Explanations --

(1) Procurement	(Dollars in Millions)	
	Base-Year	Then-Year
Decrease due to projected BRAC savings (Estimating)	-1.3	-2.0
Decrease due to adjustments for Non-Pay purchases (Estimating)	-0.3	-0.4
Decrease due to DBOF rate adjustments (Estimating)	-1.5	-2.3
Increase due to rate adjustments at Weapon Stations. (Estimating)	+0.2	+0.3
Decrease due to execution adjustments (Estimating)	-0.3	-0.5
Increase due to program rebalancing. (Estimating)	+1.6	+2.4
Decrease due to revised reduced spares requirement (Estimating)	-0.8	-1.3
Adjustment for current & prior escalation (Estimating)	+0.6	+0.9
Reduced Program support fixed costs FY96-FY98. (Estimating)	-31.0	-46.1
Correction to align flyaway and support. (Estimating)	+5.3	+8.6

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STANDARD MISSILE-2, December 31, 1996

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

SM-2 BLK IV

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised escalation indices. (Economic)	N/A	-2.0
Decrease due to reduction of total procurement quantity (from 160 to 153) (Quantity)	-18.0	-28.5
Adjustment for current and prior escalation. (Support)	+0.2	+0.2
Congressional adjustment to procure additional BLK IV missiles in FY97 (Schedule)	+14.9	+22.5
Correction to align flyaway and support. (Support)	-5.3	-8.6
Procurement Subtotal	-35.7	-56.8

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

SM-2 BLK I\II\III\A\B

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.75	-0.07	-0.03	+0.05	+0.02	+0.02	--	--	-0.01	0.74

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.68	-0.07	-0.02	+0.05	+0.02	--	--	--	-0.02	0.66

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14c. (U) Unit Cost and Other History (Cont'd):

SM-2 BLK I\II\III\A\B

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	JUN 85	JUN 85
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	SEP 90	AUG 90
Total Cost	N/A	N/A	8052.8	8487.3
Total Quantity	N/A	N/A	10778	11505
Prog Acq Unit Cost	N/A	N/A	0.75	0.74

SM-2 BLK IV

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.00	-5.62	+1.63	+4.92	+1.35	+1.91	--	+0.09	+4.28	5.28

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.89	-5.42	+0.39	+4.92	+1.32	+0.53	--	+0.09	+1.83	2.72

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	AUG 86	N/A	AUG 86
Milestone III	N/A	DEC 91	N/A	TBD
FUE/IOC	N/A	N/A	N/A	JAN 98
Total Cost	N/A	3014.4	N/A	807.9
Total Quantity	N/A	3000	N/A	153
Prog Acq Unit Cost	N/A	1	N/A	5.28

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STANDARD MISSILE-2, December 31, 1996

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

a. Procurement --

(U) SM-2 IIIA FY94 AUR PROD:
 RAYTHEON COMPANY, BRISTOL, TN
 N00024-94-C-5321, FFP/PI
 Award: June 15, 1994
 Definitized: August 22, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$43.2	N/A	101

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$43.2	N/A	101	\$43.2	\$43.2

	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:

None.

(U) Contract Comments:

Cost and schedule variance is not required on this FFP contract.

The FY91 to FY93 SM-2 AUR Production Contracts, N00024-92-C-5305 and N00024-92-C-5310, are greater than 90% complete and not reported in the SAR.

(U) SM-2 IIIA FY94 AUR PROD:
 HMSC, TUCSON, AZ
 N00024-94-C-5320, FFP/PI
 Award: June 15, 1994
 Definitized: July 15, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$42.5	N/A	101

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$43.5	N/A	101	\$42.5	\$42.5

	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:

None.

(U) Contract Comments:

Cost and schedule variance is not required on this FFP contract.

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STANDARD MISSILE-2, December 31, 1996

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

(U) SM-2 IIIA FY95 AUR PROD:
SMCo, McLean, VA
N00024-96-C-5304, FFP/PI
Award: November 16, 1995
Definitized: September 27, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$50.4	N/A	160

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$84.5	N/A	160

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$84.5	\$84.5

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

None.

(U) SM-2 BLK IV FY95-96 LRIP:
Standard Missile Company, Mclean VA
N00024-96-C-5337, CPAF/IF
Award: March 27, 1996
Definitized: N/A

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$126.7	N/A	45

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$132.1	N/A	50

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$132.1	\$132.1

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
N/A	N/A
\$0.2	\$-1.2
\$0.2	\$-1.2

Explanation of Change:

(U) This is the first time this contract is reported in the SAR.

Increase in quantity due to plus-up in President's budget.

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STANDARD MISSILE-2, December 31, 1996

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

Total Program

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

<u>Appropriation</u>	<u>Prior Years (FY76-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-09)</u>	<u>Total</u>
RDT&E	1237.4	0.5	1.3	15.2	1254.4
Procurement	6598.3	184.5	120.8	1094.4	7998.0
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7878.5	185.0	122.1	1109.6	9295.2

SM-2 BLK I\II\III\A\B

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

<u>Appropriation</u>	<u>Prior Years (FY76-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-09)</u>	<u>Total</u>
RDT&E	845.5	0.5	1.3	15.2	862.5
Procurement	6266.3	100.5	120.8	1094.4	7582.0
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7154.6	101.0	122.1	1109.6	8487.3

SM-2 BLK IV

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

<u>Appropriation</u>	<u>Prior Years (FY87-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	391.9	-	-	-	391.9
Procurement	332.0	84.0	-	-	416.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	723.9	84.0	-	-	807.9

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STANDARD MISSILE-2, December 31, 1996

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

b. Annual Summary -- SM-2 BLK I\II\III\A\B

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				324.1	305.0
1983				23.6	23.2
1984				17.0	17.3
1985				27.8	29.2
1986				56.8	61.4
1987				40.2	44.7
1988				27.3	31.4
1989				49.6	59.5
1990				47.3	59.0
1991				37.1	48.0
1992				27.6	36.7
1993				24.3	33.0
1994				38.4	53.3
1995				9.3	13.2
1996				14.8	21.4
1997				6.2	9.2
1998				0.3	0.5
1999				0.8	1.3
2000				0.8	1.3
2001				0.8	1.3
2002				0.9	1.4
2003				0.9	1.5
2004				0.9	1.5
2005				0.9	1.6
2006				0.9	1.6
2007				0.9	1.6
2008				0.9	1.7
2009				0.9	1.7
Subtotal				781.3	862.5

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1976	22		88.0	92.4	48.4
1977	36		62.2	73.9	42.9
1978	40		66.5	74.2	48.2
1979	40		57.1	66.1	47.3
1980	85		67.7	82.1	64.7
1981	345		156.2	198.2	174.3

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

SM-2 BLK I\II\III\A\B

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982	495		230.3	287.2	274.3
1983	500		294.1	399.5	403.5
1984	490		311.9	385.5	405.1
1985	730		394.4	443.5	479.7
1986	1271		589.2	659.9	738.4
1987	1194		471.2	583.2	676.2
1988	1310		414.2	472.7	569.6
1989	1310		435.7	474.7	594.4
1990	710		264.5	304.5	394.5
1991	405		185.8	228.4	303.4
1992	330		151.7	194.4	264.8
1993	330		162.6	180.3	250.1
1994	202		124.7	157.1	222.7
1995	160		91.7	113.2	163.6
1996					
1997	80		50.6	66.5	100.2
1998	83		53.3	65.4	100.5
1999	75		55.6	76.9	120.8
2000	77		49.2	61.9	99.3
2001	91		48.3	56.1	92.0
2002	91		41.8	47.2	79.2
2003	92		40.0	44.8	77.1
2004	105		43.8	48.4	85.5
2005	115		46.7	51.6	93.4
2006	115		47.7	52.6	97.7
2007	118		48.3	53.1	101.2
2008	132		52.8	57.9	113.3
2009	326		117.1	127.4	255.7
Subtotal	11505		5314.9	6280.8	7582.0

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				23.6	29.3
1990				10.6	13.5
Subtotal				34.2	42.8

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

SM-2 BLK I\II\III\A\B

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	11505		5314.9	7096.3	8487.3

b. Annual Summary -- SM-2 BLK IV

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				25.2	28.0
1988				57.7	66.4
1989				85.9	102.9
1990				72.7	90.7
1991				33.2	42.9
1992				25.6	34.1
1993				12.6	17.1
1994				6.5	9.0
1995				0.6	0.8
Subtotal				320.0	391.9

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	28		49.6	53.4	77.1
1996	22		64.0	91.9	135.6
1997	59		67.4	79.2	119.3
1998	44		48.3	54.6	84.0
Subtotal	153		229.3	279.1	416.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	153		229.3	599.1	807.9

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17. (U) Delivery/Expenditure Information:

SM-2 BLK I\II\III\A\B

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	9741	9718

(U) Percent Total Program Quantities Delivered: 84.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 6829

(U) Percent Total Program Expended: 80.5%

SM-2 BLK IV

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 401.4

(U) Percent Total Program Expended: 49.7%

18. (U) Operating and Support Costs:

SM-2 BLK I\II\III\A\B

a. (U) Assumptions and Ground Rules --

Since the SM-2 is a wooden round, Personnel Costs are unnecessary for missile operation. The O&S Consumables include Range and Target Cost as well as Post Flight Analysis. The Direct Maintenance consists of Intermediate and Depot Maintenance. The Sustaining Investment Category includes Replenishment Spares and Support Equipment, Equipment Modification, Receipt, Segregation Storage and Issue (RSSI). Direct Support consists of Transportation and Technical Support. There is no Antecedent System.

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

SM-2 BLK I\II\III\A\B

b. (U) Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	SM-2 BLK I/II/III Avg Annual Cost Per (b)(1)	Avg Annual Cost Per N/A
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	5.5	0.0
Intermediate Maintenance	4.6	0.0
Depot Maintenance	5.4	0.0
Contractor Support	0.0	0.0
Sustaining Support	1.3	N/A
Indirect Costs	0.0	N/A
Other	2.3	N/A
Other	2.5	N/A
Overhaul/Rework	7.5	N/A
Total	29.1	0.0

SM-2 BLK IV

a. (U) Assumptions and Ground Rules --

Since the SM-2 is a wooden round, Personnel Costs are unnecessary for missile operation. The O&S Consumables include Range and Target Cost as well as Post Flight Analysis. The Direct Maintenance consists of Intermediate and Depot Maintenance. The Sustaining Investment Category includes Replenishment Spares and Support Equipment, Equipment Modification, Receipt, Segregation Storage and Issue (RSSI). Direct Support consists of transportation and Technical Support. There is no Antecedent System.

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18b. (U) Operating and Support Costs (Cont'd):
SM-2 BLK IV

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N-22 T-45TS

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: T45TS

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): T45TS - Undergraduate Jet
Flight Training System (GOSHAWK)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

PEOASWASM (PMA-273)
ARLINGTON, VA 22243-5120

CAPT T. L. HEELY
Assigned: February 28, 1997
DSN 664-6211; COMM 703-604-6211 x6331

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603208N Project H1142

PROCUREMENT:

APPN 1506 ICN 0015/0016 (Navy)

MILCON:

PE PROJ 236

CLEARED
FOR OPEN PUBLICATION

MAR 21 1997 9

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

No security objection
to open publication
97-00133
MAR 21 1997
M. J. Heely
Naval Air Station
Dept. of the Navy

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5. References:

SAR Baseline (Production Estimate):

DAE Approved Acquisition Program Baseline dated January 19, 1995.

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated February 21, 1997.

6. Mission and Description:

(U) The T45TS is the Navy's strike pilot training system designed to replace both the T-2C and TA-4J and to produce 325 Strike and 36 E2/C2 Pilots each year through FY 2020 at two sites, NAS Kingsville and NAS Meridian. The system includes: 187 Production aircraft; 17 simulators; academic material, training aids, & equipment; a computer based Training Integration System (TIS) at NAS Kingsville to achieve total system efficiencies; and contractor logistics support of all system elements.

(U) The T-45A is a derivative of the British Aerospace Hawk that has been adapted to provide the capability for carrier catapult take-offs and arrested landings. The simulator suite includes both Instrument Flight Trainers (IFT) 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 scheduling and tracking of training events in order to achieve required training efficiency. Contractor logistics support has been structured to provide for future competition of maintenance support services to ensure that the system will be supported in the most cost effective manner. The system is currently up and operating at NAS Kingsville producing winged Naval Aviators.

7. Executive Summary:

(U) On Sep 11, 1996, the International Association of Machinist and Aircraft Workers (IAMAW) union ended a strike against MDA. MDA placed significant priority on delivery of T-45A aircraft. The strike was settled with minor impact to the delivery of aircraft.

(U) On Sep 23, 1996, the Navy awarded \$209M to McDonnell Douglas Aerospace (MDA) in accordance with the claim settlement terms defined in the Memorandum of Agreement (MOA) dated July 31, 1996. The agreement provided for resolution of several contract issues in a manner which is overall favorable and in the best interests of the Navy and MDA.

(U) On Sep 24, 1996, contracts with MDA (N00019-84C-0240, N00019-90C-0040, and N00019-92C-0187) were amended to incorporate durability improvements to the engine in accordance with the terms of the T45TS claim settlement MOA dated July 31, 1996. A withhold in the amount of \$2,160,000 remains pending submission of applicable ECP's. The T45TS claim settlement includes provisions for an engine hot end improvement program to address hot section durability. The Program Manager (PM) will continue surveillance of engine durability.

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7. Executive Summary (Cont'd):

(U) On Sep 30, 1996, the Navy awarded McDonnell Douglas Aerospace (MDA) the T45TS FY97 production Advanced Acquisition Contract (AAC). The initial funding awarded for termination liability (TL) was \$16M dollars. The contract was subsequently modified to include priced and unpriced option items, including a priced option for twelve (12) T45TS aircraft.

(U) On Oct 9, 1996, Vice Admiral Pilling, Deputy Chief of Naval Operations, signed a memorandum directing the Program Manager (PM) to plan for an inventory quantity of 187 T-45A aircraft. A procurement cost threshold breach resulted when the cost of the additional thirteen (13) aircraft was reflected in the FY-98 President's budget. On Feb 21, 1997, ASN (RDA) authorized a revision to the T45TS Acquisition Program Baseline (APB) to resolve the breach to the Procurement cost threshold due to the inventory increase.

(U) On Nov 25, 1996, ASN (RDA) authorized changes to the T45TS Acquisition Program Baseline (APB) to resolve breaches to the RDT&E cost and to the schedule milestone Contractor Logistic Support (CLS) Competition date thresholds. The APB baseline was revised to reflect the addition of \$167.4M RDT&E dollars for the development portion of the \$209M MDA contract claim settlement (Sep 1996). The \$41.6M balance of the claim was awarded in procurement (APN 3) dollars which did not cause a breach to that appropriation for APB reporting. The CLS Competition date change was necessary due to the delay in the stand up of NAS Meridian to incorporate a fully operational digitized Cockpit 21 configuration that had been delayed due to technical problems.

(U) As of Dec 1996, the Training Command had flown over 97,677 T-45A flight hours and there were a total of 163 students in training.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

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8. Threshold Breaches (Cont'd):

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Program Initiated	JUL 75	JUL 75	JUL 75
Requirements Validation Study	MAR 78	MAR 78	MAR 78
MENS Approved	JUN 79	JUN 79	JUN 79
RFQ For Concept Definition	DEC 79	DEC 79	DEC 79
Project Charter Approved	AUG 80	AUG 80	AUG 80
ASE Studies Completed	MAR 81	MAR 81	MAR 81
Sustain Engr Contract Award	NOV 81	NOV 81	NOV 81
DEM/VAL Contract Award (Pre FSED)	SEP 82	SEP 82	SEP 82
Program Redirect (All Carrier Qual)	NOV 83	NOV 83	NOV 83
Advance Development Contract Award	JUL 84	JUL 84	JUL 84
Milestone I/II (DSARC)	SEP 84	SEP 84	SEP 84
FSED Letter Contract	SEP 84	SEP 84	SEP 84
Milestone IIIA Approval Pilot Prod (APP)	SEP 87	SEP 87	SEP 87
T45A First Flight	MAR 88	MAR 88	APR 88
Pilot Lot II FY 89	DEC 89	DEC 89	DEC 89
Milestone IIIA (ALRIP) FY92	NOV 91	NOV 91	APR 92
Complete Navy Tech Eval (NTE)	AUG 93	AUG 93	NOV 93
Complete OPEVAL	DEC 93	DEC 93	APR 94
Initial Operational Capability	NOV 92	NOV 92	APR 93
Milestone III Authorized Full Production	JAN 95	JAN 95	JAN 95
Contractor Logistics Support (CLS) Competition	OCT 97	OCT 99	OCT 99 (Ch-1)

b. Current Change Explanations --

(CH-1) Contractor Logistics Support (CLS) competition date has been accelerated to Oct 99 for the FY00 CLS contract support for NAS Kingsville (NASK) and NAS Meridian (NASM).

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10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Aircraft					
Wing Span (ft)	30.81	30.81	/ 30.81	N/A	30.81
Length (ft)	39.26	39.26	/ 39.26	N/A	39.26
Height (ft)	13.42	13.42	/ 13.92	N/A	13.92
Flight Design Weight (lbs)	13725	13725	/ 14000	13868	13868
Specific Range @ 30,000 ft (takeoff less 40% useable fuel) (nm/lb)	.33	.33	/ .32	.359	.359
Endurance @ 5000 ft (takeoff less 80% useable fuel) (lb/hr)	1130	1130	/ 1160	940	940
Waveoff (altitude loss ft)	50	50	/ 70	<70	<70
Bolter (ground roll distance ft @ 15 kts WOD)	325	325	/ 425	310-375	310-375
Lateral Directional Stability (sideslip excursion approach configuration) (deg)	4	4	/ 6	6	6
Roll Off at Stall (approach configuration) (deg)	<30	<30	/ 30	15-20	15-20
"G" Excursion Speed Brake Extension (Gs)	.25	.25	/ .40	.35	.35
Longitudinal Stability (stick free damping ratio 10,000 ft & .86 IMN)	.45	.45	/ .25	.30	.30
Simulator					
Total Time Lag Error (ms)	124	124	/ 155	155	155
Digital Computational System					
Main Memory with spare (MB)	4.0/2.75	4.0/2.75/	4.0/2.0	4.0/2.0	4.0/2.0
Processing Capacity (ms)	16.05	16.05	/ 16.67	<16.67	<16.67

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10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Visual System	2.0	2.0 / 1.5	2.16	2.16
Luminance (ft-1)				
Academics				
Memory/Spare (K/MB)	640/80	640/80 / 640/40	640 / 80	640 / 80
Terminal Response Time (sec avg)	<3	<3 / 3	<3	<3
Training Integration System				
Memory (RAM) (MB)	256	256 / 192	192	192
I/Os per second	210	210 / 75	75	75
Terminal Response Time (sec avg)	<3	<3 / 3	<3	<3
Aircraft				
Speed				
Max Level Flt (Mach)	.84	.84 / .83	.845	.845
Approach (kts)	125	125 / 125	124.4	124.4
Sustain G's @ 15,000 ft	3.4	3.4 / 3.2	3.3	3.3
Mean Flight Hours Between Failure (MFHBF)	3.2	3.2 / 2.0	3.2	3.2
Direct Maintenance Man Hours/Flight Hour (DMGH/FH)	10	10 / 10	8.33	8.33
Availability (%)	85	85 / 75	76	76
Simulator				
Availability (%)				
Instrument Flight Trainer (IFT)	95	95 / 80	90	90
Operational Flight Trainer (OFT)	95	95 / 80	90	90
Academics				
Computer Aided Instruction (CAI) System Availability (% Sched)	95	95 / 85	100	100
Training Integration System (TIS)				
Availability (% Sched)	95	95 / 85	85	100
Pilot Training Rate	450	N/A / N/A	N/A	N/A

b. Current Change Explanations --
NONE.

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	898.9	1086.0	1054.9
Procurement	4595.2	4832.2	4832.2
Airframe/CFE	(2738.5)		(3001.8)
Engines	(184.3)		(221.1)
GFE	(137.8)		(118.5)
Change Allowance/ECO	(62.6)		(30.4)
Nonrecurring flyaway	(198.6)		(221.6)
Total Flyaway	(3321.8)		(3593.4)
Training Equipment	(337.1)		(259.3)
Other	(651.3)		(700.1)
Total Other Wpn Sys	(988.4)		(959.4)
Peculiar Support	(0.0)		
Initial Spares	(285.0)		(279.4)
Construction (MILCON)	34.0	34.0	33.9
Acquisition O&M	0.0	0.0	0.0
Total FY 95 Base-Year \$	5528.1	5952.2	5921.0
Escalation	71.4	30.8	43.0
Development (RDT&E)	(-167.1)	(-186.8)	(-174.7)
Procurement	(241.4)	(220.5)	(220.5)
Construction (MILCON)	(-2.9)	(-2.9)	(-2.8)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5599.5	5983.0	5964.0
b. Quantity --			
Development (RDT&E)	2	2	2
Procurement	174	187	187
Total	176	189	189

The percentage of LRIP units has increased proportionately to the total quantity reduction (300 to 187). The original program planned 48 LRIP (FY89/90) units or 16% of 300 total. Due to delays in completing development which approved Full Rate Production in FY-95, OSD directed procurement of 60 LRIP units (FY89 thru FY94). Subsequently the total was adjusted to 187 units resulting in the current 32% ratio to the total (187).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (Feb 97 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	5921.0	5952.2	
(2) Quantity	189	189	
(3) Unit Cost	31.328	31.493	-0.52
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	4832.2	4832.2	
(2) Quantity	187	187	
(3) Unit Cost	25.841	25.841	0.00

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	731.8	4836.6	31.1	5599.5
Previous Changes:				
Economic	+5.5	-106.8	+0.1	-101.2
Quantity	-	-	-	-
Schedule	-	-4.8	-	-4.8
Engineering	-19.6	+32.8	-	+13.2
Estimating	-4.8	-23.9	-0.1	-28.8
Other	-	-	-	-
Support	-	-60.9	-	-60.9
Subtotal	-18.9	-163.6	+0.0	-182.5
Current Changes:				
Economic	-	-12.0	-	-12.0
Quantity	-	+276.6	-	+276.6
Schedule	-	-0.1	-	-0.1
Engineering	-	+2.1	-	+2.1
Estimating	+167.3	+65.7	-	+233.0
Other	-	-	-	-
Support	-	+47.4	-	+47.4
Subtotal	+167.3	+379.7	-	+547.0
Total Changes	+148.4	+216.1	+0.0	+364.5
Current Estimate	880.2	5052.7	31.1	5964.0

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

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	898.9	4595.2	34.0	5528.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-4.8	-	-4.8
Engineering	-20.3	+36.4	-	+16.1
Estimating	-10.8	-28.7	-0.1	-39.6
Other	-	-	-	-
Support	-	-66.8	-	-66.8
Subtotal	-31.1	-63.9	-0.1	-95.1
Current Changes:				
Economic	-	-	-	-
Quantity	-	+216.1	-	+216.1
Schedule	-	-0.1	-	-0.1
Engineering	-	+1.6	-	+1.6
Estimating	+187.1	+51.1	-	+238.2
Other	-	-	-	-
Support	-	+32.2	-	+32.2
Subtotal	+187.1	+300.9	-	+488.0
Total Changes	+156.0	+237.0	-0.1	+392.9
Current Estimate	1054.9	4832.2	33.9	5921.0

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	0.0
	Increase for development claim settlement awarded to McDonnell Douglas Aerospace (MDA). (Estimating)	+187.2	+167.4
	Reduced estimate for envelope expansion testing. (Estimating)	-0.1	-0.1
	RDT&E Subtotal	+187.1	+167.3
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-12.0
	Total change associated with quantity increase of 13 T-45A aircraft.	+217.2	+278.0
	Quantity increase of 13 (from 174 to 187 T-45A aircraft). (Quantity)	+216.1	+276.6
	Allocation to schedule resulting from quantity change. (Schedule)	-0.1	-0.1
	Allocation to engineering resulting from quantity change. (Engineering)	+1.6	+2.1

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Allocation to estimating resulting from quantity change. (Estimating)	-0.4	-0.6
Increase for production claim settlement awarded to McDonnell Douglas Aerospace. (Estimating)	+40.9	+41.6
Revised estimate for McDonnell Douglas Aerospace (MDA) production shutdown costs. (Estimating)	+13.1	+17.7
Revised estimate to procure additional T-45A ancilliary equipment (Estimating)	+9.9	+11.4
Revision of methodology for estimating engineering and incorporation of Forward Pricing Rate Agreement (FPRA) rates. (Estimating)	-14.2	-6.4
Adjustment for Current and Prior Inflation. (Estimating)	+1.8	+2.0
Revised estimate for Initial spares for 187 aircraft. (Support)	+9.6	+14.7
Increase in Other Support for ILS and production support. (Support)	+54.9	+68.9
Reduction in Training Equipment estimates for T-45A simulators and technical support. (Support)	-33.1	-37.0
Adjustment for Current and Prior Inflation. (Support)	+0.8	+0.8
Procurement Subtotal	+300.9	+379.7

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
17.97	-1.31	+4.06	+0.44	+4.34	+5.01	--	+1.31	+13.85	31.81

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14a. Unit Cost and Other History (Cont'd):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
31.82	-0.60	-0.72	-0.03	+0.08	+1.08	--	-0.07	-0.26	31.56

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
13.73	-1.20	+0.97	+4.00	+3.70	+4.68	--	+1.92	+14.07	27.80

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
27.80	-0.64	-0.45	-0.03	+0.19	+0.22	--	-0.07	-0.78	27.02

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JUL 75	N/A	JUL 75	JUL 75
Milestone II	N/A	N/A	SEP 84	SEP 84
Milestone III	N/A	N/A	JAN 95	JAN 95
FUE/IOC	MAY 91	N/A	NOV 92	APR 93
Total Cost	5462	N/A	5599.5	5964
Total Quantity	304	N/A	176	189
Prog Acq Unit Cost	17.97	N/A	31.82	31.56

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

a. Procurement --

<u>T45TS FY 94 PRODUCTION:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
MCDONNELL DOUGLAS CORP, ST. LOUIS MO					
N00019-93-C-0098, FFP	\$20.5	N/A	12		
Award: May 28, 1993					
Definitized: December 15, 1994					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$246.3	N/A	12	\$246.3	\$246.3

Explanation of Change:

(U)The Current Target Price has been revised to \$246.3M and is a result of decreases in the limitation of government liability for GTS and spares.

Contract Comments:

(U)This is the Final report for this contract since the contract is over 90% complete. The twelfth and final FY-94 aircraft was delivered Dec 1996.

(U)The Initial Target Price reflects the Termination Liability funding (initially) awarded on the Advanced Acquisition contract prior to definitization.

(U) Cost and Schedule variance reporting is not required for this FFP contract.

<u>T-45A GFE ENGINES:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
ROLLS ROYCE, plc, Bristol, England					
N00019-93-C-0100, FFP	\$2.7	\$0.0	12		
Award: November 30, 1993					
Definitized: March 23, 1995					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$79.5	N/A	48	\$216.0	\$216.0

Explanation of Change:

(U)The Current Target Price has been revised to include the FY-97 advance acquisition award. Total reflects the definitization of the GFE engines (FY-94, FY-95, FY-96, and FY-97 (AAC option), plus the price of modules, and spare engines awarded to date.

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15. Contract Information (Cont'd):

Contract Comments:

(U)The Program Managers EAC reflects the total estimate of contract which includes eight (8) option years at approximately \$27M annually.

(U)The Basic contract was awarded to Rolls Royce (Nov 93) and contains eight options, FY-94 through FY01.

(U)The Initial Target Price reflects the Termination Liability funding (initially) awarded on the Advanced Acquisition contract prior to definitization.

(U) Cost and Schedule variance reporting is not required for this FFP contract.

T45TS FY95 PRODUCTION: MCDONNELL DOUGLAS CORP, ST. LOUIS MO N00019-94-C-0058, FFP Award: December 31, 1994 Definitized: May 31, 1996	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$20.0	\$0.0	12

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$208.6	N/A	12	\$208.6	\$208.6

Explanation of Change:

(U)The Current Target Price reflects the May 96 contract definitization, modified to include the Cockpit 21 ECP into the twelfth aircraft. Additional funds awarded are for support equipment, and logistics support.

Contract Comments:

(U)The Initial Target Price reflects the Termination Liability funding (initially) awarded on the Advanced Acquisition contract prior to definitization.

(U) Cost and Schedule variance reporting is not required for this FFP contract.

T45TS FY96 PRODUCTION: MCDONNELL DOUGLAS CORP, ST. LOUIS, MO N00019-95-C-0164, FFP Award: September 30, 1995 Definitized: May 31, 1996	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$15.0	N/A	12

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$242.1	N/A	12	\$242.1	\$242.1

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18. Contract Information (Cont'd):

Explanation of Change:

(U)The Current Target Price reflects the May 96 contract definitization price modified to include Cockpit 21 ECP. Additional funding awarded procures T45TS simulators systems and support items, support equipment, logistics support items, and non recurring costs.

Contract Comments:

(U)The Initial Target Price reflects the Termination Liability funding (initially) awarded on the Advanced Aquisition contract prior to definitization.

(U) Cost and Schedule variance reporting is not required for this FFP contract.

T45TS FY97 PROD: MCDONNELL DOUGLAS, ST. LOUIS, MO N00019-96-C-0029, FFP Award: September 30, 1996 Definitized: N/A	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$16.0	N/A	12

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$16.0	N/A	12	\$181.3	\$181.3

Explanation of Change:

(U)The Initial Target Price reflects the Termination Liability funding (initially) awarded on the Advanced Aquisition Contract (AAC) prior to definitization.

Contract Comments:

(U) Cost and Schedule variance reporting is not required for this FFP contract.

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

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

<u>Appropriation</u>	<u>Prior Years (FY80-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	880.2	-	-	-	880.2
Procurement	2998.0	266.2	299.1	1489.4	5052.7
MILCON	31.1	-	-	-	31.1
O&M	-	-	-	-	-
Total	3909.3	266.2	299.1	1489.4	5964.0

b. Annual Summary -- T45TS

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY95 Dollars Nonrec</u>	<u>Flyaway FY95 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1980			7.1	7.1	4.2
1981			2.5	2.5	1.6
1982			7.3	7.3	4.9
1983			11.1	11.1	7.8
1984			32.3	32.3	23.6
1985			89.6	89.6	67.5
1986			156.6	156.6	121.4
1987			178.6	178.6	142.5
1988			120.5	120.5	99.4
1989			106.0	106.0	91.1
1990			216.6	216.6	193.8
1991			15.6	15.6	14.5
1992			50.3	50.3	48.0
1993			30.4	30.4	29.7
1994			28.1	28.1	27.9
1995			0.6	0.6	0.6
1996			1.3	1.3	1.3
1997			0.4	0.4	0.4
Subtotal	2		1054.9	1054.9	880.2

Appropriation: 1506 Aircraft Procurement, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY95 Dollars Nonrec</u>	<u>Flyaway FY95 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1987				78.8	65.1
1988	12	55.8	274.4	481.5	415.1
1989	24	9.1	429.0	418.7	375.4

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

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990		15.4		135.2	125.4
1991		39.9		159.6	152.3
1992	12	25.9	225.0	372.3	363.3
1993	12	8.3	225.0	281.5	279.9
1994	12	8.2	247.1	315.7	320.2
1995	12	5.2	217.3	254.9	263.5
1996	12	2.2	208.3	307.2	324.2
1997	12	2.8	204.3	291.0	313.6
1998	12	4.8	201.6	242.0	266.2
1999	12	2.5	197.7	266.2	299.1
2000	12	2.6	195.8	267.6	307.1
2001	12	2.5	193.5	237.7	278.7
2002	12	2.5	191.0	226.4	271.7
2003	6		117.0	140.3	172.6
2004	6		116.2	142.6	180.0
2005	7		128.6	151.5	196.2
2006		6.5		21.4	28.4
2007		27.3		40.1	54.7
Subtotal	187	221.6	3371.8	4832.2	5052.7

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				10.8	9.2
1989					
1990				12.9	11.8
1991					
1992					
1993				10.2	10.1
Subtotal				33.9	31.1

MILCON claimant is Chief of Naval Education and Training (CNET).

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	189	221.6	4426.7	5921.0	5964.0

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17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	2	2
Procurement	73	72

Percent Total Program Quantities Delivered: 39.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 3569.6

Percent Total Program Expended: 59.9%

T-45A deliveries accepted through the "As Of" date of Dec 96 are through A072.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The concept of operations of the T45TS is for total contractor logistic support (CLS), where the Navy provides the appropriate operational military personnel and flightline consumables, and the remainder is a turn key contractor operation. This program was specifically scoped to a 325 pilot training rate (PTR) per year, spread over two sites (NAS Meridian, and NAS Kingsville, TX). In order to meet this PTR, 110 aircraft are required to fly approximately 720 flight hours each aircraft per year. The steady state quantity of flight hours is 79,037 per year. These quantities reflect the incorporation of JPATS into the T45TS program, and were used in the calculation of Mission Personnel, Unit-Level Consumption, Contractor Logistics Support, Sustaining Support and Indirect Support. In section b costs, Mission Personnel costs include the costs for pay and allowances for enlisted personnel and officers. Contractor personnel involved in the maintenance of the T-45 are not included in the element, but within the CLS portion of the O&S.

(U) Unit-Level Consumption costs include the cost for Petroleum, Oil & Lubricants (POL) required for peacetime operations, and Training Ordnance costs. The 36 PTR for E2/C2 aircraft have no ordnance requirements, and therefore are not included in the estimate. Consumables/Repair Part and Depot Level Repairables are not included in Unit-Level Consumption, but within CLS, as maintenance is performed by the contractor.

(U) Contractor Logistics Support costs include the costs for Aircraft Maintenance; Ground Training System (GTS Maintenance, Replenishment Spares, ROR, Simulator Maintenance, and Operations Costs); Training Spt Center Maintenance; Program & Administrative Mgt; Off Site Repair (Engine Depot ROR, Aircraft ROR, SE ROR, and Airframe Rework); Detachment Support; Travel & Per Diem; and other Direct Charges. Sustaining Support Costs include the costs for modifications kits needed to achieve acceptable levels of safety, overcome mission capability deficiencies, and reliability, and reduce maintenance costs. Support Equipment Replacement is performed by the contractor, and is included in CLS under ROR. Sustaining Engineering Support, Software

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

Maintenance, and Simulator Operations costs are also included in the cost for CLS.

(U) Indirect costs include the costs for Student Aviators and Installation Support. Installation Support includes costs for personnel normally assigned to the host installation who are required for the unit to perform its mission in peacetime.

(U) Date of estimate: January 28, 1997.

(U) The T-45A was designed to replace both the T-2C and TA-4J aircraft. The Average Annual Cost Per Steady State reflects the current T-45A aircraft estimate. The cost of antecedent (T-2C and TA-4J) systems were not available for this SAR.

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per T-45/YEAR	Avg Annual Cost Per Steady State
Mission Pay & Allowances	84.7	16.3
Unit Level Consumption	85.1	16.3
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	567.2	109.4
Sustaining Support	39.1	7.5
Indirect Costs	270.8	51.9
Total	1046.9	201.4

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A-3 ASAS

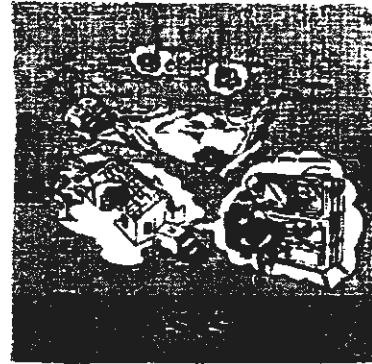
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: ASAS

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): All Source Analysis System (ASAS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Intelligence Fusion PMO	COL Lawrence G Arrol
1616 Anderson Road	Assigned: May 14, 1996
McLean, VA 22102-1616	DSN 235-8110; COMM (703)-275-8110
	larrol@asaspmo.belvoir.army.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 64321A Project D2FT, D396, D926, DB19, DB20
PE 64321F
PE D2FT
PE D396
PE D926
PE DB19
PE DB20

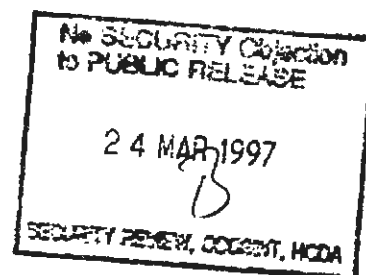
PROCUREMENT:

APPN 3080 ICN 1683790 (Air Force)
APPN 2035 ICN B59704 (Army)
APPN 2035 ICN BA9520 (Army)
APPN 2035 ICN BA9704 (Army)
APPN 2035 ICN K28801 (Army)
APPN 2035 ICN MA9704 (Army)
APPN 2035 ICN BS9704 (Army)

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DEPARTMENT OF DEFENSE



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97-C-0550

5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated December 1991.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated October 21, 1993.

6. Mission and Description:

As the Intelligence and Electronic Warfare (IEW) sub-system of the Army Tactical Command and Control System (ATCCS), the All Source Analysis System (ASAS) provides all source intelligence fusion to gain a timely and comprehensive understanding of enemy deployments, capabilities, and potential courses of action. With this knowledge, battle managers will be able to view the battlefield and more effectively conduct the land battle. ASAS is a tactically deployable ADP system used to receive and correlate data from strategic and tactical intelligence sensors/sources; produce ground battle situation displays; rapidly disseminate intelligence information; provide target nominations; help manage organic IEW assets; and assist in providing operational security (OPSEC) support. The system is theater independent and designed to operate in peace-time, supporting contingency and crisis operations during low, mid, and high intensity wartime, and during restoration and return to peace stabilization periods. ASAS has been designated by Congress as the Army's only tactical intelligence fusion project.

ASAS is being produced and fielded in two hardware configurations and three software versions. The current configuration, Block I, was formerly planned for procurement and fielding to corps and active divisions in the years 1992 through 1997. This configuration was restructured in FY91 to include Hawkeye, an OSD-sponsored balanced technology initiative. Because of the restructuring, Block I was fielded to the above units in the FY93-95 timeframe without having to go into full rate production.

Block I is made up of the Communications Control Set AN/TYQ-40 which receives and transmits information from multiple sensor systems; the Data Processor Set AN/TYQ-36 which processes intelligence data; the Workstation, Computer Graphics AN/TYQ-37 which is the primary user interface with the system; and Workstation, Computer Graphics AN/TYQ-52(V) which processes intelligence data.

Block II is made up of objective hardware modules using ATCCS Common Hardware/Software (CHS) components. ASAS Block II hardware procurement will begin in FY98 and full fielding to the Army's force structure will begin in FY99. ASAS Block III is a software development effort which will bring ASAS to its full objective capabilities. It will be used with the hardware procured in Block II. There is no Block I antecedent system. ASAS Block II replaces ASAS Block I equipment with improved functionality and common hardware and software. The ASAS acquisition strategy maximizes the use of government and commercial Non-Developmental Item software, OSD directed Common Operating Environment software, incremental phased deliveries, and continuous user test and evaluation.

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7. Executive Summary:

As noted in the Sep 96 SAR, emerging requirements (Operational Requirements Document, Change 2, which included Remote Workstations for Brigade/Battalions), directed changes to the program (such as Common Operating Environment, Modernized Integrated Database), and increased near year focus on Battlefield Visualization to warfighters, have required program changes. All program documentation has been revised and submitted for approval. Block II has been replanned to incorporate near term efforts and fit within available resources. The full impact of these changes will be reflected in a future SAR after the revised APB has been signed by the AAE.

The ASAS is successfully providing support to troops in Bosnia in both communications and intelligence processing arenas. On the communications side, the 112th Signal Battalion is operating four Compartmented ASAS Message Processing Systems (CAMPS) in a hub and spoke configuration, interconnected through Ground Mobile Force (GMF) Satellite Terminals, with the hub at Brindisi, Italy and three spokes in Bosnia. In the intelligence processing arena, ASAS provides All Source Analysis and Signal Intelligence systems to the 1st Armored Division and V Corps; supports the Multinational Brigade with a consolidated view of the friendly and enemy situation; provides Defense Intelligence Agency (DIA) and National Military Joint Intelligence Center (NMJIC) with the tactical Ground Order of Battle; provides automated Counter Intelligence/Human Intelligence (CI/HUMINT); and provides sustainment operations, training and site support for deployed systems.

We continue to tailor the ASAS Remote Workstation (RWS) software to meet functional requirements coming out of Task Force XXI (TFXXI). Software deliveries continue to be timely and to successfully meet interoperability requirements with other BFA systems supporting TFXXI.

The Program Office continues to successfully test the Block II software drops. The ASAS innovative "build a little, test a little, field a little" strategy appears to have the backing of all levels of the OSD and Army staff.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

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8. Threshold Breaches (Cont'd):

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

There are currently both schedule and cost breaches to the approved Acquisition Program Baseline dated 21 Oct 93. Program changes required to support Task Force XXI Advanced Warfighting Experiment (AWE) and implementation of Common Operating Environment (COE) impacted near-term schedule milestones, but should result in earlier overall deployment of capabilities to the warfighter. New requirements to purchase Brigade/Battalion workstations, Communication Control Sets and Shelterized Remote Workstations impacted outyear costs. A Program Deviation Report and a revised Acquisition Program Baseline Change Request have been submitted and will be reflected in a future SAR.

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
DAB Program Review	AUG 93	AUG 93	AUG 93
Joint Oversight Group (ASARC Authority Approves Block II)	NOV 87	NOV 87	NOV 87
Block II RDT&E Contract Award (EMD)	SEP 93	SEP 93	OCT 93
Phase 2 (TSE Functionality) Prototype Delivery	JUL 95	JUL 95	N/A
Phase 3 (EAC Functionality) Prototype Delivery	MAR 96	MAR 96	N/A
Preliminary Design Review	MAR 96	MAR 96	N/A
Critical Design Review	AUG 96	AUG 96	N/A
DT&E			
Start	JAN 98	JAN 98	N/A
Complete	FEB 98	FEB 98	N/A
IOT&E			
Start	JUL 98	JUL 98	N/A
Complete	SEP 98	SEP 98	N/A
First Article Test	FEB 00	FEB 00	N/A
Organic Support Capability	OCT 98	OCT 98	N/A
Depot Support Capability	NOV 98	NOV 98	N/A
Block II Milestone III	APR 99	APR 99	N/A
Block II Prod Contract Award	MAY 99	MAY 99	N/A
Initial Operational Capability	DEC 99	DEC 99	TBD
Block III EMD Contract Award	JUN 99	JUN 99	TBD
Block III FOT&E	OCT 02	OCT 02	TBD
Block III Milestone III	JUL 03	JUL 03	TBD
Incremental Delivery, Phase 1	N/A	N/A	N/A
Incremental Delivery, Phase 3	N/A	N/A	N/A
Block II Milestone III/Block III Milestone II	N/A	N/A	TBD
Incremental Delivery Phase 3	N/A	N/A	N/A

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Op Eval, Del 2 (RWS)	N/A	N/A	TBD
Op Eval, Del 3 (ACE)	N/A	N/A	TBD
Op Eval, Del 4 (Advanced Capability)	N/A	N/A	TBD
Block II Milestone II	N/A	N/A	N/A
PEO Program Review Decision (to procure Phase-3 CCS replacements)	N/A	N/A	
Operational Assessment	N/A	N/A	

b. Current Change Explanations -- None.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Maintainability (ACE)				
MTTR - DS (hr)	3.0	3.0 / 3.0	TBD	3.0
MTTR - Unit (hr)	1.0	1.0 / 1.0	TBD	1.0
Operational Availability (Ao)	0.8	0.8 / 0.8	TBD	0.8
Intelligence Development	All Source corre- lated database auto-IPB product, receive, manipu- late, display, & store secon- dary/UAV imagery.	All / All Source / Source corre- / corre- lated / later database/ auto-IPB/ product, / IPB receive, / products manipu- / late, / display, / & store / secon- / dary/UAV/ imagery. /	TBD	All Source corre- lated data base auto- IPB product, receive, manipu- late, display and store second- ary/UAV imagery.

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Target Development	Auto genera- tion of target nomina- tion msg w/in 30 seconds of receipt of info meeting preset criteria in 90% of all cases.	Auto / Genera- tion of / target target / nomina- tion msg/ w/in 2 w/in 30 / minutes seconds / of of / receipt receipt / of info of info / meeting meeting / analyst preset / preset criteria/ criteria in 90% / in 85% of all / of all cases. / cases.	TBD	Auto- genera- tion of target nomina- tion msg w/in 30 seconds of receipt of info meeting preset criteria in 90% of all cases.
Collection Management	Integra- tion of DoD Std Collect- ion Mgt Systems.	Integra-/ Integra- tion of / tion of DoD Std / Army Collect-/ Std. ion Mgt / Collect- Systems./ ion / Mgt. / Systems	TBD	Integra- tion of DoD Std Collect- ion Mgt systems.
Interoperability with ATCCS (SCI/ Collateral)	Auto Sanitize	Auto / Manual Sanitize/ Sanitize	TBD	Auto- Sanitize
Interoperability with DIA MIIDS/IDB	Auto Data Base Exchange	Auto / Bulk Data / Load Base / Updates Exchange/	TBD	Auto Database Exchange
Direct trans- mission/receipt of SCI/Non-SCI Message Traffic	Computer to Computer File Exchange	Computer/ Process to / All ASAS Computer/ Required File / DoD Std. Exchange/ MTF / Messages / Automa- / tically / in 95% / of all / trials.	TBD	Computer to Computer File Exchange

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	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Message Volume	Process 29,000 combined I/O msgs w/ peak => 4,350 per hour in 24 hours at Division	Process / Process 29,000 / 21,000 combined/ I/O msgs/ w/ peak / => 4,350/ per hour/ in 24 / hours at/ Division/	TBD	Process 29,000 combined I/O msgs w/peak => 4,350 per hour in 24 hours at Division
DIA Accreditation for Operation	Multi- Level Security Process	Multi- / System Level / High Security/ Process /	TBD	Multi- Level Security Process
Continuity of operations during tactical redeployment	=> 2,828 I/O msgs combined during peak hour.	=> 2,828/ I/O msgs/ combined/ during / peak / hour. /	TBD	=> 2,828 I/O msgs combined during peak hour.

USMTF - US Message Text Format
TSE - Tactical Operations Center Support Element
TCAE - Technical Control and Analysis Element
FSIC - Forward Sensor Interface and Control
ENSIT - Enemy Situation
CCS - Communications Control Set
G2-TOC - Assistant Chief of Staff, Intelligence (General Staff)
Tactical Operations Center
EAC - Echelons Above Corps

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	259.3	259.3	263.7
Procurement	279.8	279.8	318.3
Flyaway	(256.3)		(294.4)
Other Wpn Sys Costs			(0.0)
Peculiar Support	(0.5)		(0.5)
Initial Spares	(23.0)		(23.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 86 Base-Year \$	539.1	539.1	582.0
Escalation	270.7	270.7	290.9
Development (RDT&E)	(108.2)	(108.2)	(105.9)
Procurement	(162.5)	(162.5)	(185.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	809.8	809.8	872.9
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	28	28	28
Total	28	28	28

ASAS unit of measure consists of a system being fielded to 28 Army Contingency units in Force Packages I through III. These units are Army priority units identified in Division, Corps, and Echelons-Above-Corps.

c. Foreign Military Sales --
Not Applicable.

d. Nuclear Costs --
None.

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 93 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 86 BY\$)	582.0	539.1	
(2) Quantity	28	28	
(3) Unit Cost	20.786	19.254	+7.96
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 86 BY\$)	318.3	279.8	
(2) Quantity	28	28	
(3) Unit Cost	11.368	9.993	+13.76

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	367.5	442.3	-	809.8
Previous Changes:				
Economic	-13.9	-25.4	-	-39.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+3.0	-	-	+3.0
Estimating	+12.2	+39.0	-	+51.2
Other	-	-	-	-
Support	-	-13.0	-	-13.0
Subtotal	+1.3	+0.6	-	+1.9
Current Changes:				
Economic	-1.1	-2.0	-	-3.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.9	+50.0	-	+51.9
Other	-	-	-	-
Support	-	+12.4	-	+12.4
Subtotal	+0.8	+60.4	-	+61.2
Total Changes	+2.1	+61.0	-	+63.1
Current Estimate	369.6	503.3	-	872.9

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

Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	259.3	279.8	-	539.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+2.2	-	-	+2.2
Estimating	+0.9	+10.0	-	+10.9
Other	-	-	-	-
Support	-	-7.5	-	-7.5
Subtotal	+3.1	+2.5	-	+5.6
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.3	+28.1	-	+29.4
Other	-	-	-	-
Support	-	+7.9	-	+7.9
Subtotal	+1.3	+36.0	-	+37.3
Total Changes	+4.4	+38.5	-	+42.9
Current Estimate	263.7	318.3	-	582.0

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-1.1
	Adjustment for Current and Prior Inflation. (Estimating)	0.0	+0.1
	Revised Program Office Estimate (Estimating)	+1.3	+1.8
	RDT&E Subtotal	+1.3	+0.8
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-2.0
	Increased Initial Spares requirement (Support)	+7.9	+12.4
	Correction of error in Sep 96 SAR which cited 2.4M v 52.4M (FY05) (Estimating)	+29.4	+50.0
	New requirement to purchase Bde/Bn workstations, Comms Control Sets and Shelterized Remote Workstations (Estimating)	+28.0	+46.9
	Revised Program Office Estimate (Estimating)	-29.3	-46.9
	Procurement Subtotal	+36.0	+60.4

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
28.92	-1.51	--	--	+0.11	+3.68	--	-0.02	+2.26	31.18

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
15.80	-0.98	--	--	--	+3.18	--	-0.02	+2.18	17.98

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	OCT 93
Milestone III	N/A	N/A	N/A	TBD
FUE/IOC	N/A	N/A	N/A	TBD
Total Cost	1210.6	809.6	0	826
Total Quantity	0	28	28	28
Prog Acq Unit Cost	0	28.92	0	29.5

No Milestone I because program originated out of a joint service testbed and was managed outside traditional acquisition milestones as the Joint Tactical Fusion Program Management Office which reported directly to the Army as lead service. In 1990, program was placed under traditional acquisition procedures and policies and became an Army Systems Acquisition Review Council (ASARC) Defense Acquisition Board (DAB) program.

No Initial Estimate for PAUC was possible because no unit of measure had been defined.

Revised program documentation is currently in Army staffing. Approved cost and schedule will be entered in the next SAR.

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

a. RDT&E --

ASAS Block II:
Martin Marietta Astro, Littleton CO
DAAB07-94-C-A515, CPAP
Award: October 29, 1993
Definitized: October 29, 1993

Initial Contract Price		
Target	Ceiling	Qty
\$115.2	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$114.5	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$108.9	\$108.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$2.6	\$-0.9
Cumulative Variances To Date (12/31/96)	\$0.7	\$0.6
Net Change	\$-1.9	\$1.5

Explanation of Change:

Current cost and schedule variances are not considered significant. The current program is being restructured and updated information will be provided in future SAR.

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

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

Appropriation	Prior Years (FY91-97)	Budget Year (FY98)	Budget Year (FY99)	Balance To Complete (FY00-05)	Total
RDT&E	204.1	24.0	26.2	115.3	369.6
Procurement	27.1	7.8	25.3	443.1	503.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	231.2	31.8	51.5	558.4	872.9

b. Annual Summary -- Block II/III

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991				2.7	3.3
1992				15.2	19.1
1993				33.4	42.9
1994				6.4	8.4
1995				30.8	41.1
1996				36.7	50.0

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ASAS, December 31, 1996

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

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				28.3	39.3
1998				16.9	24.0
1999				18.1	26.2
2000				15.3	22.7
2001				20.9	31.6
2002				20.0	30.9
2003				19.0	30.1
2004					
Subtotal				263.7	369.6

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995			2.8	3.3	4.5
1996			5.9	7.4	10.3
1997			8.7	8.7	12.3
1998			5.4	5.4	7.8
1999	2		17.2	17.2	25.3
2000	5		37.6	39.2	59.1
2001	6		41.8	46.4	71.4
2002	5		35.8	43.1	67.9
2003	5		28.6	37.0	59.7
2004	5		69.2	69.2	114.7
2005			41.4	41.4	70.3
Subtotal	28		294.4	318.3	503.3

Recurring costs occur without corresponding quantities due to incremental procurement of workstation upgrades from FY95-FY99. The FY05 recurring costs are associated with procurement of Brigade/Battalion workstations which are outside the system quantity description.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	28		294.4	582.0	872.9

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17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 238.6

Percent Total Program Expended: 27.3%

Expenditures represent Block II/III.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --
(Reference: Army Cost Position (ACP), July 1993) The concept of operation for ASAS is a mobile battlefield automated data processing system operating on a peacetime scenario using an operating tempo of 2160 hours per year (HPY) (except Military Pay which is based on a wartime scenario with an operating tempo of 7555.5 HPY. The system employs a three tier maintenance concept. At the Organizational level, system malfunctions will be analyzed down to the Line Replaceable Unit (LRU); at the Intermediate (DS/GS) level, repair and replacement of unserviceable assemblies and sub-assemblies will be accomplished; and major overhaul and rebuilding will occur at the Depot.

The costs to operate and support the system include personnel costs of operators, maintainers, and support personnel. Permanent change of station costs are included. The sustaining materiel cost consists primarily of replenishment spares and repair parts, POL, and Modifications Kits.

There is no antecedent system.

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

Cost Element	Avg Annual Cost Per Block II	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.0	0.0
Indirect Costs	0.4	0.9
O&S Consumables	0.0	0.0

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

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

Cost Element	Avg Annual Cost Per Block II	Avg Annual Cost Per Antecedent
Direct Depot Maintenance	0.4	1.0
Sustaining Investment	0.2	0.4
Other Direct Costs	0.2	0.1
Personnel	1.7	1.2
Total	2.9	3.6

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PROGRAM: Minuteman III PRP

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Minuteman III Propulsion Replacement Program (MM III PRP)
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:
 OO-ALC/LM COL Terrence Crossey
 6014 Dogwood Ave Assigned: June 1, 1994
 Hill AFB, UT 84056-5816 DSN 777-8645; COMM (801)777-8645
4. (U) Program Elements/Procurement Line Items:
 RDT&E:
 (U) PE 0604851F
 PROCUREMENT:
 (U) APPN 3020 ICN LGM30G (Air Force)

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97--0082

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 AND SECURITY REVIEW (OASD-PA)
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Minuteman III PRP, December 31, 1996

7. (U) Executive Summary (Cont'd):

The last of the three solid stage preliminary design reviews was successfully completed in Oct 96. The resulting development specifications will be placed under program office control in Feb 97. All three software modification contracts were awarded during the first quarter of FY 97. The Ordnance Life Extension Program is currently in source selection with contract award anticipated in Feb 97.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone II AFSARC	JUN 94	JUN 94	JUN 94
DT&E Phase Start	APR 95	APR 95	APR 95
PDR Close-out	FEB 98	FEB 98	FEB 98
CDR Close-out	AUG 98	AUG 98	AUG 98
LRIP Contract Award	OCT 99	OCT 99	OCT 99
DT&E Phase Complete	JUN 99	JUN 99	JUN 99
IOT&E Phase Start	JUL 99	JUL 99	JUL 99
IOT&E Phase Complete	MAR 00	MAR 00	MAR 00
PCA Close-out	SEP 00	SEP 00	SEP 00
Milestone III Review	SEP 00	SEP 00	SEP 00
LRIP Booster FAD	MAR 01	MAR 01	MAR 01
IOC	JAN 02	JAN 02	JAN 02

(U) ACRONYMS:

CDR- Critical Design Review
DT&E- Developmental Test and Evaluation

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

IOC- Initial Operational Capability
IOT&E- Initial Operational Test and Evaluation
LRIP- Low Rate Initial Production
PCA- Physical Configuration Audit
PDR- Preliminary Design Review

b. Current Change Explanations -- None.

10. (U) Performance Characteristics:

a. Performance --

(b)(1)



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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	340.0	336.8	329.3
Procurement	1911.4	1750.0	1745.4
Flyaway	(1864.7)		(1697.6)
Other Wpn System Costs	(46.7)		(47.8)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 94 Base-Year \$	2251.4	2086.8	2074.7
Escalation	567.9	514.0	508.3
Development (RDT&E)	(30.6)	(30.5)	(28.3)
Procurement	(537.3)	(483.5)	(480.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2819.3	2600.8	2583.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	607	607	607
Total	607	607	607

(U) The LRIP quantities approved at Milestone II are 9 (first year).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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Minuteman III PRP, December 31, 1996

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (Dec 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BYS)	2074.7	2086.8	
(2) Quantity	607	607	
(3) Unit Cost	3.418	3.438	-0.58
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BYS)	1745.4	1750.0	
(2) Quantity	607	607	
(3) Unit Cost	2.875	2.883	-0.28

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	370.6	2448.7	-	2819.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-1.2	-0.3	-	-1.5
Quantity	-	-	-	-
Schedule	-	+13.0	-	+13.0
Engineering	-	-	-	-
Estimating	-11.8	-237.1	-	-248.9
Other	-	-	-	-
Support	-	+1.1	-	+1.1
Subtotal	-13.0	-223.3	-	-236.3
Total Changes	-13.0	-223.3	-	-236.3
Current Estimate	357.6	2225.4	-	2583.0

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

(U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	340.0	1911.4	-	2251.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.7	-167.1	-	-177.8
Other	-	-	-	-
Support	-	+1.1	-	+1.1
Subtotal	-10.7	-166.0	-	-176.7
Total Changes	-10.7	-166.0	-	-176.7
Current Estimate	329.3	1745.4	-	2074.7

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-1.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Decrease in funding for Small Business Inovative Research (SBIR) requires reduction in engineering changes to contractors. (Estimating)	-11.0	-12.1
RD&E Subtotal	-10.7	-13.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-0.3
Realignment of procurement buy from earlier to later years. (Schedule)	0.0	+13.0
Revised estimate due to mis-application of inflation indices in the out years. (Estimating)	-167.1	-237.1

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Minuteman III PRP, December 31, 1996

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

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year	Then-Year
+1.1	+1.1

Increased estimate in Other Weapon System
Costs. Increased estimate in engineering
change orders. (Support)

Procurement Subtotal

-166.0	-223.3
--------	--------

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.64	--	+0.01	+0.02	--	-0.41	--	--	-0.38	4.26

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.03	--	+0.01	+0.02	--	-0.39	--	--	-0.36	3.67

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	JUN 94	N/A	JUN 94
Milestone III	N/A	SEP 00	N/A	SEP 00
FUE/IOC	N/A	JAN 02	N/A	JAN 02
Total Cost	N/A	2819.3	N/A	2583
Total Quantity	N/A	607	N/A	607
Prog Acq Unit Cost	N/A	4.64	N/A	4.26

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

a. RDT&E --			Initial Contract Price		
(U) <u>MMIII PRP STAGE 1:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
THIOKOL, BRIGHAM CITY, UT			\$84.3	N/A	0
F42610-94-C-0031, CPAF					
Award: August 1, 1994					
Definitized: August 1, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$86.4	N/A	0	\$87.7	\$87.7	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-0.3	\$-0.3	
Cumulative Variances To Date (12/30/96)			\$-0.5	\$-0.6	
Net Change			\$-0.2	\$-0.3	

Explanation of Change:

(U) The net change in cost variance of \$-0.2M is insignificant.

The net change in schedule variance of \$-0.3M is insignificant.

These variances have no impact on the contract or the program.

The change in target price from \$84.3 to \$86.4 is due to qualifying Polyacrylonitrile (PAN) as a substitute for Rayon manufactured by the North American Rayon Corporation (NARC) and the addition of nozzle rework identified during engineering studies.

(U) <u>MMIII PRP STAGE 2:</u>			Initial Contract Price		
AEROJET, SACRAMENTO, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F42610-94-C-0027, CPAF			\$75.5	N/A	0
Award: July 18, 1994					
Definitized: July 18, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$77.2	N/A	0	\$81.5	\$81.5	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-0.7	\$-0.5	
Cumulative Variances To Date (12/30/96)			\$-0.5	\$-0.5	
Net Change			\$0.2	\$0.0	

Explanation of Change:

(U) The net change in cost variance of \$0.2M is insignificant.

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

These variances have no impact on the contract or the program.

The change in target price from \$75.5 to \$77.2 is due to the addition of the stress relief boot bulb to satisfy margins of safety requirements and the addition of the cryogenic propellant removal modification.

(U) <u>MMIII PRP STAGE 3:</u> CHEMICAL SYSTEMS DIVISION, SAN JOSE CA F42610-94-C-0026, CPAF Award: July 1, 1994 Definitized: July 1, 1994	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$82.0	N/A	0

	Current Contract Price			Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$82.0	N/A	0	\$89.8	\$89.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2.1	\$-0.2
Cumulative Variances To Date (12/30/96)	<u>\$-3.1</u>	<u>\$-0.7</u>
Net Change	\$-1.0	\$-0.5

Explanation of Change:

(U) The net change in cost variance of \$-1.0M is due to change in contractor's business base.

The net change in schedule variance of \$-0.5M is due to engineering study tasks.

These variances have no impact on the contract or the program.

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

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

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	190.2	71.0	66.0	30.4	357.6
Procurement	-	-	-	2225.4	2225.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	190.2	71.0	66.0	2255.8	2583.0

b. Annual Summary -- Minuteman III PRP

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				14.7	14.9
1995				24.9	25.8
1996				62.6	66.1
1997				77.4	83.4
1998				64.5	71.0
1999				58.7	66.0
2000				26.5	30.4
Subtotal				329.3	357.6

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	9		109.8	113.2	132.0
2001	33		167.7	174.1	207.3
2002	86		267.3	273.3	333.1
2003	96		269.2	275.7	344.3
2004	96		240.4	247.2	316.6
2005	96		227.7	234.2	308.0
2006	96		214.8	221.1	298.2
2007	95		200.7	206.6	285.9
Subtotal	607		1697.6	1745.4	2225.4

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Minuteman III PRP, December 31, 1996

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	607		1697.6	2074.7	2583.0

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 95.4

(U) Percent Total Program Expended: 3.7%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
The concept of operations is based on 500 deployed boosters. With the possible exception of changes resulting from the Technology Insertion (TI) portion of the program of PRP, Integrated Logistics Support areas/requirements mentioned herein will remain the same as those required for the existing MM III weapon system. Maintenance planning will involve two level maintenance; Organizational, and Depot. There will be no new support equipment, training, logistics/supply support, computer systems, and operational facilities resources necessary to support the new motors beyond those already in place. Existing technical data will govern all work to be performed unless a specific technical order, drawing, or work specification is revised to reflect a new process and/or material as a result of the TI effort. Since the PRP was designed to interface seamlessly with existing MM III support functions, there are no delta costs associated with implementing the PRP.

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

Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

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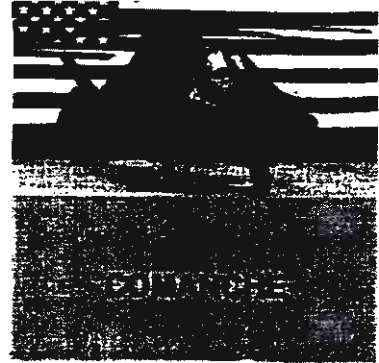
A-9 COMANCHE

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: Comanche (RAH-66)

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Comanche Program (RAH-66)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

Comanche Program Manager's Office	BG James R. Snider
ATTN: SFAE-AV-RAH	Assigned: September 27, 1994
4300 Goodfellow Blvd.	DSN 693-1800; COMM 314 263-1800
St. Louis, MO 63120-1798	

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

RDT&E:

- (U) PE 63220 Project D325
- (U) PE 64216 Project DC72
- (U) PE 64223 Project D327, D397, DC72
- (U) PE 64810 Project D327, DC72

(U) PE 64810 Project D327/DC72 (FY88 Only)

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DEPARTMENT OF DEFENSE**

~~Classification Authority: [Redacted]~~
~~Downgrade Instructions: [Redacted]~~
~~Declassify on: [Redacted]~~

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Comanche (RAH-66), December 31, 1996

5. (U) References:

SAR Baseline (Planning Estimate):

(U) AMC Approved Acquisition Strategy (December 16, 1985).

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated February 5, 1997.

6. (U) Mission and Description:

(U) This program provides for the development of the RAH-66 Comanche. The Army requires an aviation system capable of performing aerial reconnaissance on the modern battlefield. Combat lessons learned and mission analysis have repeatedly supported a critical combat requirement for an aviation reconnaissance system capable of 24 hour combat operations, responsive to the battlefield commander in night and adverse weather conditions and able to survive on the 21st century battlefield. This air cavalry helicopter system will be self-deployable with highly improved sustainability and availability to support continuous combat operations in any world trouble spot. Comanche will be able to find the enemy with a low probability of self-detection and either engage or hand-off the target based on the battle commander's decision. The air cavalry system will be able to operate effectively in the close, deep or rear battles. Comanche incorporates emerging technologies to provide a leap-ahead air cavalry system, field a world-wide deployable, air cavalry reconnaissance helicopter; operate with minimal logistical burden, serve as the command and control node for the commander to win the knowledge war. This system will provide three dimensional battlefield situational awareness with greater depth and breadth than currently possible. This picture of the battlefield will be overlaid on digital maps that consolidate all real time data. The system will display friend or foe discrimination and will avoid detection and survive by reducing signature and incorporating low observable technology. The Comanche helicopter will replace the current light fleet of tactically obsolescent AH-1, OH-6 and OH-58A/C helicopters. The Comanche system will be integrated with the Army aviation force structure to complement the AH-64 Apache helicopter.

7. (U) Executive Summary:

(U) In March 1982, the Army Aviation Mission Area Analysis (AAMAA) was endorsed by senior Army leadership at the Army Aviation Systems Program Review. From that review, the Comanche emerged as the most viable concept to meet fleet needs. A Comanche Justification for Major Systems New Start (JMSNS) was submitted in June 1983. The Comanche was further developed and refined during FY 1984. In December 1985, a Defense Science Board (DSB) Task Force was established to review the Comanche program. The task force reported the Army had a need for a new light helicopter and that technology existed which could support the design of a weapon system of much greater performance than the existing fleet. As the result of the June 9, 1988, Comanche Milestone I Defense Acquisition Board (DAB) review, an Acquisition Decision Memorandum (ADM) dated June 17, 1988, approved the Comanche program to proceed with Demonstration/ Validation (Dem/Val). In 1988, the Light Helicopter Turbine Engine Company (LHTEC) was

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Comanche (RAH-66), December 31, 1996

7. (U) Executive Summary (Cont'd):

announced the winner of the competitive T800 engine program. The Comanche program was restructured in August 1990. The restructure deferred the Engineering and Manufacturing Development (EMD) and extended the Dem/Val phase by an additional two years. In 1991, the Boeing Sikorsky team was declared the winner of the competitive Comanche air vehicle program and was awarded a contract for the Dem/Val Prototype phase. The Comanche program was again restructured in January 1992, as a result of the Defense Acquisition Executive Guidance and the FY 1993 President's budget reductions. The restructured contract modifications were issued to Boeing Sikorsky and LHTEC in January 1993. In December 1994, the Comanche Program was restructured as a prototype industrial/ technology base program with two flyable prototypes. As a result of the Defense Acquisition Board review of the Comanche restructured program, an Acquisition Decision Memorandum was issued in March 1995, to continue the Demonstration/Validation phase with two flyable prototypes and add six aircraft within the FYDP for user evaluation. The Comanche successfully completed first flight on January 4, 1996. Ground and flight testing continued allowing use of higher power levels required for expansion of the flight envelope.

Nunn-McCurdy unit cost reporting is not required for this pre-milestone II program in accordance with Title 10, United States Code, Section 2433.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

Nunn-McCurdy unit cost reporting is not required for this pre-milestone II program in accordance with Title 10, United States Code, Section 2433.

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Comanche (RAH-66), December 31, 1996

9. (U) Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
T800 Engine FSD Contract Award	JUL 85	JUL 85	JUL 85
Milestone I (ASARC)	FEB 87	MAY 88	MAY 88
Milestone I (DAB)	MAR 87	JUN 88	JUN 88
Award Air Vehicle Phase I Dem/Val	OCT 87	OCT 88	OCT 88
Contracts			
T800 FSD Downselection	SEP 88	OCT 88	OCT 88
USD(A) Program Review	N/A	JAN 91	JAN 91
Award Dem/Val Prototype Phase Contract	N/A	APR 91	APR 91
Early Operational Assessment	N/A	N/A	
Start	N/A	N/A	N/A
Complete	N/A	N/A	N/A
Critical Design Review	N/A	OCT 93	DEC 93
Dem/Val Prototype Flight Test Program			
Start	N/A	N/A	N/A
Complete	N/A	N/A	N/A
Milestone II (ASARC)	FEB 87	N/A	N/A
Milestone II	MAR 87	OCT 01	OCT 01
Award EMD Contract	JUL 89	N/A	N/A
First Flight	SEP 91	NOV 95	JAN 96
Initiate Assembly of EOC Aircraft	N/A	NOV 99	NOV 99
T800 Engine Production Contract Award	JAN 93	N/A	N/A
LUT			
Start	N/A	JUL 03	JUL 03
Complete	NOV 93	SEP 03	SEP 03
Updated to Preproduction Configuration	N/A	SEP 04	SEP 04
LRIP Program Review (IPR)/Contract	N/A	NOV 04	NOV 04
Award			
IOT&E Training/ARTEP			
Start	N/A	N/A	N/A
Complete	N/A	N/A	N/A
IOT&E			
Start	N/A	SEP 05	SEP 05
Complete	N/A	NOV 05	NOV 05
First Air Vehicle Production Delivery	JUL 95	N/A	N/A
First Unit Equipped	MAY 96	N/A	N/A
Production Contract	JAN 94	NOV 06	NOV 06
Milestone III	JAN 94	JUL 06	JUL 06
IOC	N/A	JUL 06	JUL 06
Depot Support Date	N/A	DEC 06	JUL 06
Organic Support Date	N/A	JUL 09	JUL 09
RAM Validation			
Start	N/A	N/A	N/A
Complete	N/A	N/A	N/A
DT/EUTE* Completed	N/A	N/A	N/A
Air Vehicle Production Contract Award	N/A	N/A	N/A
(LRIP)			
Milestone IIIA (LRIP)	N/A	N/A	N/A

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Comanche (RAH-66), December 31, 1996

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

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
IOTE Completed	N/A	N/A	N/A

b. Current Change Explanations -- None.

10. (U) Performance Characteristics:

a. Performance --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Flight Performance (Primary Mission): RAH				
Vertical Rate of Climb (VROC) (Feet per Minute (FPM), @4000 ft, 95 F & PMGW & 97.5% MRP)	500	750 / 500	TBD	500 (Ch-1)

Signature Levels:

(b)(1)

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

	<u>Planning</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Mean Time Between Essential Main- tenance Actions (MTBEMA) (hrs)	4.5	4.5 / 4.5	TBD	4.5
Crashworthiness (Vertical Impact Velocity, FPS)	N/A	□ / N/A	TBD	N/A
Maintainability: Mean Time To Repair (MTTR) (hrs)	1.0	0.86 / 1.0	TBD	.86

(b)(1)

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Comanche (RAH-66), December 31, 1996

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

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Primary Mission	N/A	N/A / N/A	TBD	N/A
Gross Weight (PMGW - lbs)				
Flight Performance (Primary Mission):				
RAH				
C-130	N/A	N/A / N/A	TBD	N/A
Turn to Target (sec)	N/A	N/A / N/A	TBD	N/A
Single Engine Operation, Knots @ CRP 100 FPM	N/A	N/A / N/A	TBD	N/A
Rate of Climb				
Self Deployable (NM) w/ 30 min. reserve	1260	N/A / N/A	TBD	N/A
Engine Size, Inter- mediate Rated Power at Sea Level Std	N/A	N/A / N/A	TBD	N/A
EMI/EMP Protection (Volt/M)	N/A	<input type="checkbox"/> / N/A	TBD	N/A

b. (U) Current Change Explanations --

(Ch-1) Current estimate of performance characteristics have been revised in accordance with the approved Acquisition Program Baseline dated February 5, 1997 to reflect actual ORD Key Performance Parameters. The following were changed.

Vertical Rate of Climb from 860 to 500
Digital Exchange Battlefield Information with Joint and Combined Arms
Forces from Yes to LINK 16.

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Comanche (RAH-66), December 31, 1996

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

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1756.2	5344.2	5327.4
Procurement	0.0	N/A	
Total Flyaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 84 Base-Year \$	1756.2	5344.2	5327.4
Escalation	376.8	2632.4	2607.2
Development (RDT&E)	(376.8)	(2632.4)	(2607.2)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2133.0	7976.6	7934.6
b. (U) Quantity --			
Development (RDT&E)	0	6	6
Procurement	0	N/A	0
Total	0	6	6

Note: Excludes 2 RDTE prototypes from the SAR Baseline and 2 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

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Comanche (RAH-66), December 31, 1996

12. (U) Unit Cost Summary:

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

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2133.0	-	-	2133.0
Previous Changes:				
Economic	-53.9	-	-	-53.9
Quantity	-	-	-	-
Schedule	+265.4	-	-	+265.4
Engineering	+1154.8	-	-	+1154.8
Estimating	+4477.3	-	-	+4477.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+5843.6	-	-	+5843.6
Current Changes:				
Economic	-11.5	-	-	-11.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-30.5	-	-	-30.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-42.0	-	-	-42.0
Total Changes	+5801.6	-	-	+5801.6
Current Estimate	7934.6	-	-	7934.6

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Comanche (RAH-66), December 31, 1996

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

(U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1756.2	-	-	1756.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	+145.2	-	-	+145.2
Engineering	+685.6	-	-	+685.6
Estimating	+2757.2	-	-	+2757.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+3588.0	-	-	+3588.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-16.8	-	-	-16.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-16.8	-	-	-16.8
Total Changes	+3571.2	-	-	+3571.2
Current Estimate	5327.4	-	-	5327.4

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-11.8
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Adjustment for Current and Prior Inflation. (Estimating)	-0.6	-0.4
Revised Estimate of Comanche Early Operational Capability Program (Estimating)	-16.2	-30.1
RDT&E Subtotal	-16.8	-42.0

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Comanche (RAH-66), December 31, 1996

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

- a. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.
- b. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	MAR 87	N/A	N/A	JUN 88
Milestone II	MAR 87	N/A	N/A	OCT 01
Milestone III	JAN 94	N/A	N/A	JUL 06
FUE/IOC	N/A	N/A	N/A	JUL 06
Total Cost	2133	0	0	7934.6
Total Quantity	0	0	0	0
Prog Acq Unit Cost	0	0	0	0

(U) The Comanche Program is pre-Milestone II program and reports only RDT&E costs.

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

a. RDT&E --

(U) Dem/Val Prototype:

Boeing Sikorsky JPO, Philadelphia PA
DAAJ09-91-C-A004, CPIF/AF
Award: April 12, 1991
Definitized: April 12, 1991

Initial Contract Price		
Target	Ceiling	Qty
\$1956.2	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$2032.7	N/A	0	\$2032.7	\$2032.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-35.9	\$-14.2
Cumulative Variances To Date (11/30/96)	\$4.1	\$-9.4
Net Change	\$40.0	\$4.8

Explanation of Change:

(U) Schedule performance was driven by achieving first flight of aircraft #1 in January 1996 and the continued flight testing of aircraft #1.

No significant change in cost variance.

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Comanche (RAH-66), December 31, 1996

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

(U) T800 Growth AVS:

LHTEC, St. Louis, MO

DAAJ09-92-C-0453, CPFF

Award: April 13, 1992

Definitized: January 5, 1993

Initial Contract Price		
Target	Ceiling	Qty
\$208.3	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$285.5	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$285.5	\$285.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$4.6	\$-3.5
Cumulative Variances To Date (11/30/96)	\$-0.2	\$-1.2
Net Change	\$-4.8	\$2.3

Explanation of Change:

(U) Both cost and schedule performance are driven by the settlement of the Growth Engine and Air Vehicle Support portions of the contract.

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

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

Appropriation	Prior Years (FY84-97)	Budget Year (FY98)	Budget Year (FY99)	Balance To Complete (FY00-09)	Total
RDT&E	3591.7	282.0	371.9	3689.0	7934.6
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3591.7	282.0	371.9	3689.0	7934.6

b. Annual Summary -- COMANCHE (RAH-66)

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				1.0	1.0
1985				67.8	71.3
1986				98.8	107.0
1987				123.2	137.6
1988				109.4	127.1
1989				146.4	177.0
1990				215.3	270.2

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Comanche (RAH-66), December 31, 1996

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

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991				259.8	338.3
1992				382.2	509.3
1993				291.3	397.3
1994				262.7	365.2
1995				334.8	474.9
1996				196.1	284.1
1997				224.1	331.4
1998				186.9	282.0
1999				241.4	371.9
2000				280.6	441.3
2001				365.4	587.0
2002				386.4	634.1
2003				377.6	634.6
2004				243.5	420.0
2005				213.6	378.0
2006				144.3	262.0
2007				80.0	149.0
2008				56.0	107.0
2009				38.8	76.0
Subtotal	6			5327.4	7934.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	6			5327.4	7934.6

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date - None.

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3177.5

(U) Percent Total Program Expended: 40.0%

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18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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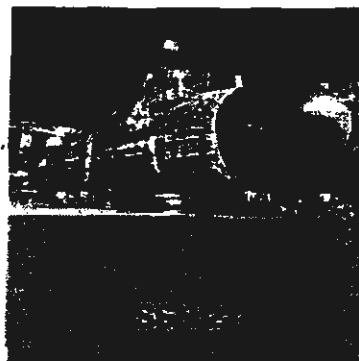
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SSN 21 CLASS/BSY-2

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1. (U) Designation and Nomenclature (Popular Name): HIGH SPEED NUCLEAR ATTACK SUBMARINE & COMBAT SYSTEM

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

SEAWOLF PROGRAM MANAGER

CAPT P.E. SULLIVAN

NATIONAL CENTER 3, ROOM 7N24

Assigned: February 24, 1995

PMS350

DSN 332-7201; COMM 703-602-7201

ARLINGTON, VA 22242-5168

(U) AN/BSY-2 SCS PROGRAM MANAGER

CAPT R.B. COOK

National Center 3, Room 3W30

Assigned: October 27, 1995

PMS418

AV 332-0056 COMM 703-602-0056

Arlington, VA 22242-5168

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

RDT&E:

(U) PE 0603561N

(U) PE 0603562N

(U) PE 0603569N

(U) PE 0603570N

(U) PE 0604524N (Shared) Project F1941, S1347

(U) PE 0604561N

(U) PE 0604567N

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

(U) APPN 1810 ICN 0204281N (Navy) (Shared)
(U) APPN 1810 ICN 0204283N (Navy) (Shared)
(U) APPN 1810 ICN 0804731N (Navy) (Shared)
(U) APPN 1810 ICN 0204282N (Navy)
(U) APPN 1611 ICN 0204281N (Navy)

MILCON:

(U) PE 0204896N
(U) PE 0804731N (Shared)

5. (U) References:

SAR Baseline (Production Estimate):

(U) Production Estimates: DCP, SEAWOLF (SSN21) Class Submarine dated 11 May 1988.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated January 3, 1997.

6. (U) Mission and Description:

(U) The SEAWOLF submarine is a multi-mission vessel that introduces unprecedented performance capabilities. It is the quietest, most heavily-armed attack submarine the Navy has ever built. The design of the SEAWOLF is based on an extensive research and development program and incorporates technological advancements to provide: order of magnitude improvement in ship quieting; improved acoustic sensors; more capable combat systems; greater weapon capacity and capability; quieter launch; weapon launch at high ship speed; advanced reactor; improved performance machinery program; an advanced propulsor; increased operating depth; improved ship control; and enhanced survivability.

The SEAWOLF has eight large-diameter torpedo tubes, and holds significantly more weapons than any other U.S. nuclear attack submarine. A stronger hull material enables deeper dives. In addition, the vessel is configured for operation in Arctic areas.

The AN/BSY-2 Submarine Combat System supports the SSN 21 mission to conduct prompt and sustained combat operations. The AN/BSY-2 Submarine Combat System improves upon existing combat systems to meet the expanded operational requirements of attack submarines in countering the future threat. The AN/BSY-2 Submarine Combat System provides combat control and acoustic functions to support the ship characteristics of the SSN-21. The warfare tasks supporting this mission are: Strike Warfare, Anti-Submarine Warfare (ASW), Surveillance/Indication and Warning, Anti-Surface Warfare, Mine Warfare, Special Warfare; Ocean Surveillance, Intelligence/Reconnaissance, Command, Control, and Communication (C3), Electronic Warfare, support of battle group operations, and Naval Special Warfare.

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7. (U) Executive Summary:

(U) The Secretary of the Navy (SECNAV) reviewed the New Design SSN Program and baseline design for the SSN 21 in December 1983, and approved the Single Sheet Ship Characteristics and Chief of Naval Operations (CNO) recommendation for initiating preliminary design. A Secretary of Defense (SECDEF) Program Review on December 21, 1983 served as the Defense System Acquisition Review Council (DSARC) Milestone I and authorized preliminary design. The Navy completed preliminary design in June 1985. Later in the month, the SEAWOLF Program was reviewed and approved by the DSARC at Milestone II. A Milestone III decision was completed in June 1988.

In December 1991, SEAWOLF construction profile was restructured in response to the reduced threat resulting from the end of the Cold War. The original 29 ship class was reduced to two hulls. The 1993 SECDEF Bottom Up review recommended the construction of a third SEAWOLF in an effort to bridge the production gap and preserve the Industrial Base until construction of a new submarine design in 1998.

Delivery of the lead ship is imminent. The SSN 21 crew took Operational Control (OPCON) of AN/BSY-2 in February 1996. In May 1996, the SSN 21 was declared In-service. Successful completion of dock trials in June 1996 paved the way for successful completion of Alpha Sea Trials in July, followed by Bravo Sea Trials in September. During Bravo Sea Trials, the SSN 21 sustained damage to the Wide Aperture Array (WAA) which required a significant re-engineering effort. System Design Certification Test (SDCT) 2 was installed in October 1996 and is undergoing functionality of the combat system to the SEAWOLF. In October 1996, the Functional Configuration Audit was completed and the AN/BSY-2 Product Baseline was established. The WAA re-engineering effort resulted in a schedule breach, approved in the modified Acquisition Program Baseline (APB) in January 1997. The ship continues through its trial and delivery sequence in spring of 1997.

The SSN 22 and SSN 23 are progressing smoothly. The contract for the SSN 23 was awarded in June 1996. The SSN 22 achieved pressure hull erect in September 1996.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

(b)(1)

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate	
SSN-21 Submarine				
Program Initiated	JUL 82	N/A	JUL 82	
Milestone I (DSARC I)	DEC 83	N/A	DEC 83	
Milestone II (DSARC II)	JUN 85	N/A	JUN 85	
FSD Contract Award	JUL 85	N/A	JUL 85	
Milestone IIB (JRMB)	OCT 86	N/A	OCT 86	
Milestone IIIA	JUN 88	JUN 88	JUN 88	
First Production Contract Award	JAN 89	JAN 89	JAN 89	
DAB Review	MAR 90	N/A	MAR 90	
Delivery (First Ship)	MAY 95	MAY 97	MAY 97	(Ch-1)
Initial Operational Capability	MAY 95	MAY 97	MAY 97	(Ch-2)

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(IMA) Ready for Operation			
Depot Maintenance Activity Ready for Operation	N/A	DEC 98	DEC 98
Assign Homeport for 2 Ship Class	N/A	NOV 95	NOV 95
Assign Intermediate Activity(IMA)	N/A	NOV 95	NOV 95
Assign Depot Maintenance Activity	N/A	NOV 95	NOV 95

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
AN/BSY-2			
System Design Definition Contract	N/A	N/A	
Award			
RCA Corporation	JAN 86	N/A	JAN 86
IBM Corporation	MAR 86	N/A	MAR 86
Milestone I (JRMB)	JUN 86	N/A	JUN 86
Milestone II	NOV 87	FEB 88	FEB 88
FSD Contract Award	JAN 88	N/A	MAR 88
Authorization for Limited Production (DAB)	DEC 89	N/A	DEC 89
Authorization for Limited Production (DAB)	DEC 91	N/A	JAN 91
Material Support Date (AN/BQG-5)	NOV 92	N/A	OCT 93
TECHEVAL (AN/BQG-5)	AUG 93	N/A	N/A
Material Support Date (AN/BSY-2)	NOV 93	N/A	MAY 95
Authorization for Limited Production (DAB)	DEC 93	N/A	N/A

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Program Deviation Report for the breach of Complete OPEVAL (OT III) is being processed.

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
SSN-21 Submarine				
Length (ft)	353	N/A / N/A	353	353
Beam Max (ft)	40	N/A / N/A	40	40
Draft Nav (ft)	34	N/A / N/A	34	34
Displacement (tons)	9150	N/A / N/A	9150	9150

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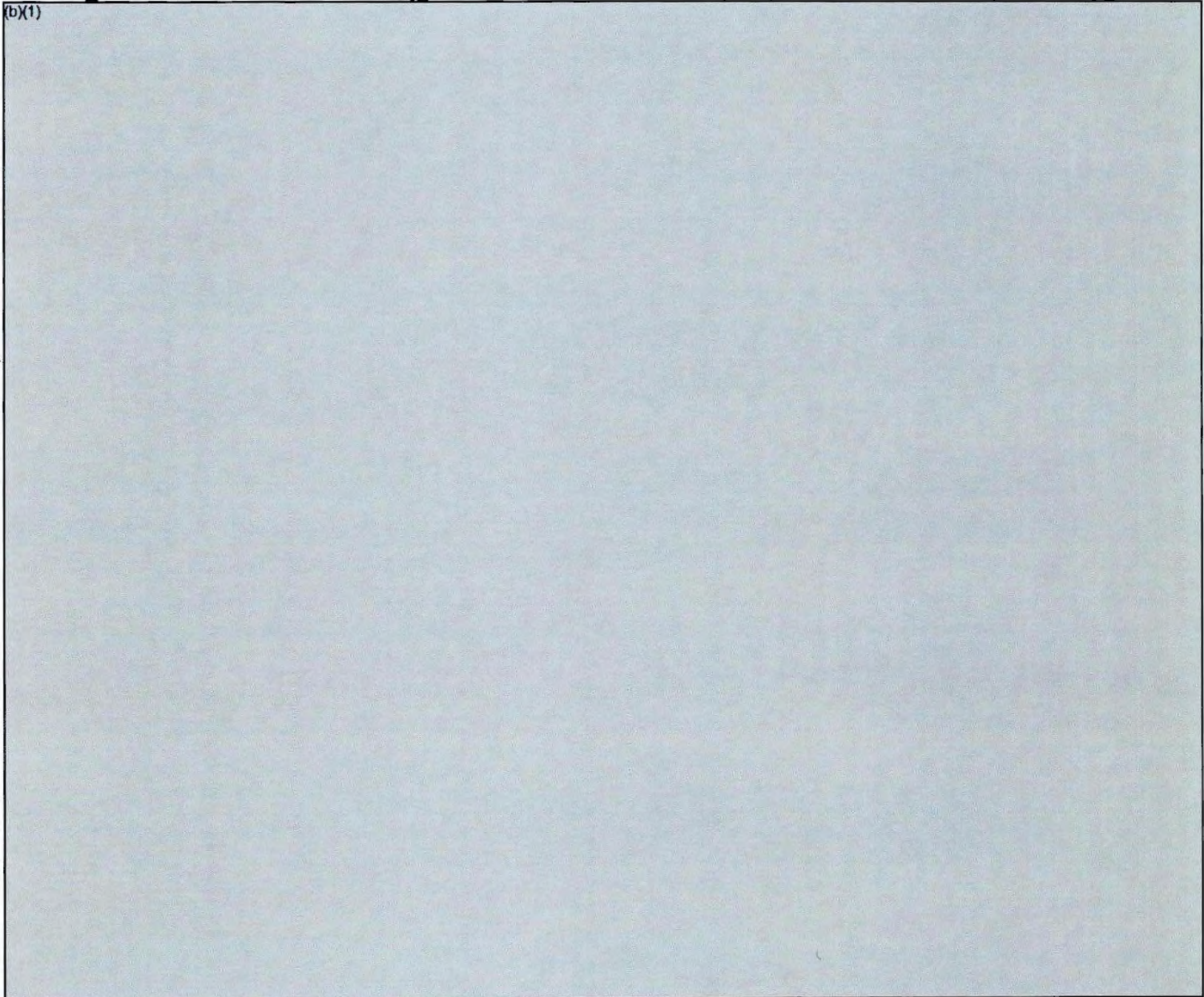
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10a. (U) Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(c) Transients	N/A	No more / No more detect- / detect- able / able than / than steady / steady state / state	TBD	No more detect- able than steady state

(b)(1)



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

Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)



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SSN 21 CLASS/BSY-2, December 31, 1996

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

Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)



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SSN 21 CLASS/BSY-2, December 31, 1996

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

Production Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	4335.0	4594.1	4672.2
Procurement	15686.3	7273.2	7562.6
Basic Ship Costs	(8083.6)		(4672.6)
GFE	(5952.8)		(2368.1)
Other Sailaway	(111.0)		(93.1)
OF/PD	(570.2)		(129.3)
Total Sailaway	(14717.6)		(7263.1)
OPN	(0.0)		(0.0)
AN/BSY-2 OPN	(968.7)		(299.5)
Total Other Wpn Sys	(968.7)		(299.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	98.6	27.5	25.1
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	20119.9	11894.8	12259.9
Escalation	1619.2	884.4	926.0
Development (RDT&E)	(-125.0)	(-19.5)	(1.6)
Procurement	(1735.1)	(901.4)	(922.2)
Construction (MILCON)	(9.1)	(2.5)	(2.2)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	21739.1	12779.2	13185.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	12	3	3
Total	12	3	3
c. (U) Foreign Military Sales --			
None.			

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

d. (U) Nuclear Costs --
\$1043.5M

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (Jan 97 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BYS)	12259.9	11894.8	
(2) Quantity	3	3	
(3) Unit Cost	4086.633	3964.933	+3.07
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BYS)	7562.6	7273.2	
(2) Quantity	3	3	
(3) Unit Cost	2520.867	2424.400	+3.98

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	4210.0	17421.4	107.7	21739.1
Previous Changes:				
Economic	-113.4	+496.6	+3.5	+386.7
Quantity	-	-15562.8	-	-15562.8
Schedule	-	+6354.0	-	+6354.0
Engineering	+144.8	-	-	+144.8
Estimating	+311.6	+647.6	-83.9	+875.3
Other	-	-	-	-
Support	+54.6	-867.4	-	-812.8
Subtotal	+397.6	-8932.0	-80.4	-8614.8
Current Changes:				
Economic	-0.7	-21.3	-	-22.0
Quantity	-	-	-	-
Schedule	+21.9	-	-	+21.9
Engineering	+16.5	-	-	+16.5
Estimating	+28.5	-15.1	-	+13.4
Other	-	-	-	-
Support	-	+31.8	-	+31.8
Subtotal	+66.2	-4.6	-	+61.6
Total Changes	+463.8	-8936.6	-80.4	-8553.2
Current Estimate	4673.8	8484.8	27.3	13185.9

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

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	4335.0	15686.3	98.6	20119.9
Previous Changes:				
Quantity	-	-12545.0	-	-12545.0
Schedule	-	+4369.6	-	+4369.6
Engineering	+127.8	-	-	+127.8
Estimating	+106.5	+734.9	-73.5	+767.9
Other	-	-	-	-
Support	+52.3	-691.3	-	-639.0
Subtotal	+286.6	-8131.8	-73.5	-7918.7
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	+16.3	-	-	+16.3
Engineering	+13.2	-	-	+13.2
Estimating	+21.1	-14.0	-	+7.1
Other	-	-	-	-
Support	-	+22.1	-	+22.1
Subtotal	+50.6	+8.1	-	+58.7
Total Changes	+337.2	-8123.7	-73.5	-7860.0
Current Estimate	4672.2	7562.6	25.1	12259.9

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.7
	Realignment of Full Ship Shock Test (Schedule)	+16.3	+21.9
	AN/BSY-2 Enhanced Modular Signal Processor Replacement (Engineering)	+13.2	+16.5
	Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.4
	Additional Technical Insertion Efforts (Estimating)	+35.6	+45.0
	Prior Year Adjustment (Estimating)	-4.7	-4.7
	Program Recissions (Estimating)	-10.1	-12.2
	RDT&E Subtotal	+50.6	+66.2
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-19.6
	Economic adjustment for negative program change. (Economic)	N/A	-1.7
	Adjustment for Current and Prior Inflation. (Estimating)	+13.6	+16.7
	Revised Outfitting and Post Delivery requirements (Estimating)	-34.1	-39.6

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Realignment of SSN 23 funding (Estimating)	+0.5	+1.2
Reestimate for SSN 21 SCA (Estimating)	+6.0	+6.6
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Change in AN/BSY-2 OPN (Support)	+21.9	+31.6
Procurement Subtotal	+8.1	-4.6

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline									
PAUC	Changes								PAUC
Ini Est	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	Prod Est
3875.00	-24.00	-2167.41	--	--	+76.00	--	+52.00	-2063.41	1811.59

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate									PAUC Cur Est
PAUC Prod Est	Changes								
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1811.59	+121.57	+247.17	+2125.30	+53.77	+296.23	--	-260.33	+2583.71	4395.30

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline									PUC Prod Est
PUC Ini Est	Changes								
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3174.60	-18.63	-1764.15	--	--	+7.74	--	+52.22	-1722.82	1451.78

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14b. (U) Unit Cost and Other History (Cont'd):

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC		Changes							PUC
Prod Est									Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1451.78	+158.43	-832.24	+2118.00	--	+210.83	--	-278.53	+1376.49	2828.27

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	DEC 83	DEC 83	DEC 83
Milestone II	N/A	MAY 85	JUN 85	JUN 85
Milestone III	N/A	MAR 90	JUN 88	JUN 88
FUE/IOC	N/A	NOV 94	MAY 95	MAY 97
Total Cost		0	3875	21739.1
Total Quantity		0	1	12
Prog Acq Unit Cost		0	3875	1811.59
				4395.3

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

a. Procurement --

(U) SSN 21 CONSTRUCTION:
GENERAL DYNAMICS, GROTON, CT
N00024-89-C-2000, FPIF
Award: January 9, 1989
Definitized: January 9, 1989

Initial Contract Price		
Target	Ceiling	Qty
\$726.0	\$928.7	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1224.7	\$1400.3	1	\$1391.1	\$1399.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-172.9	\$-61.4
Cumulative Variances To Date (09/28/96)	\$-213.5	\$-13.6
Net Change	\$-40.6	\$47.8

Explanation of Change:

(U) All numbers include anticipated escalation.

The change in cost variance since last year is attributable to the following factors: material availability, labor hour performance and the effects of the shrinking shipbuilding industry. The schedule variance reflects the near completion on the SSN 21. As the SSN 21 approaches

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15. (U) Contract Information (Cont'd):
 delivery, work arounds are more difficult. Work arounds are also hindered by the Congressionally mandated cost cap.

(U) <u>SSN 21 (NUCLEAR):</u>			Initial Contract Price		
Westinghouse Elec Corp, Monroeville PA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-87-C-4000, CPFF			\$70.2	N/A	0
Award: November 7, 1986					
Definitized: November 7, 1986					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$252.1	N/A	0	\$252.1	\$252.1	

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

None.

(U) Contract Comments:

The Navy has waived the cost/schedule control systems requirement for Naval Nuclear Propulsion Program procurements.

(U) <u>SSN 21 (NUCLEAR):</u>			Initial Contract Price		
Westinghouse Elec Corp, Schenectady NY			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-87-C-4001, CPFF			\$88.0	N/A	0
Award: November 7, 1986					
Definitized: November 7, 1986					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$299.9	N/A	0	\$299.9	\$299.9	

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

None.

(U) Contract Comments:

The Navy has waived the cost/schedule control systems requirement for Naval Nuclear Propulsion procurements.

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

(U) SSN 22 CONSTRUCTION:
GENERAL DYNAMICS, GROTON, CT
N00024-91-C-2902, FPIF
Award: May 3, 1991
Definitized: May 3, 1991

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$610.2	\$758.3	1	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$902.6	\$1041.1	1	\$1023.8	\$1059.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-68.8	\$-63.8
Cumulative Variances To Date (09/28/96)	\$-90.4	\$-10.6
Net Change	\$-21.6	\$53.2

Explanation of Change:

(U) All numbers include anticipated escalation.

The Current Contract Ceiling Price is lower than the Program Manager's Estimate Price At Completion (PMEPAC) because the PMEPAC includes future contract changes.

The change in cost variance since last year is attributable to labor performance and the effects of the shrinking shipbuilding industry. Schedule variance improved as Revision B29 of the Master Construction Schedule was incorporated into the work authorization file, but due to the concentration of available manning on the SSN 21 the schedule variance is deteriorating on the SSN 22.

(U) SSN 23 CONSTRUCTION:
GENERAL DYNAMICS, GROTON, CT
N00024-96-C-2108, FPIF
Award: June 28, 1996
Definitized: June 28, 1996

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$1220.0	\$1323.5	1	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1220.0	\$1323.5	1	\$1220.0	\$1323.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

(U) The SSN 23 contract was awarded on 28 Jun 1996. The shipbuilder has not delivered the initial Cost Performance Report.

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

The AN/BSY-2 Contract N00024-88-C-6150 is over 90% complete and will no longer be reported.

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

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

<u>Appropriation</u>	<u>Prior Years (FY81-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-04)</u>	<u>Total</u>
RDT&E	4507.2	73.2	46.3	47.1	4673.8
Procurement	8101.5	167.0	60.2	156.1	8484.8
MILCON	27.3	-	-	-	27.3
O&M	-	-	-	-	-
Total	12636.0	240.2	106.5	203.2	13185.9

b. Annual Summary -- SSN21 SUBMARINE

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY90 Dollars Nonrec</u>	<u>Flyaway FY90 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1981				20.7	15.2
1982				30.7	23.7
1983				29.9	24.1
1984				157.4	131.6
1985				334.1	288.1
1986				457.4	405.7
1987				435.9	398.1
1988				470.0	443.6
1989				516.7	508.2
1990				516.4	528.7
1991				517.3	548.6
1992				407.7	445.0
1993				157.9	176.3
1994				160.4	182.6
1995				139.6	162.1
1996				101.5	120.3
1997				87.0	105.3
1998				59.3	73.2
1999				36.7	46.3
2000				9.2	11.8
2001				3.6	4.7
2002				21.1	28.3

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

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				1.7	2.3
Subtotal				4672.2	4673.8

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				376.4	375.0
1988				251.2	257.6
1989	1		2441.1	2164.6	2287.3
1990		354.8		539.3	586.3
1991	1	124.3	2108.9	1965.4	2199.1
1992		191.8		676.2	778.7
1993				2.5	2.9
1994				1.2	1.5
1995				10.7	13.2
1996	1		2042.2	558.6	700.6
1997				514.4	658.7
1998				122.8	160.6
1999				23.2	31.0
2000				0.5	0.7
2001				7.2	10.1
2002				9.1	13.1
2003				16.5	24.2
2004				23.3	35.1
Subtotal	3	670.9	6592.2	7263.1	8135.7

(U) Nonrecurring Flyaway includes \$670.9M for ships in FY 92, FY 93, and FY 94 which were not authorized.

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				0.6	0.6
1990				142.3	152.2
1991				17.7	19.3
1992					
1993				0.4	0.4
1994				3.3	3.8

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

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				1.9	2.2
1996				4.1	4.9
1997				46.6	57.2
1998				5.1	6.4
1999				22.8	29.2
2000				28.5	37.2
2001				8.8	11.7
2002				8.7	11.9
2003				8.7	12.1
Subtotal				299.5	349.1

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991				25.1	27.3
Subtotal				25.1	27.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	3	670.9	6592.2	12259.9	13185.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	1	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 10148.9

(U) Percent Total Program Expended: 77.0%

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SSN 21 CLASS/BSY-2, December 31, 1996

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The O&S cost driving characteristics for the SEAWOLF Class are that each ship has a 30 year service life, displaces 9150 tons, has a crew of 134 officers/enlisted and a maintenance cycle which has 2 overhauls and 6 SRAS. There are 42 months between depot level availabilities. (The source for the cost information is the CAIG - Cost Analysis Improvement Group report dated 30 April 1990.)

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per SHIP	Avg Annual Cost Per SHIP
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	3.6	0.0
Intermediate Maintenance	3.5	0.0
Depot Maintenance	20.2	0.0
Contractor Support	3.7	0.0
Sustaining Support	5.9	0.0
Indirect Costs	N/A	N/A
Total	36.9	0.0

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AF-4 B-1 CMUP-COMP UPERADE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: B-1 CMUP Computer

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AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): B-1B Mission Upgrade Program-Computer Upgrade (CMUP-Computer)

BAF/PAS

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

ASD/YD B-1B System Program Office
2275 D ST STE 16 MS 16
WPAFB, OH 45433-7233

Col Robert H. Matthews
Assigned: May 1, 1994
DSN 785-3281; COMM (937) 255-3281
mattherh@blb.wpafb.af.mil

97-0109

CONGRESSIONAL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604226F

PROCUREMENT:

APPN 3010 ICN 0101126F (Air Force)

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FOR OPEN PUBLICATION

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5. References:

SAR Baseline (Development Estimate):

Development Estimate is the Computer portion of the Approved DAE Baseline dated January 25, 1995. The Joint Direct Attack Munition (JDAM) APB dated January 25, 1995 includes the Conventional Mission Upgrade Program (CMUP)-Computer Upgrade program. A revised APB is currently being staffed for User (Air Combat Command (ACC), coordination and AFAE approval to rebaseline the computer portion of the B-1B CMUP. Upon AFAE approval, the current estimate reflected in this SAR will become the approved APB.

Approved Program:

None.

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

97-C-0420

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B-1 CMUP Computer, December 31, 1996

6. Mission and Description:

The Air Force has established the requirement to upgrade B-1B offensive avionics hardware and software to provide improved conventional weapons carriage and employment capabilities. The Computer Upgrade element of CMUP is the major element of CMUP Block E. The program will replace six existing computers (Controls and Displays, Guidance and Navigation, Weapon Delivery, Critical Resources Function, and two Terrain Following) with four new computers. The current data Transfer System (DTS) will be replaced with a new DTS, and the avionics flight software will be converted/rehosted from JOVIAL to Ada. The objective is to increase memory capacity, throughput, input/output bandwidth, and growth potential; to improve reliability and maintainability; and to provide a weapons flexibility capability. Weapons flexibility will enable the B-1B to carry and deliver three different types of weapons (one type per weapons bay) on the same sortie employing a single software load. The B-1B Computer Upgrade is a modification program integrating predominantly non-developmental items to enhance aircraft conventional mission capabilities. While the B-1B is planned to operate primarily in a conventional role, these modifications will not degrade its capability re-role back to a nuclear role. For greater economy and efficiency, the B-1B program has chosen to pursue integrated "block" updates of software which combine development activities for capability upgrades with sustainment activities for deficiency corrections and increase reliability and maintainability. Once the content of a block is defined, it becomes an integrated effort, with activities dependent on each other. Therefore, the Acquisition Operation and Maintenance (O&M) funds are included to capture the dependency of the development upgrades upon the sustainment activities. With the enhanced conventional capabilities available through the Computer Upgrade effort, the B-1 will maintain its role as the backbone of the Air Force's bomber fleet.

7. Executive Summary:

This is the initial, stand-alone SAR. The December 31, 1995 SAR for B-1B CMUP-JDAM included performance, schedule and cost parameters for the JDAM/1760/Global Positioning System (GPS)/Communications integration efforts as well as the Computer Upgrade portion of the B-1B CMUP program. The Computer Upgrade has been segregated from the B-1B CMUP-JDAM and is now being reported as a separate program known as B-1B CMUP-Computer Upgrade. The B-1B CMUP-Computer Upgrade has its own APB, SAR and DAES report. This aligns the B-1B programs as reported in the Major Defense Acquisition Programs (MDAP) list.

On May 15, 1996, Step One System Definition contract was awarded to Rockwell, North American Aircraft. (Now Boeing North American, North American Aircraft Division.) Block E System Requirements Review (SRR) was successfully completed August 8, 1996. This established the preliminary requirements baseline for the Computer Upgrade program. The initial list of software deficiency correction candidates was added to the Block E baseline by contract modification on August 6, 1996. This list was subsequently revised on December 16, 1996 to meet sustainment funding constraints. Block E System Functional Review (SFR) was successfully completed on October 3, 1996. The SFR established the preliminary functional baseline for the Block E upgrade program. The first in process review for the Software Specification Review (SSR) was held November 15-18, 1996. All efforts are on track to complete the SSR which will

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B-1 CMUP Computer, December 31, 1996

7. Executive Summary (Cont'd):

complete the Step One requirements development by February 4, 1997 and award the contract for Step Two System Development by February 1, 1997. With the completion of the SSR, the scope of the computer program has been defined. The program will now provide open architecture 32-bit hardware and Ada software for the central computing complex. This will result in the best technical solution and result in long term Operation and Support (O&S) cost reduction. The upgrades to the B-1B system outlined in the above description will enable the user to satisfy mission requirements. This also defined the combined development and sustainment baseline for the program. On January 30, 1997, the contract for Step Two System Development was awarded to Boeing North American, North American Aircraft Division. This contract covers the balance of Engineering and Manufacturing Development (EMD) for the Computer Upgrade through Function Configuration Audit (FCA)/Physical Configuration Audit (PCA). The Executive Software Specification Review (SSR) was successfully completed on February 4, 1997. It was the last major event in Step One System Requirements Definition and paved the way for the transition to System Development.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I	APR 93	N/A	APR 93
Milestone II	JAN 95	N/A	JAN 95
Development Contract Award	JAN 96	N/A	MAY 96
Critical Design Review	JUN 98	N/A	JUN 98
Service Final DT&E			
Start	JAN 00	N/A	OCT 99
Complete	SEP 00	N/A	OCT 00

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B-1 CMUP Computer, December 31, 1996

9a. Schedule (Cont'd):

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Low Rate Production Contract Award	JAN 00	N/A	JUL 99
Low Rate Initial Production First Delivery	JUL 01	N/A	FEB 01
IOT&E			
Start	SEP 00	N/A	DEC 00
Complete	JAN 01	N/A	FEB 01
Milestone III	JAN 01	N/A	APR 01
Full Rate Production Contract Award	JAN 01	N/A	APR 01
Organic Support Capability Date	DEC 02	N/A	DEC 01
Service Depot Support Date	MAR 03	N/A	DEC 01
Initial Operational Capability (IOC)	JAN 03	N/A	DEC 01
Required Assets Available	N/A	N/A	N/A

DT&E: Development Test & Evaluation

IOT&E: Initial Operational Test & Evaluation

Milestone 1 is considered to have occurred upon issuance of USD(A) memo to SECAF, April 30, 1993, B-1B Program Decision.

Low Rate Production Contract award is defined as the contract award for the kitproof upgrade kit.

Low Rate Initial Production First Delivery is defined as the delivery of the first kitproof upgrade kit.

Full-rate production contract award is defined as the production contract award for follow-on upgrade kits.

Organic Support Capability date is date Organizational and Intermediate (O&I) level maintenance is in place at main operating base.

Depot support date is the date organic depot support is declared or contract depot support is in place.

Initial Operational Capability is agreed to by HQ ACC as the Required Assets Available (RAA) date. RAA is defined as the date assets consisting of three modified aircraft, associated O-level support equipment, O-level spares, verified O-level maintenance and flight manuals, and source data to support training systems, programs and courses are delivered to the using command.

b. Current Change Explanations -- None.

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B-1 CMUP Computer, December 31, 1996

10. Performance Characteristics:

a. Performance --

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated Perf	Current <u>Estimate</u>
Mission Capable (MC) Rate (%)	75%	N/A / N/A	TBD	65%

Mission Capable Rate as expressed applies to the overall fleet aircraft wartime mission capable rate. The integration of the weapons upgrade modification will not cause the fleet MC rate to degrade below the threshold value. For information only - the following reliability and maintainability parameters are specified in the weapons upgrade contract specifications: mean time between critical failure, mean time between unscheduled maintenance, maintenance manhours per flight hours, and max/mean repair time on equipment. These parameters will be used to support MC rate calculations

b. Current Change Explanations -- None.

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

a. Cost --	Development <u>Estimate (SAR)</u>	Approved Program (APB)	Current <u>Estimate</u>
Development (RDT&E)	159.9	0.0	232.7
Procurement	174.5	0.0	153.7
Recurring	(152.4)		(142.2)
Nonrecurring	(14.8)		(2.4)
Total Flyaway	(167.2)		(144.6)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.8)		(0.9)
Initial Spares	(6.5)		(8.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>211.8</u>
Total FY 95 Base-Year \$	334.4	0.0	598.2
Escalation	80.5	0.0	79.1
Development (RDT&E)	(23.2)	(0.0)	(22.7)
Procurement	(57.3)	(0.0)	(35.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(20.9)</u>
Total Then Year \$	414.9	0.0	677.3

The Acquisition O&M is included here to capture the integrated nature of B-1B software updates. For greater economy and efficiency, the B-1B program has chosen to pursue integrated "block" updates of software which combine development activities for capability upgrades and sustainment activities for deficiency corrections and increased reliability and maintainability. Once the content of a block is defined, it becomes an integrated effort, with activities dependant on each other. Therefore, the Acquisition O&M funds are included to capture the dependency of the development upgrades upon the sustainment activities. The O&M funds will be included in the updated APB as an administrative change.

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B-1 CMUP Computer, December 31, 1996

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

B-1B CMUP-Computer

Development Estimate is the Computer portion of the Approved DAE Baseline dated January 25, 1995. A revised APB is currently being staffed for User (ACC) coordination and AFAE approval to rebaseline the computer portion of the B-1B CMUP. Upon AFAE approval, the current estimate reflected in this SAR will become the approved APB.

b. Quantity --

Development (RDT&E)	0	N/A	0
Procurement	<u>103</u>	<u>N/A</u>	<u>103</u>
Total	103	N/A	103

The procurement quantity of 103 in 11b. represents 95 operational aircraft that are being modified under the B-1 Computer Upgrade program and 8 kits that are being produced for labs and trainers.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (N/A)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	598.2	0.0	
(2) Quantity	103	0	
(3) Unit Cost	5.808	N/A	N/A
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	153.7	0.0	
(2) Quantity	103	0	
(3) Unit Cost	1.492	N/A	N/A

The UCR Baseline is zeroed out until the APB that is currently being staffed for User ACC coordination and AFAE approval to rebaseline the computer portion of the B-1B CMUP APB is approved. Upon AFAE approval, the current estimate reflected in this SAR will become the approved APB.

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B-1 CMUP Computer, December 31, 1996

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	183.1	231.8	-	-	414.9
Previous Changes:					
Economic	-6.6	-17.2	-	-	-23.8
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+24.7	-	-	-	+24.7
Estimating	+47.8	+18.4	-	-	+66.2
Other	-	-	-	-	-
Support	-	+6.6	-	-	+6.6
Subtotal	+65.9	+7.8	-	-	+73.7
Current Changes:					
Economic	-1.3	+0.2	-	-	-1.1
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-30.0	-	-	-30.0
Estimating	+7.7	-16.8	-	+232.7	+223.6
Other	-	-	-	-	-
Support	-	-3.8	-	-	-3.8
Subtotal	+6.4	-50.4	-	+232.7	+188.7
Total Changes	+72.3	-42.6	-	+232.7	+262.4
Current Estimate	255.4	189.2	-	232.7	677.3

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	159.9	174.5	-	-	334.4
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+21.7	-	-	-	+21.7
Estimating	+43.7	+14.2	-	-	+57.9
Other	-	-	-	-	-
Support	-	+5.0	-	-	+5.0
Subtotal	+65.4	+19.2	-	-	+84.6
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-27.6	-	-	-27.6
Estimating	+7.4	-9.2	-	+211.8	+210.0
Other	-	-	-	-	-
Support	-	-3.2	-	-	-3.2
Subtotal	+7.4	-40.0	-	+211.8	+179.2
Total Changes	+72.8	-20.8	-	+211.8	+263.8
Current Estimate	232.7	153.7	-	211.8	598.2

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B-1 CMUP Computer, December 31, 1996

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-1.3
	The previous estimate was updated to reflect contract negotiated requirements. (Estimating)	+7.3	+7.6
	Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
	RDT&E Subtotal	<u>+7.4</u>	<u>+6.4</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+0.2
	Previous estimate updated with more current data from vendors on hardware cost. (Estimating)	-9.2	-16.8
	Estimate revised for updated training system cost and for new expenditure profiles for stock fund reimbursement for initial spares. (Support)	-3.2	-3.8
	Change in hardware configuration from Very High Speed Integrated Circuits (VHSIC) memory upgrade to non developmental 32 Bit Open Architecture Hardware. (Engineering)	-27.6	-30.0
	Procurement Subtotal	<u>-40.0</u>	<u>-50.4</u>
(3)	<u>O&M</u>		
	Acquisition related costs not previously reported. (Estimating)	+211.8	+232.7
	O&M Subtotal	<u>+211.8</u>	<u>+232.7</u>

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.03	-0.24	--	--	-0.05	+2.81	--	+0.03	+2.55	6.58

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B-1 CMUP Computer, December 31, 1996

14b. Unit Cost and Other History (Cont'd):

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.25	-0.17	--	--	-0.29	+0.02	--	+0.03	-0.41	1.84

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	APR 93	N/A	APR 93
Milestone II	N/A	JAN 95	N/A	JAN 95
Milestone III	N/A	JAN 01	N/A	APR 01
FUE/IOC	N/A	JAN 03	N/A	DEC 01
Total Cost	N/A	414.9	N/A	677.3
Total Quantity	N/A	103	N/A	103
Prog Acq Unit Cost	N/A	4.03	N/A	6.58

The Acquisition O&M is included here to capture the integrated nature of B-1B software updates. For greater economy and efficiency, the B-1B program has chosen to pursue integrated "block" updates of software which combine development activities for capability upgrades and sustainment activities for deficiency corrections and increased reliability and maintainability. Once the content of a block is defined, it becomes an integrated effort, with activities dependant on each other. Therefore, the Acquisition O&M funds are included to capture the dependency of the development upgrades upon the sustainment activities. The O&M funds will be included in the updated APB as an administrative change.

Development Estimate is the Computer portion of the Approved DAE Baseline date January 25, 1995. A revised APB is currently being staffed for User (Air Combat Command (ACC)) coordination and AFAE approval to rebaseline the computer portion of the B-1B CMUP. Upon AFAE approval, the current estimate reflected in this SAR will become the approved APB.

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B-1 CMUP Computer, December 31, 1996

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

Computer upgrade Pre-EMD is a part of CMUP, Phase IIB contract (F33657-94-C-0001). The mod to the Phase IIB contract was effective May 15, 1996. The Computer Upgrade EMD contract with Boeing NAAD (F33657-96-C-2075) was awarded January 30, 1997.

a. RDT&E --			Initial Contract Price		
<u>New Contract:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Boeing NAAD, Seal Beach, CA					
F33657-94C-0001, CPAF			\$26.8	N/A	
Award: May 15, 1996					
Definitized: May 15, 1996					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$28.8	N/A		\$28.8	\$28.8	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (11/01/96)	\$1.2	\$-0.2
Net Change	\$1.2	\$-0.2

Explanation of Change:

The cost and schedule variance are based on data from the CMUP, Phase IIB Cost Performance Report (CPR) as of November 1, 1996. Information to develop Computer Upgrade variance was extrapolated from the total CPR which includes JDAM, Wind Corrected Munition Dispenser (WCMD) and Computer Upgrade funds. The cost and schedule variances are small and have no impact on the contract or program.

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

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

<u>Appropriation</u>	<u>Prior Years (FY95-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-08)</u>	<u>Total</u>
RDT&E	51.3	52.2	59.6	92.3	255.4
Procurement	-	-	12.8	176.4	189.2
MILCON	-	-	-	-	-
O&M	35.7	53.4	71.0	72.6	232.7
Total	87.0	105.6	143.4	341.3	577.3

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B-1 CMUP Computer, December 31, 1996

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

b. Annual Summary -- B-1B CMUP-Computer

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995			1.3	1.3	1.3
1996			14.4	14.4	14.9
1997			33.2	33.2	35.1
1998			48.4	48.3	52.2
1999			54.0	54.0	59.6
2000			58.0	58.0	65.3
2001			23.4	23.5	27.0
Subtotal			232.7	232.7	255.4

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	3	2.4	8.9	11.3	12.8
2000			0.3	0.7	0.8
2001	17		23.6	24.7	29.4
2002	32		40.4	41.1	50.0
2003	31		39.7	41.0	51.2
2004	20		25.9	27.4	35.0
2005			2.4	4.1	5.4
2006			1.0	2.4	3.2
2007				0.7	1.0
2008				0.3	0.4
Subtotal	103	2.4	142.2	153.7	189.2

The Acquisition O&M is included here to capture the integrated nature of B-1B software updates. For greater economy and efficiency, the B-1B program has chosen to pursue integrated "block" updates of software which combine development activities for capability upgrades and sustainment activities for deficiency corrections and increased reliability and maintainability. Once the content of a block is defined, it becomes an integrated effort, with activities dependant on each other. Therefore, the Acquisition O&M funds are included to capture the dependency of the development upgrades upon the sustainment activities. The O&M funds will be included in the updated APB as an administrative change.

The December 31, 1995 B-1B CMUP-JDAM SAR included the B-1B CMUP-Computer funding. Separate SARs are being accomplished for December 31, 1996 submittal. All funding for the B-1B CMUP Computer has been removed from the B-1B CMUP-JDAM SAR

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B-1 CMUP Computer, December 31, 1996

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

Appropriation: 3400 Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				5.9	6.1
1997				28.0	29.6
1998				49.4	53.4
1999				64.4	71.0
2000				46.8	52.7
2001				17.3	19.9
Subtotal				211.8	232.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	103	2.4	374.9	598.2	677.3

17. Delivery/Expenditure Information:

a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 8.9

Percent Total Program Expended: 1.3%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

This estimate was prepared by the B-1B Program Office as part of the updated Service Cost Position for the submitted and currently staffed Acquisition Program Baseline.

The B-1 CMUP-Computer Upgrade Cost Analysis Requirements Description and Service Cost Position estimate, which reflects a revised system architecture, were used as the basis for this estimate. The HQ ACC/XPM Manpower Estimate Report was reviewed and found to have no manpower adjustments for the Computer Upgrade. The Operation and Support has a Phase In of FY02-FY07 and Steady State FY08-FY26. A 1.48 Utilization Factor (Equipment Operation Hours per Flying Hour) was used for 95 aircraft at 374/Flying Hour (FH)/Acft/Yr.

Changes to the Computer Upgrade program now include conversion to Ada software. It is estimated the Ada software environment will significantly reduce maintenance costs in future years, after completion of the computer upgrade.

The antecedent system is the B-1 Avionics Control Unit Complex consisting of the

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B-1 CMUP Computer, December 31, 1996

18a. Operating and Support Costs (Cont'd):
AP-101F Computers with Jovial J3B2 software.

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 95 B-1 Acft and 8 Trainer CMUP Mods	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	5.0	5.8
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	28.5	70.3
Indirect Costs	N/A	N/A
Total	33.5	76.1

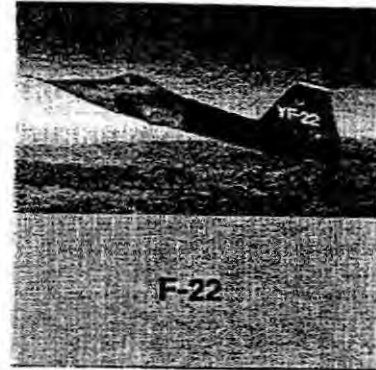
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SECRET**~~SECRET~~**~~Reason for Classification: E.O. 12958, Section 1.5(1)~~SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)PROGRAM: F-22

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): F-222. (U) DoD Component: USAF3. (U) Responsible Office and Telephone Number:

F-22 SYSTEM PROGRAM OFFICE
 AERONAUTICAL SYSTEMS CENTER
 WRIGHT-PATTERSON AFB
 DAYTON, OH 45433-7003

BGEN MICHAEL C. MUSHALA
 Assigned: January 17, 1996
 DSN 785-4167; COMM (513) 255-4167

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

- (U) PE 0603109F (Shared)
- (U) PE 0603230F
- (U) PE 0604227F (Shared)
- (U) PE 0604239F
- (U) PE 0604250F (Shared) Project 643393, 643766

PROCUREMENT:

- (U) APPN 3010 ICN 10F022 (Air Force)

MILCON:

- (U) PE 0207219F
- (U) PE 0604239F

(U) NOTE: PE 0604239F is the only RDT&E program element with funding after

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

~~Classified By: 1-22-000, 14 May 94~~~~Downgrade Instructions: Not Subject to Automatic Downgrade~~~~Declassify on: Originating Agency Determination Required (DDO)~~

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~~Reason for Classification: E.O. 12958, Section 1.5(1)~~**~~SECRET~~****SECRET**

SAF/PAS

97--0085

CONGRESSIONAL

97C-0338

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

FY91. PE 0207219F is the procurement program element. The other PEs are shown for information as they are included in the total program funding.

5. (U) References:

SAR Baseline (Development Estimate):

(U) Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB), 3 February 1992.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated March 18, 1996.

6. (U) Mission and Description:

(U) The F-22 program will develop the next-generation air superiority fighter for introduction in the early 2000s to counter emerging proliferating world-wide threats. The F-22 is designed to penetrate enemy airspace and achieve a first-look, first-kill capability against multiple targets. F-22 Engineering and Manufacturing Development (EMD) is based on the Weapon System Specification formulated from data developed during the Demonstration/Validation (Dem/Val) phase. The EMD program consists of design, fabrication, and development testing of 9 EMD flight test vehicles (all single seat); design, fabrication, development testing, and delivery of 26 EMD flight qualified engines; update of the Dem/Val Avionics Flying Laboratory into a Flying Test Bed for use in developing and integrating the EMD avionics suite; and design and development of F-22 support and training systems. The F-22 program from the outset has placed balanced emphasis on performance, survivability, reliability/maintainability, and affordability. The F-22 is characterized by a low observable highly maneuverable airframe, a new engine capable of supersonic cruise without using afterburner, and advanced integrated avionics.

7. (U) Executive Summary:

(U) The Advanced Tactical Fighter (ATF) Demonstration/Validation phase involved two competing aircraft teams, led by Lockheed (with General Dynamics and Boeing as team members) and Northrop (teamed with McDonnell-Douglas), and two competing engine contractors, General Electric (GE) and Pratt & Whitney (P&W). Each aircraft team flew two prototype air vehicles--one with GE engines and the other with P&W engines. On 23 April 1991, the Secretary of the Air Force announced the winners of the ATF Engineering and Manufacturing Development (EMD) Source Selection: Lockheed Aeronautical Systems Company (LASC) for the air vehicle and overall weapon system integration and P&W for the engine. In conjunction with the selection, the ATF was redesignated the F-22. Milestone II approval was confirmed by an Acquisition Decision Memorandum (ADM), dated 1 August 1991, authorizing F-22 EMD and long lead procurement for four pre-production verification (PPV) air vehicles. EMD contracts were awarded to

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7. (U) Executive Summary (Cont'd):

LASC and P&W on 2 August 1991. In December 1992, Lockheed Aeronautical Systems Group, parent company of LASC, acquired General Dynamics' Fort Worth Division, which was renamed Lockheed Fort Worth Company (LFWC). In FY93, a combination of government and contractor funding shortfalls led to a rephase of the F-22 program. This rephase reduced the number of EMD aircraft from eleven to nine and the number of engines from 33 to 27. In addition, the EMD program schedule slipped twelve months and the production program slipped one fiscal year. The Air Vehicle Preliminary Design Review (PDR) was completed on 30 April 1993. Further funding reductions led to a second rephase of the program in FY94, slipping the EMD and production programs an additional eight months. The Air Vehicle Critical Design Review (CDR) was conducted on 20-24 February 1995. A \$110M FY95 Congressional and \$200M FY96 Office of the Secretary of Defense budget reduction led to a third rephase of the F-22 EMD program. Schedule impacts from these reductions slipped first flight 3 months, extended EMD test aircraft deliveries, and extended EMD program completion 6 months with commensurate slips in Milestone III, Initial Operational Capability and the production program. In Jan 96, Lockheed Systems Company merged with Martin Marietta Corporation. As a result, LASC was renamed to Lockheed-Martin Aeronautical Systems (LMAS) and LFWC was renamed to Lockheed-Martin Tactical Aircraft Systems (LMTAS). In May 96, the FY98-03 Air Force Program Objective Memorandum (POM) deferred B-Model (two-seat aircraft) development converting the B-Models to single-seat aircraft (A-models) and deleting one Pre-Production Vehicle (PPV) from the combined EMD/PPV program (12 vs 13 aircraft). Also in May 96, senior management established a Joint Estimate Team (JET) to provide a top-level review and analysis of the overall program most probable cost for the remainder of the RDT&E and production. The recommendations of the JET were to delete the remaining three pre-production verification vehicles (leaving 9 single-seat aircraft and 26 engines), adjust Low Rate Initial Production (LRIP) Contract Award by 4 months, LRIP first delivery by 6 months, High Rate Production Contract Award by 9 months, and adjust the following milestone dates by 10 months each: DT&E Completion, Dedicated IOT&E Start, Dedicated IOT&E Completion, and Milestone III Decision. The net effect of these schedule changes was a 9-month extension to the EMD program. In addition, the RDT&E program cost increased to \$19391.1M (BY90\$) or \$22398.3M (TY\$). The JET identified the potential for the production program cost to increase to \$61.2B (TY\$). (At the 5 Feb 97 Defense Acquisition Board (DAB), this number was adjusted to \$59.4B by recognizing Forward Pricing Rate Agreements through FY01 and incorporating current OSD inflation rates in FY02 and beyond.) The current production cost estimate incorporates a series of cost reduction initiatives to maintain the \$48.3B (TY\$) program cost. After the completion of the JET, SAF/AQ commissioned a smaller five-person follow-on team, lead by Mr. Jack Welch, to assist in detailing the cost reduction initiatives recommended by the JET as well as identify additional initiatives that would lead to further reductions in F-22 production costs.

Assembly of A/C 4001 has proceeded on schedule to meet the first flight milestone of 29 May 97. The mid fuselage arrived at LMAS in Aug 96 and the aft fuselage in Oct 96. Mating with the forward fuselage occurred Oct 96. The wings were mated to the fuselage assembly in Nov 96 with aircraft power-on

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7. (U) Executive Summary (Cont'd):

initiated in Dec 96. Part fit-up between the mid and aft fuselage and wings was excellent due to the three-dimensional modeling techniques used across the program. The engines were installed in Feb 97.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

SAF/AQ commissioned the Joint Estimate Team (JET) in May 1996 to perform a detailed analysis to determine most probable cost to execute the F-22 Program. The review used methodologies similar to those that had proven to be successful in the C-17 program. The JET employed a joint contractor/government team to analyze the program, update the cost and schedule estimate for the work-to-go, and define approaches for maintaining an affordable acquisition program. The JET outbriefed its results at the December 1996 Chief Executive Officer (CEO) meeting held at the Pentagon. The team reported a balanced picture of program requirements and schedule necessary to successfully complete EMD and ensure an affordable production program. The Air Force incorporated the JET recommendations into the F-22 Program and presented the restructured program at a 5 February 1997 Defense Acquisition Board (DAB) meeting. The DAB approved the restructure in accordance with the 11 February 1997 Acquisition Decision Memorandum (ADM).

The net effect of the program restructure is an over 15% Acquisition Program Baseline (APB) breach to the RDT&E program, and a series of APB schedule breaches as a result of adding approximately 9 months to the EMD program. The APB threshold for the RDT&E program is \$19044M (BY90\$), the revised program estimate is \$19391.1M as reflected in the FY98 PB. A Program Deviation Report and Revised Acquisition Program Baseline was submitted after receipt of the 11 February 1997 ADM and is pending approval.

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Reason for Classification: ~~FOUO, Section 505(a)~~
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9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Milestone I (DSARC)	OCT 86	OCT 86	OCT 86	
Dem/Val Contract Award (Airframe only)	OCT 86	OCT 86	OCT 86	
Early Operational Assessment				
Start	OCT 86	OCT 86	OCT 86	
Complete	MAR 91	MAR 91	MAR 91	
System Requirements Review	MAY 87	MAY 87	MAY 87	
System Design Review	NOV 89	NOV 89	NOV 89	
Prototype First Flight	JUN 90	JUN 90	AUG 90	
Milestone II (DAB)	JUN 91	JUN 91	JUN 91	
EMD Contract Award	AUG 91	AUG 91	AUG 91	
Preliminary Design Review Complete	OCT 92	APR 93	APR 93	
Critical Design Review Complete	OCT 93	FEB 95	FEB 95	
Engine Initial Flight Release	OCT 94	DEC 96	APR 97	(Ch-1)
PPV Long Lead	JAN 95	FEB 97	N/A	(Ch-2)
First Flight	SEP 95	MAY 97	MAY 97	
DT&E				
Start	SEP 95	MAY 97	MAY 97	
Complete	DEC 99	OCT 01	AUG 02	(Ch-2)
PPV Contract Award	JAN 96	FEB 98	N/A	(Ch-2)
Low Rate Initial Production (LRIP)	OCT 96	NOV 98	N/A	(Ch-3)
Decision				
Low Rate Production Contract Award	JAN 97	FEB 99	JUN 99	(Ch-2)
LRIP First Delivery	JAN 99	MAY 01	NOV 01	(Ch-2)
Dedicated IOT&E				
Start	JUN 99	OCT 01	AUG 02	(Ch-2)
Complete	SEP 99	APR 02	FEB 03	(Ch-2)
Milestone III	DEC 99	SEP 02	JUL 03	(Ch-2)
High Rate Production Contract Award	JAN 01	FEB 03	NOV 03	(Ch-2)
Initial Operational Capability	TBD	NOV 04	NOV 04	
Organic Organizational Maintenance	TBD	NOV 04	N/A	(Ch-3)
Capability				
Required Assets Availability (RAA)	OCT 02	NOV 04	MAY 04	(Ch-2)
Organic Depot Activation	TBD	DEC 09	N/A	(Ch-3)

b. (U) Current Change Explanations --

(Ch-1) Change was due to test problems encountered on Flight Test Engine #2 at Arnold Engineering Development Center (AEDC) in Nov 96. Schedule work-arounds required using other development engines to complete testing in Jan 97. Final test reporting will be completed in Mar 97. Initial Flight Release (IFR) will closeout Apr 97.

(Ch-2) Changes annotated are reflective of the DAB-approved program restructure. Note that DT&E will continue after the completion date for capabilities required for IOC but not required for Milestone III.

(Ch-3) Changes stem from SAF/AQ guidance implementing the new DoD 5000.2-R

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

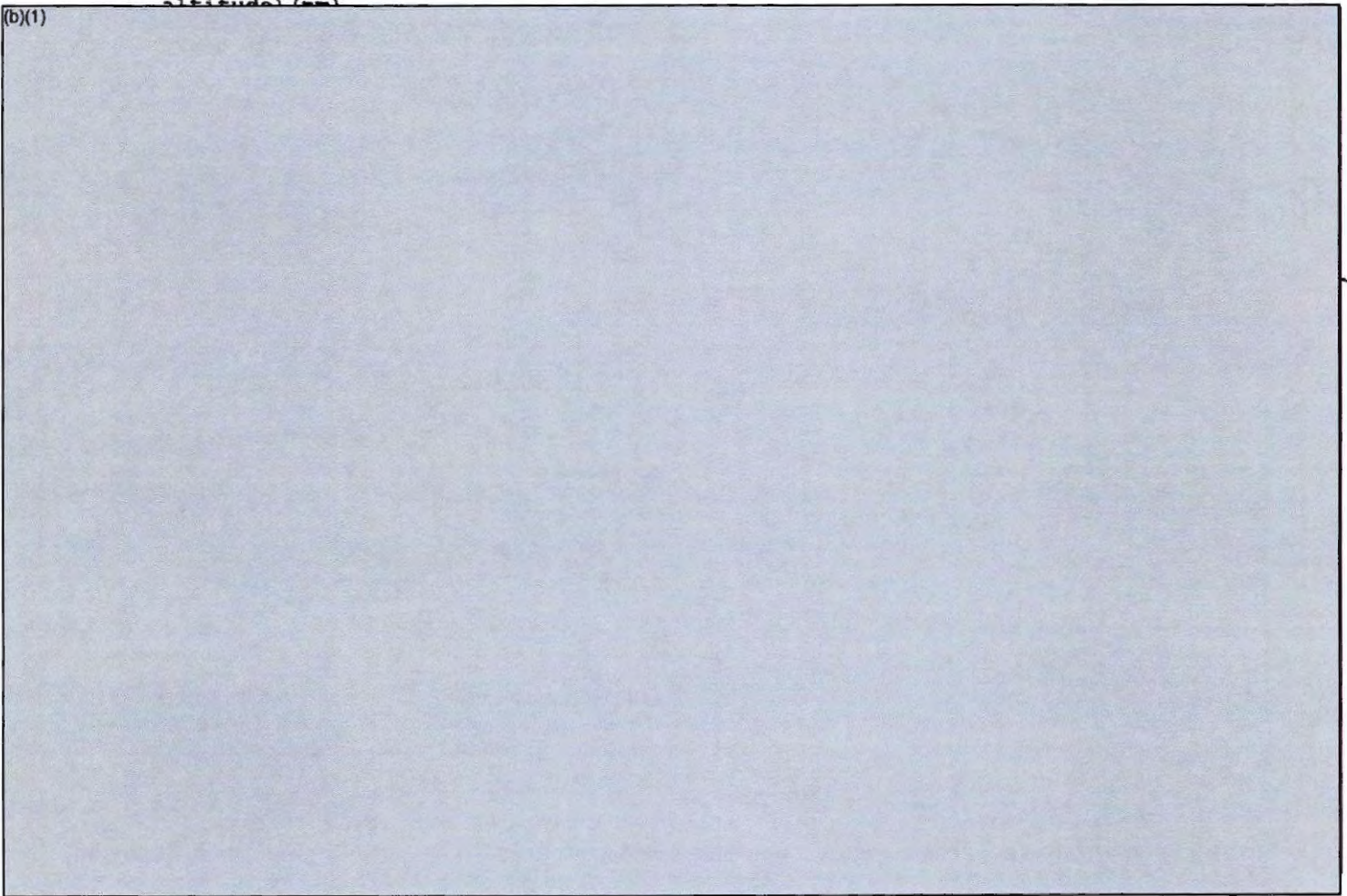
which states to delete those parameters which the Program Manager has little direct control over and which are not critical to the success of the program. These changes were included in the program restructure Baseline Change Request submitted in Feb 97.

10. (U) Performance Characteristics:

a. Performance --

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Combat Radius (at optimum altitude (nm))				

(b)(1)



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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Direct on-and-off	8.7	8.7 / 8.7	TBD	7.6	(Ch-1)
Maintenance					
Personnel (spaces per ac)					

(b)(1)

(U) * Classification/control is beyond the level of this document.

Estimate reflects capability with a full primary mission load.

Current Estimate is better than threshold.

A mission scenario was assumed for estimating purposes. The current estimate will be updated when the scenario is refined.

USD(A) Risk Assessment Items are included here for consistency with the MS II APB. While these items may provide some insight to program maturity, they are not considered critical performance parameters, and, individually, should not be construed as good indicators of overall program health.

b. (U) Current Change Explanations --

(Ch-1) Changes in Current Estimates reflect calculations based on the latest development data. Fluctuations in these parameters are expected as tradeoff studies are completed and engineering changes are incorporated.

(Ch-2) Changed as directed by F-22 PMD 7036(25) dated 4 Feb 97.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	16560.0	16560	19391.1
Procurement	43510.0	32566.1	31640.9
Airframe	(21485.7)		(16690.5)
Engines	(5993.7)		(4350.8)
Avionics	(9250.6)		(3912.1)
Total Nonrecurring			(1125.6)
Total Flyaway	(36730.0)		(26079.0)
Other Weapon Systems	(1032.1)		(893.7)
Peculiar Support	(1896.1)		(2931.3)
Initial Spares	(3851.8)		(1736.9)
Construction (MILCON)	200.0	200.0	139.1
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	60270.0	49326.1	51171.1
Escalation	38839.0	23038.8	19693.9
Development (RDT&E)	(2969.0)	(2969.0)	(3007.2)
Procurement	(35762.0)	(19961.8)	(16612.4)
Construction (MILCON)	(108.0)	(108.0)	(74.3)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	99109.0	72364.9	70865.0
b. (U) Quantity --			
Development (RDT&E)	0	0	2
Procurement	648	442	438
Total	648	442	440

(U) Note: The current Low Rate Initial Production (LRIP) quantity is 70 aircraft. The previous development quantity was 9 articles all of which were non-fully configured units. The FY97 PB moved 4 Pre-Production Vehicle (PPV) articles from Production to RDT&E yielding a total of 13. The FY98 POM reduced the EMD aircraft quantity by one. Therefore, the total EMD aircraft quantity was reduced from 13 to 12 (one PPV aircraft was removed). The Defense Acquisition Board (DAB) approved restructure deletes the remaining 3 PPV aircraft leaving a current quantity of 9 EMD aircraft (2 of the 9 EMD aircraft are projected to be fully configured and used for IOT&E. The first 2 production aircraft from LRIP Lot 1 will also be used for IOT&E prior to fielding into Air Force inventory). This revised program plan is supported in the FY98 PB.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (SEP 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	51171.1	49326.1	
(2) Quantity	440	442	
(3) Unit Cost	116.298	111.598	+4.21
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	31640.9	32566.1	
(2) Quantity	438	442	
(3) Unit Cost	72.239	73.679	-1.95

(U) Note: The previous development quantity was 9 articles all of which were non-fully configured units. The FY97 PB moved 4 Pre-Production Vehicle (PPV) articles from Production to RDT&E yielding a total of 13. The FY98 POM reduced the EMD aircraft quantity by one. Therefore, the total EMD aircraft quantity was reduced from 13 to 12 (one PPV aircraft was removed). The Defense Acquisition Board (DAB) approved restructure deletes the remaining 3 PPV aircraft leaving a current quantity of 9 EMD aircraft (2 of the 9 EMD aircraft are projected to be fully configured and used for IOT&E). This revised program plan is supported in the FY98 PB.

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	19529.0	79272.0	308.0	99109.0
Previous Changes:				
Economic	-546.8	-9206.9	-35.9	-9789.6
Quantity	+399.5	-22012.8	-	-21613.3
Schedule	+1128.9	+2647.1	-	+3776.0
Engineering	+187.4	+103.5	+5.0	+295.9
Estimating	+504.3	+99.0	-73.1	+530.2
Other	-	-	-	-
Support	+2.4	-2217.5	-	-2215.1
Subtotal	+1675.7	-30587.6	-104.0	-29015.9
Current Changes:				
Economic	+5.0	+948.8	+2.8	+956.6
Quantity	-920.4	-	-	-920.4
Schedule	+741.3	+1101.1	-	+1842.4
Engineering	-87.6	-303.8	-	-391.4
Estimating	+1455.3	-1628.7	+6.6	-166.8
Other	-	-	-	-
Support	-	-548.5	-	-548.5
Subtotal	+1193.6	-431.1	+9.4	+771.9
Total Changes	+2869.3	-31018.7	-94.6	-28244.0
Current Estimate	22398.3	48253.3	213.4	70865.0

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

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	16560.0	43510.0	200.0	60270.0
Previous Changes:				
Quantity	+281.8	-10081.2	-	-9799.4
Schedule	+878.3	+101.1	-	+979.4
Engineering	+146.6	+64.4	+4.0	+215.0
Estimating	+576.5	-104.6	-68.0	+403.9
Other	-	-	-	-
Support	+45.3	-793.6	-	-748.3
Subtotal	+1928.5	-10813.9	-64.0	-8949.4
Current Changes:				
Economic	-	-	-	-
Quantity	-708.9	-	-	-708.9
Schedule	+537.6	-	-	+537.6
Engineering	-67.5	-178.0	-	-245.5
Estimating	+1141.4	-452.7	+3.1	+691.8
Other	-	-	-	-
Support	-	-424.5	-	-424.5
Subtotal	+902.6	-1055.2	+3.1	-149.5
Total Changes	+2831.1	-11869.1	-60.9	-9098.9
Current Estimate	19391.1	31640.9	139.1	51171.1

(U) Section 13b ((2) Procurement - below) comment: Increase in procurement (Revised escalation indices (Economic)) results from a \$48.0M inflationary decrease in FY97-03 where the inflation indices are 2.2 percent to 2.1 percent coupled with a \$501.6M increase in FY04-15 where the inflation indices increase from 2.2 percent to 2.6 percent.

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	-36.4
	Economic adjustment for negative program change. (Economic)	N/A	+41.4
	Quantity variance associated with deletion of 4 PFV Aircraft. (Quantity)	-708.9	-920.4
	Manufacturing Build Revisions/Test Infrastructure (Schedule)	+537.6	+741.3
	B Model Delete (Engineering)	-67.5	-87.6
	Adjustment for Current and Prior Inflation. (Estimating)	+8.7	+10.2
	Program Restructure Revisions (Estimating)	+1132.7	+1445.1
	RDT&E Subtotal	+902.6	+1193.6

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+453.6
Economic adjustment for negative program change. (Economic)	N/A	+495.2
Stretchout of annual procurement buy profile. (Schedule)	0.0	+1101.1
2 Seat Deletion (Engineering)	-178.0	-303.8
Air Vehicle IPT Program Restructure Revisions (Estimating)	+5409.6	+8312.2
Other Government Cost (OGC) Program Restructure Revisions (Estimating)	+541.0	+831.2
Engine IPT Program Restructure Revisions (Estimating)	+1777.4	+2731.1
Forward Pricing Rate Methodology Change (Estimating)	-1121.8	-1818.5
Producibility Enhancements/Diminishing Manufacturing Sources (DMS) (Estimating)	-2536.0	-4197.8
Lean Enterprise Initiative Reductions (Estimating)	-1423.6	-2356.6
Acquisition Reform Initiatives (Estimating)	-3099.3	-5130.3
Change in Initial Spares (Support)	-824.4	-1178.4
Change in Other Weapon Systems (Support)	-129.5	-189.7
Change in Peculiar Support (Support)	+529.4	+819.6
Procurement Subtotal	-1055.2	-431.1
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	+2.8
Nellis Site Survey Incorporation (Estimating)	+3.1	+6.6
MILCON Subtotal	+3.1	+9.4

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14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
152.95	-20.07	+21.08	+12.77	-0.22	+0.83	--	-6.28	+8.11	161.06

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
122.33	-18.85	+8.40	+8.56	-0.46	-3.49	--	-6.32	-12.16	110.17

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	OCT 85	OCT 86	N/A	OCT 86
Milestone II	DEC 88	JUN 91	N/A	JUN 91
Milestone III	DEC 91	N/A	N/A	JUL 03
FUE/IOC	N/A	N/A	N/A	NOV 04
Total Cost	3282	99109	N/A	70865
Total Quantity	N/A	648	N/A	440
Prog Acq Unit Cost	N/A	152.95	N/A	161.06

(U) SAR Planning Estimate (PE) and Development Estimate (DE) reflect 18 Mar 96 Acquisition Program Baseline (APB) Then Year dollars. SAR PE represents Demonstration/Validation (DEMVAL) RDT&E funding only. SAR DE and Current Estimate reflect total RDT&E (3600), Production (3010), and MILCON (3300) funding. Quantity was not specified for SAR PE.

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

a. RDT&E --
 (U) F-22 EMD (LMAS):
 LOCKHEED MARTIN CORP, Marietta, GA
 F33657-91-C-0006, CPAF
 Award: August 2, 1991
 Definitized: August 2, 1991

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$12276.7	N/A	9	\$13784.0	\$13788.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-24.2	\$-74.7
Cumulative Variances To Date (12/31/96)	\$-342.2	\$-116.9
Net Change	\$-318.0	\$-42.2

Explanation of Change:

(U) Estimated Price At Completion for the Contractor and Program Manager includes program restructure costs which are not yet incorporated in the Current Contract Price. The revised Program Office restructure will be negotiated in 1997, and will be reflected in the next reporting period.

Explanation of Change:

The \$-318.0M Net Change cost variance through December 1996 represents a negative change since the December 1995 report. Note the cumulative cost variance does not include an unfavorable cost variance of \$181.2M which existed prior to the June 1995 cost growth baseline implementation.

The cumulative cost variance to date of \$-342.2M (-4.8%) is largely driven by negative performance within airframe, avionics, and utilities and subsystems. The airframe cost variance has increased as a result of increased engineering support and engineering changes, material cost overruns and schedule recovery. In addition, Block 2 loads impacts on Block 1 aircraft has contributed to the airframe cost increase. The avionics cost variance has increased as a result of additional engineering and manufacturing efforts to resolve technical, parts and manufacturing process issues. The utilities and subsystems cost variance has increased as a result of increased subcontractor costs.

The \$-42.2M Net Change schedule variance through December 1996 represents a negative change since the December 1995 report. The cumulative schedule variance does not include an unfavorable schedule variance of \$59.4M which existed prior to the June 1995 cost growth baseline implementation.

The cumulative schedule variance to date of \$-116.9M (-1.6%) is largely driven by negative performance within airframe, avionics and armament. The

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

airframe schedule variance has increased as a result of vendor purchased tooling not delivered as planned. The avionics schedule variances are due to material shortages delaying fabrication; rework to resolve parts issues, and resolving manufacturing processes. The armament schedule variance is due to schedule changes with subcontractors.

Program Office restructure implementation will realign the contractor's cost and schedule variances with the program restructure budget baseline. Therefore, cumulative cost and schedule variances will be eliminated at the completion of contract negotiations resulting in zero variance.

The increase in Lockheed Current Contract Target Price is due to additions and deletions to the price of the contract. The revised program office estimate is not negotiated, therefore the current contract target price does not yet reflect these changes. The Program Manager and Contractor Estimate Price at Completion increased due to the inclusion of touch labor, avionics, technical support issues, and refined program definition. These items are included in the revised Program Office restructure and will be negotiated in the next reporting period.

(U) EMD ENGINE (P&W):			Initial Contract Price		
	Target	Ceiling	Qty		
PRATT&WHITNEY - GOVT, WEST PALM BEACH FL					
F33657-91-C-0007, CPAF	\$1375.1	N/A	33		
Award: August 2, 1991					
Definitized: August 2, 1991					

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$2122.5	N/A	27	\$2213.0	\$2213.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.3	\$-21.0
Cumulative Variances To Date (12/31/96)	\$-44.0	\$-25.0
Net Change	\$-43.7	\$-4.0

Explanation of Change:

(U) Estimated Price At Completion for the Contractor and Program Manager includes program restructure costs which are not yet incorporated in the Current Contract Price. The revised Program Office restructure will be negotiated in 1997, and will be reflected in the next reporting period.

Through December 1996, the cumulative unfavorable cost variance was \$44.0M (3.0%). This is a decline of \$43.7M from the December 1995 SAR and does not include an unfavorable \$41.3M cost variance which existed prior to the August 1995 cost growth baseline implementation. The cumulative cost variance is the result of several component level redesigns and inefficiencies in manufacture of developmental engine hardware. Components

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

currently experiencing the largest cost variances include the nozzle, fan, ducts and internals, and compressor.

Through December 1996 the cumulative unfavorable schedule variance was \$25.0M (1.7%). This variance represents a decline of \$4.0M from the December 1995 SAR and does not include an unfavorable \$21.4M schedule variance which existed prior to the August 1995 cost growth baseline implementation. The components currently driving the schedule variance include controls and diagnostics, gearbox, fan, and compressor.

Program Office restructure implementation will realign the contractor's cost and schedule variances with the program restructure budget baseline. Therefore, cumulative cost and schedule variances will be eliminated at the completion of contract negotiations resulting in zero variance.

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

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

<u>Appropriation</u>	<u>Prior Years (FY83-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-15)</u>	<u>Total</u>
RDT&E	15820.3	2071.2	1464.8	3042.0	22398.3
Procurement	81.3	80.9	937.1	47154.0	48253.3
MILCON	21.1	-	7.4	184.9	213.4
O&M	-	-	-	-	-
Total	15922.7	2152.1	2409.3	50380.9	70865.0

b. Annual Summary -- Air Superiority Fighter

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1983				24.8	20.0
1984				40.7	34.1
1985				104.8	90.8
1986				171.5	152.1
1987				320.6	297.2
1988				529.8	504.4
1989				801.7	800.1
1990				1093.6	1124.2
1991				893.4	953.3

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Reason for Classification: E. O. 12958, Section 1.4(b)
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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				1463.4	1606.8
1993				1717.4	1925.2
1994				1804.4	2058.8
1995				1961.0	2280.6
1996				1816.4	2154.2
1997				1501.7	1818.5
1998				1674.4	2071.2
1999				1160.7	1464.8
2000				879.0	1133.0
2001				739.7	974.2
2002				569.1	765.4
2003				123.0	169.4
Subtotal	2			19391.1	22398.3

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				65.2	81.3
1998				63.6	80.9
1999	2	142.6	464.7	720.8	937.1
2000	6	126.5	966.6	1313.2	1743.9
2001	12	91.9	1547.1	1980.2	2689.1
2002	20	194.3	2099.3	2571.1	3576.4
2003	30	198.4	2377.0	3401.5	4854.0
2004	48	88.8	2633.4	3180.3	4656.0
2005	48	45.9	2276.5	2934.0	4406.9
2006	48	43.9	2209.3	2873.5	4428.1
2007	48	45.5	2143.9	2756.5	4358.0
2008	48	44.7	2079.9	2865.3	4647.5
2009	48	42.3	2280.9	2598.9	4324.5
2010	48	40.4	2237.4	2439.9	4167.4
2011	32	20.4	1637.4	1724.1	3020.7
2012				63.5	114.2
2013				49.7	91.7
2014				28.2	53.4
2015				11.4	22.2
Subtotal	438	1125.6	24953.4	31640.9	48253.3

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Reason for Classification: E. O. 12958, Section 1.4(b)

~~Reason for Classification: E.O. 12958, Section 1.4(a)~~
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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				3.9	4.6
1996				10.0	12.1
1997				3.6	4.4
1998					
1999				5.7	7.4
2000					
2001					
2002					
2003					
2004				16.1	23.4
2005				6.1	9.1
2006				19.5	29.8
2007				14.3	22.4
2008				12.4	19.9
2009				15.8	26.0
2010				17.0	28.7
2011				14.7	25.6
Subtotal				139.1	213.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	440	1125.6	24953.4	51171.1	70865.0

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date

	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 13720.5

(U) Percent Total Program Expended: 19.4%

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~~Reason for Classification: E.O. 12958, Section 1.4(a)~~

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The Operating and Support (O&S) cost estimate has been updated to reflect current program structure as of 31 December 1996.

For purposes of this cost comparison, the F-22 concept of operation is assumed to be a 24 aircraft fighter squadron with a utilization rate of 332 flight hours per aircraft per year. While the official program still assumes an 18 aircraft fighter squadron, a 24 aircraft fighter squadron is being investigated as a means of reducing overall costs. The wartime scenario was used to estimate the manpower requirements. The peacetime utilization rate for the weapon system was used to estimate the O&S cost. Training and combat coded squadrons were addressed as operationally the same for this O&S estimate. Total aircraft buy for the F-22 is 438, which results in 367 Primary Authorized Inventory (PAI) aircraft, the basis for the O&S estimate.

The F-15C is antecedent to the F-22; both are two engine air-to-air fighters with similar operational concepts. For purposes of this cost comparison, the F-15C concept of operation is a 24 aircraft fighter squadron with a utilization rate of 299 flight hours per year per aircraft. The wartime scenario was used to estimate the manpower requirements. The peacetime utilization rate for the weapon system was used to estimate the O&S cost. Training and combat coded squadrons were addressed as operationally the same for this O&S estimate. Total aircraft buy for the F-15C is 648, which results in 408 PAI aircraft, the basis for the O&S estimate.

The F-15C estimate was updated based on the latest AFI 65-503 Cost and Planning Factors. The F-22 estimate was based on a combination of AFI 65-503 Cost and Planning Factors and information provided in the 1996 Affordability Analysis. Both the F-15C and the F-22 cost per squadron have increased significantly from the 95 SAR estimate. The primary reason for the increase is due to use of a 24 aircraft fighter squadron rather than an 18 aircraft fighter squadron. There is no planned intermediate maintenance for the F-22 based on 2-Level maintenance concept.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per F-22 Squadron	Avg Annual Cost Per F-15C Squadron
Mission Pay & Allowances	15.3	18.8
Unit Level Consumption	17.9	24.9
Intermediate Maintenance	0.0	1.5
Depot Maintenance	3.6	4.6
Contractor Support	3.5	18.4
Sustaining Support	10.1	29.8
Indirect Costs	5.9	7.8
Total	56.3	105.8

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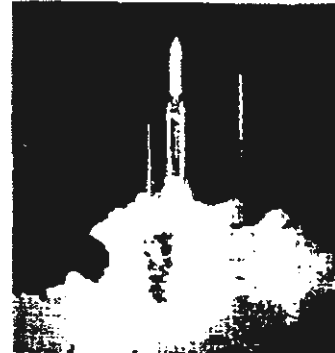
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)8231)
PROGRAM: Titan IV

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Titan IV, Expendable Launch Vehicle (ELV)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

Space and Missile Systems Center/CL Col Jeffery J. Norton
 160 Skynet Street Assigned: January 27, 1997
 Suite 1215 DSN 833-3915; COMM (310)363-3915
 Los Angeles AFB, CA 90245-4659

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0304111F (Shared) Project 299998, 346503, 6569AJ
 PE 0305119F (Shared) Project 66624A
 PE 0305144F
 PE 0305171F (Shared)

PROCUREMENT:

APPN 3080 ICN 834600 (Air Force)
 APPN 3020 ICN MSBSTR (Air Force) (Shared) Project 23BSTR
 APPN 3020 ICN MSO299 (Air Force)

MILCON:

PE 0305119F

SAF/PAS

97-0095

CONGRESSIONAL

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17 MAR 3 1997

DIRECTORATE FOR FREEDOM OF INFORMATION
 AND SECURITY REVIEW (OASD-P&A)
 DEPARTMENT OF DEFENSE

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5. References:

SAR Baseline (Development Estimate):
FY87 President's Budget, February 1986.

Approved Program:
DAE Approved Acquisition Program Baseline (APB) dated May 26, 1994.

6. Mission and Description:

The Titan IV is a heavy-lift rocket booster that assures continued access to space for the nation's highest priority space systems. The Titan IV does not replace any defense programs. The Titan IV system evolved from the basic family of Titan systems, namely the Titan II, Titan III and 34D, which have contributed to national space objectives for more than 25 years. The Titan IVA vehicle configuration consists of a two stage liquid propellant core with a pair of large, attached Solid Rocket Motors (SRMs) which provide the initial boost stage for liftoff. Beginning with the twenty-fourth vehicle in the program, a new block change Titan IVB incorporating advanced technology and improved processes will become operational. The Titan IVB will fly with Solid Rocket Motor Upgrades (SRMUs) and new avionics, both of which will increase reliability, producibility, and performance for larger payload requirements. In addition, a new technology ground checkout system will be needed to fly the Titan IVB. Two upper stage configurations are used on Titan IV, the Inertial Upper Stage (IUS) and the Titan/Centaur. When configured with the Centaur and SRMU, Titan IV is capable of placing an 11,500-pound payload into Geosynchronous Earth Orbit (GEO). When configured with No Upper Stage (NUS) and SRMU, Titan IVB can place a 38,800-pound payload into a 100-nmi circular, polar orbit.

7. Executive Summary:

The Titan IV was developed in direct response to a National Security Decision Directive. The initial contract for 10 Titan IVs with Centaur upper stages was awarded in Feb 85. As a result of the Jan 86 Space Shuttle accident, the Department of Defense (DoD) began a recovery plan which included the acquisition of 13 additional Titan IVs. The resulting 23-vehicle program was placed on contract in December 1987. The DoD later embarked on an increased capacity plan which included an additional launch pad at Cape Canaveral Air Station (CCAS), 18 additional Titan IV boosters, and associated facility enhancements. The current 41-vehicle program was definitized in Dec 89. The Titan IV was designated a Defense Acquisition Board program in Jul 91. Between 1991 and 1994, two production slowdowns and a production bridge reduced production from 10 to 2 core vehicles per year to match the reduction in launch requirements. The Unified Payload Integration Contract was awarded in Jul 92 to provide payload integration capability through FY97. The Titan Master Contract Plan, approved by the Acquisition Strategy Panel in Mar 95, was developed in order to break out Titan contracts into four separate but interdependent contracts to better manage the program.

The first Titan IV was successfully launched in 1989 from CCAS. In Apr 91, an explosion occurred during the static firing test of the first SRMU

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7. Executive Summary (Cont'd):

Qualification motor. SRMU production began again in Nov 93. A Titan IV launched from Vandenberg Air Force Base (VAFB) on 2 Aug 93 experienced a catastrophic failure caused by a burn through on one of the SRM segments. The program successfully recovered in record time, 7 months, with the highly successful first launch of a Titan IVA-10 Centaur/Military Strategic and Tactical Relay (MILSTAR) payload in Feb 94, the first Titan IV launch from Launch Complex-40 at CCAS. As of 20 Dec 96, 18 Titan IVs (of 19 attempts) have been successfully launched, raising the demonstrated reliability performance for the Titan IV to 95%. Four successful Titan IV launches occurred since last report, all carrying DoD payloads.

The first two contracts of the Titan Master Plan (-0001 Production and -0012 Launch Base Operations) were awarded on 1 Apr 96. The -0035 Research and Development contract was awarded on 1 Jul 96. The second phase of -0019 contract close-out was completed on 23 Dec 96. It included the close-out of the final -0019 cost performance data, transferral of funding, and final contract language into the new Titan contracts. Just prior to the close-out, the Program Office accomplished the final billing price adjustment on the -0019 contract for the CCAS Launch Complex 40 cost overrun. Per Air Force direction, the program office has begun procuring the remaining hardware and services required to complete the 41 vehicle program, releasing an RFP for modifications to the -0001, -0012, and -0035 contracts on 26 Jul 96, and issuing a 5-month Unfinalized Contractual Action against those contracts on 1 Nov 96 to preserve program schedule. This action assumes no follow-on buy of Titan IVs, given the advent of the new Evolved Expendable Launch Vehicle (EELV) heavy lift capability in FY 2004. The planned definitization date for the 41-completion contract modifications is 1 Nov 97. These modifications will also account for work reallocated by a national user decision which accelerated satellite downsizing and decreased the launch requirements and schedule. FY97 budget reductions coupled with an Air Force Space Command operational effectiveness assessment led to the deletion of the Centaur Processing Facility capability from the Titan IV Acquisition Program Baseline.

The original Stage II asbestos nozzle failed during a confidence test in Jul 95. A new stage II quartz nozzle was developed, and then tested at the Arnold Engineering Development Center on 29 Jun 96 in response to the original asbestos nozzle failure. Final test data analysis showed the new skirt exceeds all operational and test requirements, and preliminary results from the Dec 96 Titan IVA-13 (TIVA-13) mission indicate the new nozzle performed as predicted. United Technologies (Chemical Systems Division) completed production of the last SRM for Titan IV on 5 Sep 96. Alliant Techsystems achieved Initial Launch Capability (ILC) of the SRMU in Jul 96. The Camp Blanding solid segment storage facility achieved Initial Operation Capability (IOC) in Dec 96. All qualification testing and hardware deliveries are complete for the first Titan IVB mission (TIVB-24), currently planned to launch in Feb 97. The core vehicle was shipped to CCAS on 23 Jan 96, and SRMUs were attached on 11 Sep 96. The first baseline Combined Systems Test was accomplished on 18 Oct 96. The official merger of the Titan, Atlas, Delta, and IUS Launch Vehicle Program Offices into a single System Program Office occurred in Feb 96. Under the direction of Launch Programs, Atlas launch operations was merged into the Titan launch operations -0012 contract in Dec 96 to gain further program

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Titan IV, December 31, 1996

7. Executive Summary (Cont'd):

efficiencies. The Defense Support Program satellite was successfully integrated to the TIVB-24 booster on 5 Jan 97; TIVB-24 was successfully launched on 23 Feb 97. An Integrated Baseline Review for the -0001, -0012, and -0035 contracts is scheduled for mid-Mar 97.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Initial Contract Award	FEB 85	FEB 85	FEB 85	
Production Start	OCT 85	N/A	OCT 85	
System Preliminary Design Review	APR 86	N/A	APR 86	
Critical Design Review	NOV 86	NOV 86	OCT 86	
Addition of 13 Vehicles	N/A	DEC 87	DEC 87	
First Core Delivery to CCAFS	N/A	JAN 88	JAN 88	
First Delivery to CCAFS	FEB 88	N/A	APR 88	
Initial Launch Capability (ILC)				
Titan IV/IUS	OCT 88	FEB 89	FEB 89	
Titan IV/NUS (WTR)	N/A	OCT 90	OCT 90	
Titan IV/Centaur	N/A	MAY 93	SEP 93	
SLC-40	N/A	SEP 92	FEB 93	
Centaur Structural Test	N/A	JUL 89	APR 91	
SRMU Static Firing (PQM-1)	N/A	JUN 92	JUN 92	
SRMU ILC	N/A	JUL 96	JUL 96	
Centaur Processing Facility IOC	N/A	JAN 97	N/A	(Ch-1)

Space Launch Complex - 40 (SLC-40) is referred to as Launch Complex - 40 (LC-40) throughout this document.

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) FY97 budget reductions coupled with an Air Force Space Command operational effectiveness assessment led to the deletion of the Centaur Processing Facility capability.

10. Performance Characteristics:

a. Performance --

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
System Reliability (%)	98	98 / 96	95	96
Payload to Geosynchronous Orbit (k-lbs) (Titan IV/Centaur)				
SRM	10.0	10.0 / 10.0	10.0	10.0
SRMU	N/A	11.5 / 11.5	11.5	11.5
Payload to Transfer Orbit (k-lbs)				
SRM	N/A	38.8 / 38.8	39.3	39.3
SRMU	N/A	47.0 / 47.0	47.0	47.0
Payload to Low Earth Polar Orbit (k-lbs) (Titan IV/NUS)				
SRM	N/A	31.1 / 31.1	31.1	31.1
SRMU	N/A	38.8 / 38.8	38.8	38.8

b. Current Change Explanations --

Note: Due to four successful launches during the Dec 96 SAR reporting period, Titan IV demonstrated performance for system reliability has been increased from 93% to 95%. (18 of 19 launches have been successful)

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	579.7	3194.0	2583.3
Procurement	1570.8	19868.4	12917.2
Flyaway	(1106.6)		(10544.5)
Other Wpn Sys	(464.2)		(2372.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	105.3	93.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 85 Base-Year \$	2150.5	23167.7	15593.5
Escalation	378.7	14545.4	5587.3
Development (RDT&E)	(61.4)	(1252.3)	(641.9)
Procurement	(317.3)	(13267.4)	(4917.3)
Construction (MILCON)	(0.0)	(25.7)	(28.1)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	2529.2	37713.1	21180.8

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>10</u>	<u>65</u>	<u>41</u>
Total	10	65	41

Note 1: Program Deviation Report (PDR) was submitted 23 Jan 95 due to a Titan IV program reduction from 65 to 47 vehicles in the FY 95 Defense Appropriations Act. An intelligence community decision reallocated two user boosters to the Air Force. The Air Force Program Executive Office for Space (AFPEO/SP) letter dated 24 Jan 97 directed a 41 vehicle program. Secretary of the Air Force/Acquisition (SAF/AQS) is updating the Program Management Directive (PMD) to direct completion of the Titan 41 vehicle program. This will include reallocation of hardware between AF and the National User.

Note 2: Vehicle Quantity History:

DEC 85 SAR	DEC 86 SAR	DEC 88 SAR	Aug 94 DAB	DEC 94 SAR	DEC 95 SAR	96 SAR
10	23	57	65	47	46	41

c. Foreign Military Sales --

None.

d. Nuclear Costs --

None

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAY 94 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 85 BY\$)	15593.5	23167.7	
(2) Quantity	41	65	
(3) Unit Cost	380.329	356.426	+6.71
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 85 BY\$)	12917.2	19868.4	
(2) Quantity	41	65	
(3) Unit Cost	315.054	305.668	+3.07

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	641.1	1888.1	-	2529.2
Previous Changes:				
Economic	-71.2	-1013.6	+7.0	-1077.8
Quantity	-12.8	+4211.4	-	+4198.6
Schedule	+795.1	+4478.5	+5.0	+5278.6
Engineering	+862.0	-3630.6	-	-2768.6
Estimating	+1103.8	+11345.6	+111.9	+12561.3
Other	-	-	-	-
Support	+80.9	+2760.0	-	+2840.9
Subtotal	+2757.8	+18151.3	+123.9	+21033.0
Current Changes:				
Economic	+0.9	-15.3	0.0	-14.4
Quantity	-224.5	-2504.3	-	-2728.8
Schedule	-	-	-	-
Engineering	+32.8	-	-	+32.8
Estimating	+17.1	+793.1	-2.8	+807.4
Other	-	-	-	-
Support	-	-478.4	-	-478.4
Subtotal	-173.7	-2204.9	-2.8	-2381.4
Total Changes	+2584.1	+15946.4	+121.1	+18651.6
Current Estimate	3225.2	17834.5	121.1	21180.8

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Titan IV, December 31, 1996

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

Summary (FY 1985 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	579.7	1570.8	-	2150.5
Previous Changes:				
Quantity	-8.4	+4069.6	-	+4061.2
Schedule	+377.7	+1553.1	-	+1930.8
Engineering	+631.5	-2288.6	-	-1657.1
Estimating	+871.0	+7040.4	+95.2	+8006.6
Other	-	-	-	-
Support	+228.1	+2136.3	-	+2364.4
Subtotal	+2099.9	+12510.8	+95.2	+14705.9
Current Changes:				
Economic	-	-	-	-
Quantity	-130.4	-1437.5	-	-1567.9
Schedule	-	-	-	-
Engineering	+19.9	-	-	+19.9
Estimating	+14.2	+500.9	-2.2	+512.9
Other	-	-	-	-
Support	-	-227.8	-	-227.8
Subtotal	-96.3	-1164.4	-2.2	-1262.9
Total Changes	+2003.6	+11346.4	+93.0	+13443.0
Current Estimate	2583.3	12917.2	93.0	15593.5

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E

Revised escalation indices. (Economic)	N/A	+0.9
A decrease in the number of vehicles from 46 to 41 plus a corresponding truncation of the Titan launch period of performance from 2011 to 2005 reduced program office management costs. (Quantity)	-130.4	-224.5
Additional requirements associated with the 41 vehicle reallocation increased hardware and system engineering costs. (Engineering)	+19.9	+32.8
Revised estimate reduced Air Force mission integration costs. (Estimating)	-9.0	-12.1
Updated LC-40 overrun estimate increased facilities costs. (Estimating)	+23.0	+28.9
Adjustment for current and prior year escalation. (Estimating)	+0.2	+0.3
RD&E Subtotal	-96.3	-173.7

(2) Procurement

Revised escalation indices. (Economic)	N/A	-15.3
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Titan IV, December 31, 1996

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decrease in the number of vehicles from 46 to 41 reduced hardware costs. (Quantity)	-720.6	-1190.3
Decrease in the number of vehicles from 46 to 41 reduced non Air Force mission integration costs. (Quantity)	-136.0	-233.2
A decrease in the number of vehicles from 46 to 41 plus a corresponding truncation of the Titan launch period of performance from 2011 to 2005 reduced infrastructure maintenance costs. (Quantity)	-44.7	-93.8
A decrease in the number of vehicles from 46 to 41 plus a corresponding truncation of the Titan launch schedule from 2011 to 2005 reduced launch services costs. (Quantity)	-536.2	-987.0
Revised estimate for contract closeout. (Estimating)	+76.3	+104.6
New requirements to mitigate risk associated with future environmental compliance, vendor obsolescence, and hardware shelf-life, increase hardware and support costs. (Estimating)	+420.8	+683.2
Change in the final launch year from 2011 to 2005 reduced program office and technical support costs. (Support)	-227.8	-478.4
Adjustment for current and prior year escalation. (Estimating)	+3.8	+5.3
Procurement Subtotal	-1164.4	-2204.9
(3) <u>MILCON</u>		
Revised escalation indices. Small value rounded to zero. (Economic)	N/A	0.0
Revised estimate to complete construction of the Solid Motor Assembly Building (SMAB) at CCAS. (Estimating)	-2.2	-2.8
Adjustment for current and prior year escalation. Small values rounded to zero. (Estimating)	0.0	0.0
MILCON Subtotal	-2.2	-2.8

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
252.92	-26.64	-155.39	+128.75	-66.73	+326.07	--	+57.62	+263.68	516.60

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
188.81	-25.10	-101.12	+109.23	-88.55	+296.07	--	+55.65	+246.18	434.99

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	2529.2	N/A	21180.8
Total Quantity	N/A	10	N/A	41
Prog Acq Unit Cost	N/A	252.92	N/A	516.6

Titan IV had no acquisition phase milestones.

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

a. RDT&E --		Initial Contract Price		
Program R & D:		Target	Ceiling	Qty
LOCKHEED MARTIN, DENVER, CO				
F04701-96-C-0035, CPAF/FF		\$62.3	N/A	0
Award: July 1, 1996				
Definitized: July 1, 1996				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$100.2	N/A	0	\$100.2	\$98.4

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/96)	<u>\$3.1</u>	<u>\$-2.0</u>
Net Change	\$3.1	\$-2.0

Explanation of Change:

This is the first time this contract has been reported. The contract was awarded on July 1 1996. Positive cumulative cost variance is from System Engineering addition of the Atlas launch program. Schedule variance is from SRMU research and development. An Integrated Baseline Review (IBR) will be completed in March 1997 to validate the performance measurement baseline.

b. Procurement --

TITAN IV:

LOCKHEED MARTIN, DENVER, CO
P40701-85-C-0019, FPIF
Award: February 28, 1985
Definitized: March 1, 1985

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$2095.8	\$2287.8	10

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$11777.8	\$12739.7	41	\$12510.9	\$12510.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-453.7	\$-113.0
Cumulative Variances To Date (06/30/96)	<u>\$-476.8</u>	<u>\$-74.4</u>
Net Change	\$-23.1	\$38.6

Explanation of Change:

This will be the last time that -0019 contract will be reported in the SAR. The June 1996 Cost Performance Report (CPR) is the final -0019 contract cost and schedule position prior to transfer of the remaining production work, launches and research & development to the new Production (-0001), Launch Operations (-0012) and R&D (-0035) contracts.

Cumulative net cost variance was due to: 1) Centaur upper orbital stages technical and managerial problems, 2) core vehicle hardware such as SRMs, SRMUs and necessary vehicle avionics upgrades. Cumulative net schedule was due to: 1) core vehicle hardware in Stage I & II plus SRMs and 2) Centaur production schedules.

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15. Contract Information (Cont'd):

UNIFIED PAYLOAD INT(UPI):
LOCKHEED MARTIN, DENVER, CO
F04701-92-C-0028, CPAF
Award: June 30, 1992
Definitized: June 30, 1992

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$673.5	N/A	0

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$705.1	N/A	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$655.8	\$652.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$31.0	\$-7.3
Cumulative Variances To Date (12/31/96)	<u>\$46.2</u>	<u>\$-4.0</u>
Net Change	\$15.2	\$3.3

Explanation of Change:

The positive net change in cumulative cost variance of \$15.2M is from manpower level of effort (LOE) in engineering for mission integration. The positive net change in cumulative schedule variance of \$3.3M is from re-baselining to realistic payload mission schedules.

Launch Base Ops:
LOCKHEED MARTIN, DENVER, CO
F04701-95-C-0012, CPAF/FF
Award: April 1, 1996
Definitized: April 1, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1538.0	\$1764.4	0

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1668.4	\$1913.9	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$1639.4	\$1639.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/96)	<u>\$1.6</u>	<u>\$-5.0</u>
Net Change	\$1.6	\$-5.0

Explanation of Change:

This is the first time this contract has been reported. The contract was awarded on April 1 1996. The net change in cumulative schedule variance is from: 1) logistic problems in ground equipment for the core vehicle, 2) labor overrun from paid overtime for "first-time" TIVB configuration processing for TIVB-24. The program manager and the contractor's estimated price at completion reflect a \$29.0M underrun. An Integrated Baseline Review (IBR) will be completed in March 1997 to validate the performance measurement baseline.

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Titan IV, December 31, 1996

15. Contract Information (Cont'd):

<u>Production:</u>			<u>Initial Contract Price</u>		
LOCKHEED MARTIN, DENVER, CO			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F04701-96-C-0001, FPIF			\$568.9	\$589.6	0
Award: April 1, 1996					
Definitized: April 1, 1996					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1853.8	\$1997.9	0	\$1814.8	\$1814.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/96)	\$10.4	\$-20.1
Net Change	\$10.4	\$-20.1

Explanation of Change:

This is the first time this contract has been reported. The contract was awarded on April 1 1996. The net changes in cumulative schedule variance are from: 1) Centaur logistic problems in delivery of production materials, 2) Centaur production problems, and 3) TIVB vehicle avionics, instrumentation and ground equipment. An Integrated Baseline Review (IBR) will be completed in March 1997 to validate the performance measurement baseline.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY85-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-06)	<u>Total</u>
RDT&E	2770.4	80.8	136.8	237.2	3225.2
Procurement	11596.8	1062.1	1042.0	4133.6	17834.5
MILCON	121.1	-	-	-	121.1
O&M	-	-	-	-	-
Total	14488.3	1142.9	1178.8	4370.8	21180.8

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

b. Annual Summary -- TITAN IV (ELV)

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985				32.9	33.6
1986				247.3	258.4
1987				160.9	175.7
1988				317.8	356.3
1989				340.3	400.2
1990				290.1	351.6
1991				143.4	180.2
1992				190.9	247.0
1993				112.3	148.5
1994				189.3	254.4
1995				101.9	139.6
1996				92.1	128.7
1997				67.4	96.2
1998				55.5	80.8
1999				91.9	136.8
2000				35.0	53.2
2001				31.9	49.4
2002				28.0	44.4
2003				24.8	40.2
2004				15.0	25.0
2005				14.6	25.0
Subtotal				2583.3	3225.2

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985		42.7	69.7	112.4	118.5
1986		36.9	385.4	471.2	519.7
1987	2	90.5	592.3	766.8	881.8
1988	6	193.0	646.7	941.4	1122.1
1989	5	215.4	502.8	870.4	1083.7
1990	5	166.9	552.6	865.2	1097.1
1991	5	230.4	318.2	694.6	906.4
1992	6	296.9	232.5	720.2	951.4
1993	6	421.0	227.3	791.5	1067.8
1994	4	239.3	500.1	877.6	1209.4
1995	2	179.3	267.3	551.9	769.3
1996		142.7	318.1	568.9	807.3
1997		151.3	375.4	676.5	980.2

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

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998		172.6	387.8	718.1	1062.1
1999		142.2	428.3	690.1	1042.0
2000		143.7	275.4	512.6	790.9
2001		129.0	228.4	465.8	734.6
2002		122.3	232.2	458.9	740.2
2003		88.4	176.1	351.0	580.2
2004		148.2	161.7	423.0	717.4
2005		96.3	126.5	298.4	519.3
2006		28.6		28.6	51.0
Subtotal	41	3477.6	7004.8	12855.1	17752.4

The user funds approximately 50% of missile procurement funds in the Titan IV program. All User funded Titan IV vehicles, and all funding related to Air Force vehicles after December 1992, are incrementally funded. Therefore, recurring Flyaway dollars do not correspond logically to procurement quantities in FY85, FY86, and FY96 through FY06. There are no production quantities associated with the Launch Base Operations (LBO) contract (-0012). The LBO contract does however, procure a launch capability which includes recurring launch operation costs at both Eastern and Western Ranges which is not tied to any specific hardware unit.

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992		62.1		62.1	82.1
Subtotal		62.1		62.1	82.1

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY85 Dollars Nonrec	Flyaway FY85 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				44.1	55.8
1991				7.7	10.0
1992				16.0	21.2
1993				25.2	34.1
Subtotal				93.0	121.1

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	41	3539.7	7004.8	15593.5	21180.8

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	35	35

Percent Total Program Quantities Delivered: 85.4%

b. Total Expenditures To Date (In Millions of Dollars): \$ 9919.8

Percent Total Program Expended: 46.8%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The costs for launch processing are based on actual contract values for the current Titan IV program and were transferred from operation and support costs to procurement costs in conjunction with the FY92/93 President's Budget. Thus, these costs are not included below. Range costs continue to be carried as operation and support costs. The updated Titan IV Program Office Estimate (POE) annual O&S costs were estimated to be \$63.6M in base year dollars. With a reasonable rate of four launches per year the average annual cost per launch in base year dollars is \$15.9M.

b. Costs -- (FY 1985 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Titan IV Launch	Avg Annual Cost Per Titan 34D Launch
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Range Support	15.9	7.5
Total	15.9	7.5

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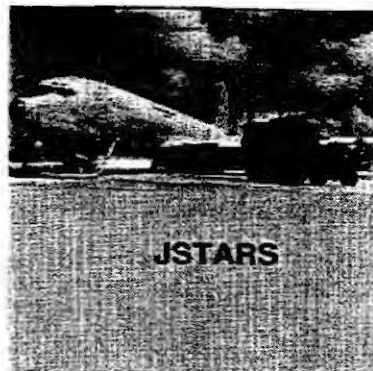
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: Joint STARS

AS OF DATE: December 31, 1996

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 FOR OPEN PUBLICATION

AS AMENDED

17 MAR 4 1997

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

1. (U) Designation and Nomenclature (Popular Name): Joint STARS2. (U) DoD Component: USAF

Joint Participants:
 US Army

3. (U) Responsible Office and Telephone Number:

Joint STARS Program Office	Col Robert H. Latiff
Electronic Systems Center	Assigned: December 6, 1996
75 Vandenberg Drive	DSN 478-5725; COMM (617) 377-5725
Hanscom AFB, MA 01731-2119	latiff@hanscom.af.mil

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

(U) PE 0207581F
 (U) PE 0603770F
 (U) PE 0604270F Project 3894 (Shared)
 (U) PE 0604616F
 (U) PE 0604770D
 (U) PE 0604770F

PROCUREMENT:

(U) APPN 3010 ICN 0207581F (Air Force)

MILCON:

(U) PE 0604770F

GAF/PAS

97-0008

CONGRESSIONAL

~~Classified by Joint STARS Classification Guide dated 09 Mar 94~~
~~Excluded from automatic downgrading and declassification~~
~~Excluded from automatic downgrading and declassification (GAPD)~~

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5. (U) References:

SAR Baseline (Development Estimate):

(U) ADM dated 5 Jul 88, subject: "Joint Surveillance Target Attack Radar System: Milestone IIB Acquisition Decision Memorandum."

Approved Program / Production Estimate (PdE):

(U) DAE Approved Acquisition Program Baseline (APB) dated October 24, 1996.

6. (U) Mission and Description:

(U) The Joint Surveillance Target Attack Radar System (Joint STARS) is a Joint Army and Air Force Program, with the Air Force as lead service. The Joint STARS system provides real-time wide area surveillance of the battlefield and rear echelons. Joint STARS is unique because it detects and tracks enemy armor, vehicles, and troops over a wide-area in real-time using moving target indicator (MTI) and synthetic aperture radar (SAR) techniques. Joint STARS also provides precise real-time targeting information to direct attack aircraft, friendly artillery, and standoff missile batteries thereby reducing interdiction missions. Joint STARS unique capabilities can give the Corps Commander a near real-time look at enemy first and second echelon force buildups, force movements, and the enemy's scheme-of-maneuver on the battlefield. This early information on the enemy's battle plan will allow friendly forces to act before the enemy plan is executed and maneuver with economy of force to engage the enemy at a time and place of the Corps Commander's own choosing. There is no antecedent system.

7. (U) Executive Summary:

(U) OUSD(A&T) approved Full Rate Production of 19 Joint STARS aircraft at a Defense Acquisition Board (DAB) Readiness Meeting on 17 Sep 96 with an Acquisition Decision Memorandum (ADM) released on 26 Sep 96 and an Acquisition Program Baseline (APB) dated 24 Oct 96. All current estimates are within the objective/threshold parameters of the APB.

General Skantze (Ret) completed an Affordability Review of Joint STARS and reported to USD(A&T) in Oct 96. Several hardware and manufacturing process initiatives are in work, including insertion of commercial off-the-shelf (COTS) technology. Implementation requires FY97 reprogramming with no net increase in cost over the FYDP. O&M savings are estimated at over \$1B over the life of the system.

Northrop Grumman delivered P2, the second low rate initial production (LRIP) aircraft on 13 Dec 96. The Lot IV LRIP contract for P7 and P8 was awarded 20 Dec 96 and the advance buy for Lot VI full production was awarded on 31 Dec 96. The Lot V full production contract is planned for a May 97 award.

The Joint STARS JPO and the 93rd Air Control Wing completed the successful support of Operation Joint Endeavor II on 29 Dec 96, completing 34 operational

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Joint STARS, December 31, 1996

7. (U) Executive Summary (Cont'd):

missions out of 39 scheduled with three weather cancellations and two air aborts due to engine problems. P1 deployed on 31 Oct 96; test aircraft T3 deployed on 13 Nov 96 and was replaced by P2 on 22 Dec 96. P2 remained in theater for a CINCEUR demonstration and returned to Robins AFB on 4 Jan 97.

Several deficiencies were identified in DT&E and OT&E, especially in the suitability area. This is not unusual at this stage of the program for a highly complex system. However, it clearly identifies the need for a continuing disciplined process to improve the system both prior to IOC and throughout the life cycle. The program office is working hard, with user assistance, to prioritize and resolve these deficiencies. We initiated a joint service General Officer Steering Group to provide strategic guidance to mature the Joint STARS system and review progress.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program/PdE	Current Estimate
Milestone IIA	SEP 85	SEP 85	SEP 85
FSD Contract Award	SEP 85	SEP 85	SEP 85
Preliminary Design Review (PDR)	MAY 86	N/A	MAY 86
Hardware			
PDR Software	MAR 87	N/A	MAR 87
Critical Design Review (CDR) Hardware	DEC 86	N/A	DEC 86
First Test Flight	APR 88	APR 88	APR 88
Milestone IIB	APR 88	APR 88	APR 88
System CDR	NOV 88	NOV 88	NOV 88
Contractor Flight Test Start	APR 89	APR 89	APR 89

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

	Development Estimate (SAR)	Approved Program/PdE	Current Estimate	
Operational Field Demo I	N/A	JUL 90	SEP 90	
System-level Perf. Verf.-start	NOV 90	SEP 91	OCT 91	
DT&E Start	FEB 91	JUN 91	OCT 91	
Milestone IIIA	DEC 91	N/A	N/A	
DAB Program Review, LRIP	N/A	MAR 93	MAY 93	
Software Support Facility Delivery (MSSF Phase I)	N/A	MAY 96	AUG 96	
Flight/Mission Simulator Delivery (MCTC Phase I & J-FCTS Phase I)	N/A	N/A	N/A	
DT&E Complete (FOFSD)	N/A	JUN 95	SEP 95	
MOT&E				
Start	N/A	JUN 95	NOV 95	
Complete	N/A	FEB 96	JUL 96	
Milestone III	N/A	JUN 96	SEP 96	
Full Rate Production Contract Award	N/A	JUN 97	MAY 97	(Ch-1)
Self Defense Suite (SDS) Flight Test	DEC 92	N/A	N/A	
SDS Production Decision	OCT 93	N/A	N/A	
First Aircraft Deliver to TAC	MAR 94	N/A	N/A	
First Aircraft Delivery to ACC	N/A	FEB 96	JUN 96	
First Training Squad Ready for Trng	N/A	SEP 96	SEP 96	
Depot Support Date	N/A	JAN 96	MAY 96	
First SDS Installation (Group A)	JAN 95	FEB 96	FEB 96	
Required Assets Availability (RAA)	N/A	SEP 96	FEB 97	(Ch-2)
Organic Support Capability	N/A	SEP 97	SEP 97	
IOC	SEP 96	SEP 97	SEP 97	
Mature Reliability	N/A	SEP 98	SEP 98	
Last Aircraft Delivery	SEP 00	N/A	N/A	
Follow-On OT&E Start	N/A	FEB 98	FEB 98	(Ch-3)

b. (U) Current Change Explanations --

(Ch-1) Full Rate Production Contract Award estimate changed from Mar 97 to May 97 because a late Lot IV settlement delayed the Lot V proposal.

(Ch-2) Required Assets Availability estimate changed from Nov 96 to Feb 97 due to delayed delivery of PME maintenance supplies (radar and surveillance control data link (SCDL) parts) needed to meet the required fill rate.

(Ch-3) Follow-on OT&E Start estimate changed from Sep 99 to Feb 98. The APB Objective/Threshold changed from Sep 99/Mar 00 to Feb 98/Oct 98 to more accurately reflect the planned testing required as part of the continuing maturation process for tactics, operational concept, software and hardware.

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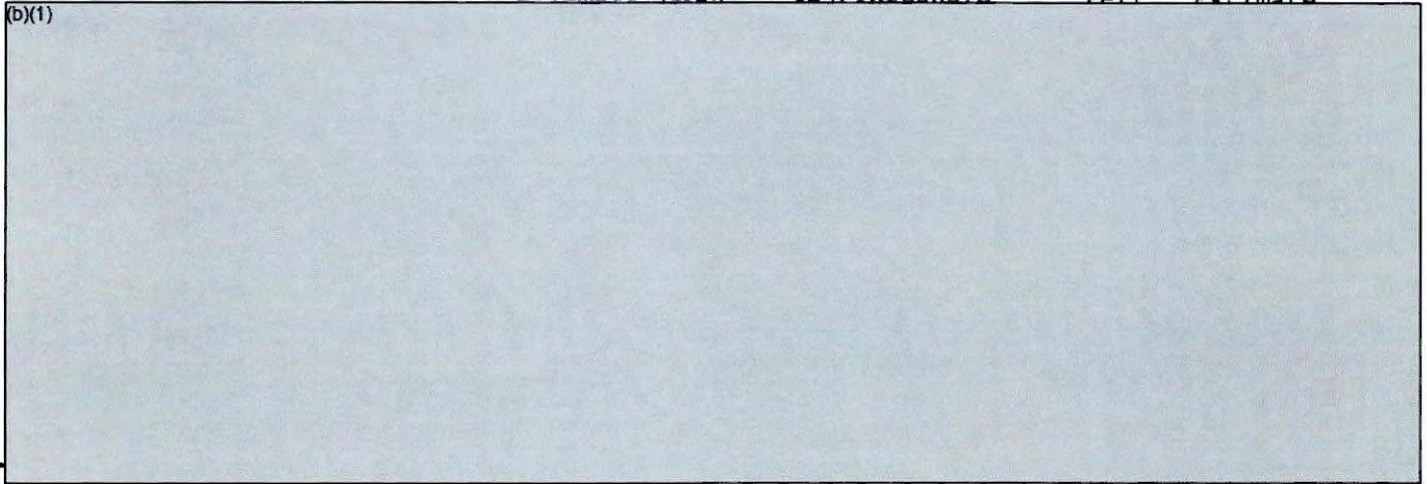
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9b. (U) Schedule (Cont'd):

10. (U) Performance Characteristics:

a. Performance --

Development Estimate (SAR)	Approved Program;PdE Obj/Threshold	Demon- strated Perf	Current Estimate
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10a. (U) Performance Characteristics (Cont'd):

Development	Approved Program;PdE	Demon- strated	Current
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(b)(1)



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

	<u>Development Estimate (SAR)</u>	<u>Approved Program;PdE Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Air (%) (min)				
in 20	N/A	50 / 3	96	60
in 30	N/A	75 / 7	98	73
in 45	N/A	90 / 25	99	76
Ground (%) (hrs)				
in 4	N/A	50 / 15	52 (SIM)	50
in 8	N/A	75 / 38	83 (SIM)	75
in 12	N/A	85 / 50	76	100
Mission Reliability	N/A	.88 / .78	.65	.81
Rate				

(b)(1)

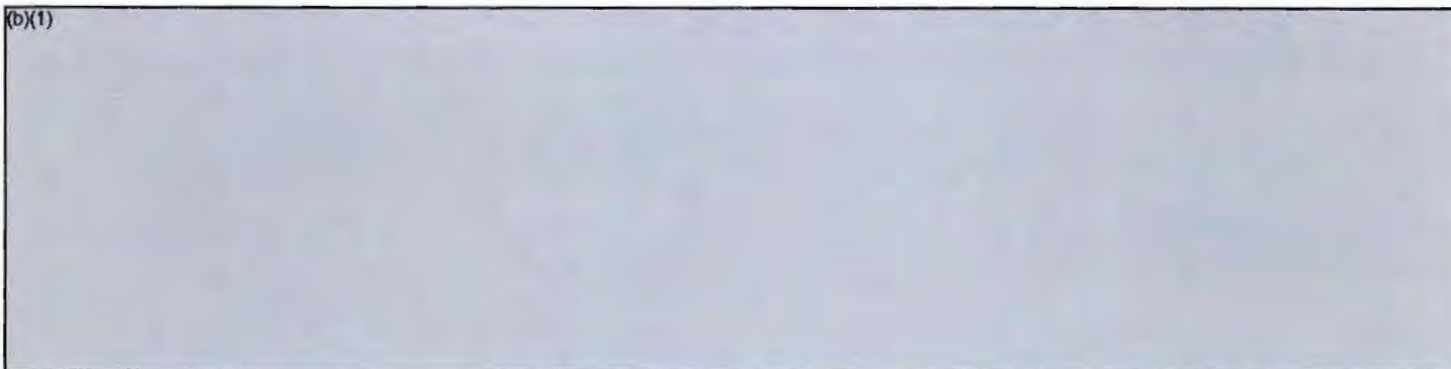
(D-1 to D+30)					
Effective time on station (ETOS%)	N/A	90	/ 75	78	90 (Ch-1)

(U) *NOTE- The following is required information needed to fully understand the data located in the Performance Characteristics Section 10. Acronyms used above and not referenced below include: Forward Line Own Troops (FLOT) and Mean Time Between Critical Failure (MTBCF).

(b)(1)

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b. (U) Current Change Explanations --
 (Ch-1) Effective Time on Station (ETOS) was added to Performance Characteristics in the 24 Oct 96 APB.

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

	Development Estimate (SAR)	Approved Program; PdE	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1448.2	2498.6	2520.1
Procurement	3192.8	3762.5	3631.6
Recurring	(2481.1)		(2807.5)
Non-Recurring	(182.7)		(112.2)
Total Flyaway	(2663.8)		(2919.7)
Other Wpn Sys	(286.4)		(383.4)
Peculiar Support	(0.0)		(35.6)
Initial Spares	(242.6)		(292.9)
Construction (MILCON)	87.8	84.7	79.6
Acquisition O&M	0.0	0.0	0.0
Total FY 83 Base-Year \$	4728.8	6345.8	6231.3
Escalation	2013.1	3416.3	3283.7
Development (RDT&E)	(315.0)	(856.0)	(867.8)
Procurement	(1658.1)	(2516.4)	(2374.9)
Construction (MILCON)	(40.0)	(43.9)	(41.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6741.9	9762.1	9515.0
b. (U) Quantity --			
Development (RDT&E)	0	1	1
Procurement	21	19	19
Total	21	20	20

(U) NOTE: The Development (RDT&E) quantity under Current Estimate was incorrectly

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11b. (U) Total Program Cost and Quantity (Cont'd):
reported as zero in previous SARs. The correct value is one.

The DAB Program Review for LRIP (May 93) approved a total of five aircraft in three lots. The 4 Mar 94 Under Secretary of Defense Joint STARS Program Memorandum increased the total LRIP program to six aircraft in three lots. The 15 Jun 95 Under Secretary of Defense Joint STARS Program Memorandum approved an increase in the total LRIP program to eight aircraft in four lots. The increase was prompted by multi-service operational testing and evaluation (MOT&E) delays and the desire to preserve production continuity.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 83 BY\$)	6231.3	6345.8	
(2) Quantity	20	20	
(3) Unit Cost	311.565	317.290	-1.80
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 83 BY\$)	3631.6	3762.5	
(2) Quantity	19	19	
(3) Unit Cost	191.137	198.026	-3.48

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1763.2	4850.9	127.8	6741.9
Previous Changes:				
Economic	-1.1	+188.2	+3.6	+190.7
Quantity	-	-370.1	-	-370.1
Schedule	+504.3	+270.3	-	+774.6
Engineering	+371.8	-732.9	-	-361.1
Estimating	+752.5	+1475.4	-5.4	+2222.5
Other	-	-	-	-
Support	-	+503.4	-	+503.4
Subtotal	+1627.5	+1334.3	-1.8	+2960.0
Current Changes:				
Economic	-2.9	-27.8	-0.4	-31.1
Quantity	-	-	-	-
Schedule	-	+27.5	-	+27.5
Engineering	-	-	-	-
Estimating	+0.1	+68.2	-5.0	+63.3
Other	-	-	-	-
Support	-	-246.6	-	-246.6
Subtotal	-2.8	-178.7	-5.4	-186.9
Total Changes	+1624.7	+1155.6	-7.2	+2773.1
Current Estimate	3387.9	6006.5	120.6	9515.0

(U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1448.2	3192.8	87.8	4728.8
Previous Changes:				
Quantity	-	-234.2	-	-234.2
Schedule	+308.7	+67.4	-	+376.1
Engineering	+250.2	-412.3	-	-162.1
Estimating	+514.1	+795.1	-5.2	+1304.0
Other	-	-	-	-
Support	-	+331.6	-	+331.6
Subtotal	+1073.0	+547.6	-5.2	+1615.4
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.1	+39.9	-3.0	+35.8
Other	-	-	-	-
Support	-	-148.7	-	-148.7
Subtotal	-1.1	-108.8	-3.0	-112.9
Total Changes	+1071.9	+438.8	-8.2	+1502.5
Current Estimate	2520.1	3631.6	79.6	6231.3

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic inflation indices (Economic)	N/A	-2.9
Adjustment for current and prior year escalation (Estimating)	+0.4	+0.6
Estimating changes in Follow-on FSD efforts (Estimating)	-7.2	-11.0
Requirements changes in Self Defense Suite (SDS) and Multi-Stage Improvement Program (MSIP) (Estimating)	-31.6	-47.2
Estimating changes in Government Test Efforts (Estimating)	+7.3	+12.8
Requirements changes in Support Systems (deleted Deployable Mission Support Capability (DMSC) and reduced Mission Crew Training Capability and Interoperability Certification Capability) (Estimating)	-66.9	-105.6
Estimating changes in Other Government Costs (Estimating)	+4.5	+7.6
Requirements changes in Program Support (Estimating)	-16.6	-27.0
Estimating changes in Miscellaneous Efforts (Estimating)	+14.4	+22.5
Skantze Life Cycle Cost initiatives (Estimating)	+93.1	+145.0
Re-estimating of FY98-03 due to inflation (Estimating)	+1.5	+2.4
RDT&E Subtotal	-1.1	-2.8
(2) <u>Procurement</u>		
Revised economic inflation indices (Economic)	N/A	-20.9
Economic adjustment for negative program change (Economic)	N/A	-6.9
Adjustment for current and prior year escalation (Estimating)	+3.7	+6.0
Schedule change associated with revised annual buy quantities (FY98, 01, 02) (Schedule)	N/A	+27.5
Adjustment for Advance Buy Debit/Credit (Estimating)	-28.3	-51.8
Skantze Life Cycle Cost initiatives (Estimating)	-107.6	-188.5
Spares Requirements changes (Support)	-111.1	-177.7
Other Weapon Systems changes (deleted DMSC & Software Support Facility, reduced JIMIS, PSE, and Program Support efforts) (Support)	-80.2	-141.8

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Funds added for modifications (BP11) (Support)	+42.6	+72.9
Re-estimating of FY98-05 for inflation (Estimating)	+8.7	+15.0
Flyaway changes for retrofit costs, adding one year to the program, and corrections for advance buy calculations (Estimating)	+163.4	+287.5
Procurement Subtotal	-108.8	-178.7

(3) MILCON

Revised escalation indices. (Economic)	N/A	-0.3
Economic adjustment for negative program change. (Economic)	N/A	-0.1
Adjustment for Current and Prior Inflation. (Estimating)	0.0	+0.1
Rephasing of efforts due to funding adjustments (Estimating)	-3.0	-5.1
MILCON Subtotal	-3.0	-5.4

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Dev Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
571.40	-3.40	-430.20	+2.90	+95.90	+45.70	--	+38.74	-250.36	321.04

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
321.04	+7.98	-2.46	+40.11	-18.05	+114.29	--	+12.84	+154.71	475.75

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14b. (U) Unit Cost and Other History (Cont'd):

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Dev Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
--	--	--	--	--	--	--	--	--	--

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
231.00	+8.44	+4.83	+15.67	-38.57	+81.24	--	+13.52	+85.13	316.13

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	APR 85	SEP 85	N/A	SEP 85
Milestone III	N/A	SEP 96	N/A	SEP 96
FUE/IOC	TBD	SEP 97	N/A	SEP 97
Total Cost	1388.2	6741.9	N/A	9515
Total Quantity	0	21	N/A	20
Prog Acq Unit Cost	0	321.04	N/A	475.75

(U) NOTE: The SAR Planning Estimate (PE) Total Cost of 1388.2 was based on the RDT&E program only.

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

a. RDT&E --

(U) Ground Support Systems:
Grumman Aerospace, Melbourne, FL
F19628-93-C-0067, CPIF
Award: October 28, 1993
Definitized: October 28, 1993

Initial Contract Price		
Target	Ceiling	Qty
\$79.0	N/A	1

Current Contract Price		
Target	Ceiling	Qty
\$119.7	N/A	2

Estimated Price At Completion	
Contractor	Program Manager
\$112.4	\$112.4

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$18.9	\$-1.6
Cumulative Variances To Date (12/31/96)	\$25.8	\$-0.5
Net Change	\$6.9	\$1.1

Explanation of Change:

(U) Current Contract Target Price decreased by \$674K due to deletion of automated tech orders from the contract. The Transportable Mission Support System (TMSS) effort continues to underrun with a current CPR underrun of \$11.6M. Total cost underrun on this contract is \$25.8M. The schedule variance improvement from -\$1.6 to -\$0.5 reflects a rescheduled delivery date for TMSS from Apr 97 to Jun 97.

b. Procurement --

(U) LRIP Lot I:

Grunman Aerospace, Melbourne, FL
F19628-92-C-0035, FPIF OPTION
Award: April 24, 1992
Definitized: May 28, 1993

<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$129.2	N/A	2

<u>Current Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$525.1	\$557.0	2

<u>Estimated Price At Completion</u>	
<u>Contractor</u>	<u>Program Manager</u>
\$538.4	\$538.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-27.1	\$-60.1
Cumulative Variances To Date (11/30/96)	\$-35.9	\$-12.2
Net Change	\$-8.8	\$47.9

Explanation of Change:

(U) Subsequent to the Sep 96 SAR (using Jul 96 cost reporting), the second and final aircraft of this LRIP lot was delivered (DD250 complete). Cost greater than the Current Contract Target Price is expected to be \$14.2M. A technical evaluation of this figure is underway by the program office and the DPRO. Government share of any overrun on this contract is 70%. The Program Manager's Estimated Price at Completion (\$538.4M) includes consideration of these factors.

(U) LRIP Lot II:

Grunman Aerospace, Melbourne, FL
F19628-92-C-0035, FFP OPTION
Award: June 17, 1993
Definitized: July 14, 1994

<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$75.6	N/A	2

<u>Current Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$464.7	N/A	2

<u>Estimated Price At Completion</u>	
<u>Contractor</u>	<u>Program Manager</u>
\$464.7	\$464.7

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$6.4	\$-51.0
Cumulative Variances To Date (09/27/96)	\$-11.6	\$-0.9
Net Change	\$-18.0	\$50.1

Explanation of Change:

(U) The Current Contract Target Price increase from \$454.7M to \$464.7M reflects over and above aircraft restoration effort, spares orders and miscellaneous work requests. The net change in cost variance reflects the higher than planned direct labor for the O&A workscope. The poor condition of aircraft P3 has resulted in an extraordinary amount of over and above aircraft restoration work that has impacted normal scheduled refurbishment and aircraft flow. This in turn has impacted the delivery of aircraft P3 to Melbourne, where installation of the PME takes place. The \$50.1M net change in schedule variance reflects the rescheduled delivery date of P3 to Sep 97. The Lot II contract is a Firm Fixed Price Option; the Target Price includes profit.

(U) LRIP Lot III:
Grumman Aerospace, Melbourne, FL
F19628-92-C-0035, FFP OPTION
Award: May 10, 1994
Definitized: August 2, 1995

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$123.2	N/A	2

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$666.7	N/A	2

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$666.7	\$666.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$8.6	\$-6.2
Cumulative Variances To Date (11/30/96)	\$-3.6	\$-5.1
Net Change	\$-12.2	\$1.1

Explanation of Change:

(U) The requirement for CPR is pending negotiations. Increase in Current Contract Target Price is due to over and above (O&As). Lot III is a Firm Fixed Price Option; the Target Price includes profit.

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

(U) LRIP Lot IV:

Grumman Aerospace, Melbourne, FL

F19628-95-C-0169, FFP

Award: July 21, 1995

Definitized: December 20, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$168.6	N/A	2

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$403.9	N/A	2	\$403.9	\$403.9

Explanation of Change:

(U) The Current Contract Target Price change is a result of the Lot IV basic settlement. Cost reporting on this Firm Fixed Price Contract was terminated as part of the definitization negotiations.

(U) LOT V:

Grumman Aerospace, Melbourne, FL

F19628-96-C-0021, FFP

Award: June 19, 1996

Definitized: N/A

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$73.0	N/A	2

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$104.7	N/A	2	\$104.7	\$104.7

Explanation of Change:

(U) The increase in Current Contract Target Price is due to over and aboves.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY82-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-06)	<u>Total</u>
RDT&E	2965.0	119.2	84.5	219.2	3387.9
Procurement	3043.3	371.5	839.3	1752.4	6006.5
MILCON	93.8	18.7	-	8.1	120.6
O&M	-	-	-	-	-
Total	6102.1	509.4	923.8	1979.7	9515.0

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

b. Annual Summary -- AIRBORNE RADAR

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				33.5	32.6
1983				30.7	31.3
1984				38.7	41.0
1985				44.4	48.6
1986				139.3	156.1
1987				256.1	300.2
1988				274.7	330.7
1989				181.9	229.6
1990				76.2	99.1
1991				172.4	232.6
1992				242.8	337.2
1993				221.0	313.4
1994				192.9	278.3
1995				111.6	164.2
1996				103.3	154.9
1997				140.5	215.2
1998				76.2	119.2
1999				52.9	84.5
2000				47.4	77.3
2001				34.4	57.3
2002				27.6	46.9
2003				21.6	37.7
Subtotal	1			2520.1	3387.9

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				91.8	137.3
1993	2	9.2	323.7	419.2	636.4
1994	2	3.8	332.7	347.6	536.7
1995	2	20.3	341.5	418.9	659.4
1996	2	9.5	257.2	333.9	536.6
1997	2	11.2	282.6	327.4	536.9
1998	1	9.8	150.9	221.8	371.5
1999	2	12.0	336.8	490.5	839.3
2000	2	12.9	297.8	377.0	659.0
2001	2	11.8	269.4	319.4	570.7
2002	2	11.7	202.9	242.3	443.7
2003			12.0	34.2	64.3

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

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				5.6	10.7
2005				1.6	3.1
2006				0.4	0.9
Subtotal	19	112.2	2807.5	3631.6	6006.5

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY83 Dollars Nonrec	Flyaway FY83 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				13.2	18.8
1993				7.4	10.8
1994				16.5	24.4
1995				9.5	14.3
1996				4.5	6.9
1997				11.9	18.6
1998				11.7	18.7
1999					
2000				4.9	8.1
2001					
Subtotal				79.6	120.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	20	112.2	2807.5	6231.3	9515.0

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	3	2

(U) Percent Total Program Quantities Delivered: 15.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3914.3

(U) Percent Total Program Expended: 41.1%

(U) DD250 of P1 was completed on 4 Mar 96. DD250 of P2 was completed 12 Dec 96. DD250 of P3 was scheduled for Aug 96; delivery is expected in Sep 97.

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
O&S Costs were based on 19 refurbished Boeing 707 aircraft powered by the TF-33B engine. The support concept priced assumes two-level (organizational/depot) support of the Prime Mission Equipment (PME). The airframe support will be Government organizational level support, a mixture of Government and contractor support for organizational (off-equipment) maintenance, and contractor support for depot level requirements. The O&S costs of the PME and airframe were estimated individually and then added together to estimate the total system level O&S Costs. The PME costs were estimated using a Program Office developed Depot Level Repairables (DLR) cost estimating model which takes into account current Mean Time Between Failure (MTBF) projections for all components, latest acquisition procurement for each, and the current Repairable Support Division (RSD) surcharge expected to be levied against each depot return. The airframe costs were estimated using analogies to similar programs which use the exact same Planned Depot Maintenance (PDM) or a similar (Aircraft DLRs/Contractor Owned and Managed Base Supply) airframe. The cost data presented represents the first year of Steady State O&S costs (FY06) which would occur in the same year that has all 19 Primary Aircraft Authorizations (PAA) available for a full year. The Operations and Support period for the current estimate has a ten year Ramp-Up (FY96-05), eleven year Steady State (FY06-16), and ten year Ramp-Down (FY17-25). The Steady State costs presented below were extracted from the Service Cost Position, dated 22 Jul 96.

There is no antecedent system.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

Cost Element	Steady State (SS) Annual Costs - First Year SS FY06	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	137.5	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	11.5	N/A
Contractor Support	69.9	N/A
Sustaining Support	77.8	N/A
Indirect Costs	37.9	N/A
Mission Personnel	111.1	N/A
Total	445.7	N/A

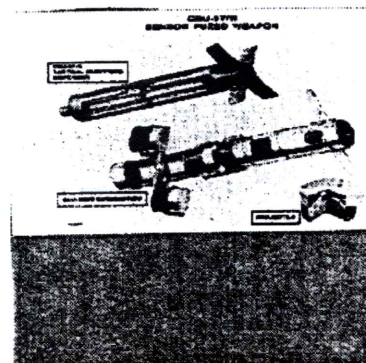
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AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Sensor Fuzed Weapon (SFW), CBU-97/B

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

ASC/YH

102 W D Avenue, Suite 300
EGLIN AFB, FL 32542-6807

COL (A) WILLIAM M. WISE

Assigned: June 28, 1996

DSN 872-5382; COMM (904) 882-5382

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

RDT&E:

- (U) PE 0207320F Project 671016
- (U) PE 0604602F (Shared) Project 643244
- (U) PE 0604604F (Shared) Project 643086
- (U) PE 0604607F Project 642961

PROCUREMENT:

- (U) APPN 3020 ICN 273520 (Air Force)
- (U) APPN 3020 ICN 353520 (Air Force)
- (U) APPN 3080 ICN 813520 (Air Force)

(U) Beginning in FY95, funding was transferred from APPN 3020 (Missile Procurement, AF) to APPN 3011 (Procurement of Ammunition, AF).

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DIRECTORATE OF SPECIAL OPERATIONS
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

SAF/PAS

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5. (U) References:

SAR Baseline (Production Estimate):

(U) OSD/CAIG Briefing, May 86. (Approved by OSD).

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated August 28, 1996.

6. (U) Mission and Description:

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Sensor Fuzed Weapon, December 31, 1996

7. (U) Executive Summary:

(U) On 16 Nov 96, the Program Office conducted a successful Lot Acceptance Test (LAT) for the first lot of LRIP 4 weapons. LAT 11 was delivered over the standard SFW target array at 515 KCAS, 600 feet above ground level, straight and level with a 25 knot tail wind. The weapon achieved 10 hits on five targets, a new SFW record. Government acceptance of LOT 11 put 54 more weapons in the inventory.

The SFW team has been investigating some anomalies that surfaced in laboratory and component level tests of BLU-108 submunition altimeters. The team found testing conditions where altimeters caused the BLU-108 to function at a slightly higher altitude than desired. Textron Systems Division (TSD) delayed deliveries of hardware until this problem was corrected. The problem has been corrected and LAT 12 is scheduled for early March. LATs 13 and 14 will be conducted in Apr 97 and May 97 respectively, which will close out the LRIP 4 contract on schedule.

Efforts to complete Producibility Enhancement Program (PEP) 2 were delayed due to the diversion of key PEP 2 personnel to work the altimeter investigation. With completion of that effort, balloon testing started. Tests revealed software and noise issues. These problems were corrected and fixes verified in the lab. Retest with corrected hardware occurred in January 1997, with qualification testing scheduled for February 1997. PEP 2 is on track for Full Rate Production (FRP) 2 cut-in.

Performance verification and sensitivity testing have been completed on four candidate insensitive explosives for the SFW P3I program. Two candidates were eliminated for lack of performance (low penetrator velocity). The remaining two candidates are acceptable to both the Air Force and Navy. Final selection will be made in February 1997.

On 22 Jan 97, the SFW System Program Office (SPO) conducted a live drop test of a CBU-97 that was cold soaked to -65 degrees Fahrenheit. The weapon was delivered by an F-16 at 500 knots, 575 feet above ground level. All ten submunitions functioned properly, and the weapon achieved 7 hits on 5 targets and met the user's kill requirement. This was the first extreme cold temperature test of an "all-up" round. The weapon was estimated to be at its maximum cold temperature requirement limit of -40 degrees Fahrenheit when it functioned.

The second SFW full rate production contract is expected to be awarded in early February 1997 to TSD.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone II (SAF/AL)	NOV 85	NOV 85	NOV 85
DT&E Start	DEC 88	DEC 88	DEC 88
IOT&E Start	JUL 90	JUL 90	AUG 90
Complete DT&E/IOT&E	MAR 92	MAR 92	MAR 92
Critical Design Review Complete	AUG 89	AUG 89	AUG 89
Many-On-Many Test	JUL 89	JUL 89	JUL 89
DAB Program Review	SEP 91	SEP 91	MAR 92
Production Contract Award	DEC 91	DEC 91	MAR 92
Lot 2 Contract Award	DEC 92	DEC 92	JAN 93
Lot 3 Contract Award	DEC 93	DEC 93	DEC 93
Milestone III	JUN 96	JUN 96	JUN 96

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(U) IOC/RAA - The SPO is responsible for making the weapon hardware, spares, training and logistics hardware, and materials available to the user. The availability of all necessary materials provided to the user is now called Required Assets Available (RAA). The user takes the RAA materials and implements them to achieve IOC.

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10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Shelf Life In Container (yr)	20	20 / 10	TBD	10 1/
Aircraft Compatability	NATO (JAGUAR, TORNADO, ALPHA JET, HARRIER, MIRAGEV) USMC/USN	NATO / F-16, (JAGUAR, / F-15E, TORNADO, / A-10, ALPHA / B-1, JET, / B-2, HARRIER, / B-52 MIRAGEV) / USMC/USN /	F-16 A/B/C/D, F-15E, F-111 A/D/E/F/ G, F-4	F-16 A/B/C/D, F-15E, A-10, USMC/USN A/C, NATO A/C B-52, B-1, B-2
Service Life Out of Container (yr)	1	1 / 1	3	1 1/
Weight (lb Class Munition)	1000	1000 / 1000 /	925	1000
Delivery				2/
Altitude FT AGL	200	200 / 200	228	200
Altitude FT MSL	40000	40000 / 20000	18700	20000
Attitude (degrees)	+45 to -45	+45 to / +45 to -45 / -45 /	+15 to -45	+45 to -45 (Compat- ible w/ AC Env)
Airspeed (KCAS)	250 to 700	250 to / 250 to 700 / 650 /	250 to 648	200 to 650 (Up to Mach 1.4)
Acceleration (Gs)	+0.5 to +5	+0.5 to / +0.5 to +5 / +5	+5 to +4	+5 to +5

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

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	158.3	158.3	159.5
Procurement	734.1	734.1	736.2
Recurring Flyaway	(694.0)		(692.3)
Nonrecurring Flyaway	(39.4)		(43.2)
Total Flyaway	(733.4)		(735.5)
Other Wpn Systems Costs	(0.7)		(0.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 79 Base-Year \$	892.4	892.4	895.7
Escalation	1195.5	1195.5	1180.8
Development (RDT&E)	(118.9)	(118.9)	(119.6)
Procurement	(1076.6)	(1076.6)	(1061.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2087.9	2087.9	2076.5

(U) Procurement funding does not include SEEK EAGLE funding of \$10.8M.

b. (U) Quantity --

Development (RDT&E)	84	84	84
Procurement	5000	5000	5000
Total	5084	5084	5084

Note: Excludes 80 RDTE prototypes from the SAR Baseline and 80 from the Current Estimate that are not considered fully configured.

(U) SFW was approved to enter LRIP in March 92 by the Office of the Secretary of Defense. LRIP quantities approved at Milestone II were 521 (LRIP 1 - 98 units, LRIP 2 - 23 units, LRIP 3 - 175 units, LRIP 4 - 225 units). LRIP quantities were reduced to 513 due to budget constraints (LRIP 1 - 98, LRIP 2 - 22, LRIP 3 - 131, LRIP 4 - 260). The LRIP quantity currently exceeds 10% of the total procurement buy primarily because of the FY94 reduction from 10,000 units to 5,000 units.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (AUG 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 79 BY\$)	895.7	892.4	
(2) Quantity	5084	5084	
(3) Unit Cost	0.176	0.176	0.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 79 BY\$)	736.2	734.1	
(2) Quantity	5000	5000	
(3) Unit Cost	0.147	0.147	0.00

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	277.2	1810.7	-	2087.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	+9.1	-	+9.1
Engineering	-	-	-	-
Estimating	+2.3	+6.0	-	+8.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2.3	+15.1	-	+17.4
Current Changes:				
Economic	-0.2	-10.2	-	-10.4
Quantity	-	-	-	-
Schedule	-	-10.2	-	-10.2
Engineering	-	-	-	-
Estimating	-0.2	-8.0	-	-8.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.4	-28.4	-	-28.8
Total Changes	+1.9	-13.3	-	-11.4
Current Estimate	279.1	1797.4	-	2076.5

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

(U) Summary (FY 1979 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	158.3	734.1	-	892.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+4.0	-	+4.0
Engineering	-	-	-	-
Estimating	+1.4	+2.6	-	+4.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.4	+6.6	-	+8.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.2	-4.5	-	-4.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.2	-4.5	-	-4.7
Total Changes	+1.2	+2.1	-	+3.3
Current Estimate	159.5	736.2	-	895.7

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.2
	Adjustment for Current and Prior Inflation. (Estimating)	0.0	+0.1
	FY97 Congressional reduction (Estimating)	-0.2	-0.3
	RDT&E Subtotal	-0.2	-0.4
(2)	<u>Procurement</u>		
	Revised escalation indices (Economic)	N/A	-9.4
	Economic adjustment for negative program change (Economic)	N/A	-0.8
	Revised procurement profile moved 248 units from FY04 (42 to FY97 and 206 to FY98) (Schedule)	0.0	-10.2
	Adjustment for Current and Prior Inflation (Estimating)	+0.7	+1.9
	Revised procurement profile to procure 248 SFW baseline weapons instead of 248 P3I weapons (Estimating)	-5.2	-9.9
	Procurement Subtotal	-4.5	-28.4

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

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.17	+0.01	+0.02	+0.23	+0.01	-0.02	--	-0.01	+0.24	0.41

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.41	--	--	--	--	--	--	--	--	0.41

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.16	+0.01	+0.01	+0.23	--	-0.04	--	-0.01	+0.20	0.36

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.36	--	--	--	--	--	--	--	--	0.36

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	NOV 85	NOV 85	NOV 85
Milestone III	N/A	N/A	JUN 96	JUN 96
(b)(1)				
Total Cost	N/A	2405.8	2087.9	2076.5
Total Quantity	N/A	14075	5084	5084
Prog Acq Unit Cost	N/A	0.17	0.41	0.41

(U) IOC/RAA - The SPO is responsible for making the weapon hardware, spares, training and logistics hardware, and materials available to the user. The availability of all necessary materials provided to the user is now called Required Assets Available (RAA). The user takes the RAA materials and implements them to achieve IOC.

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

a. RDT&E --
 (U) P3I:
 Textron Systems Division, Wilmington MA
 F08626-96-C-0162, CPAF
 Award: April 26, 1996
 Definitized: April 26, 1996

			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
	\$39.9	N/A	0		

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$39.9	N/A	0	\$39.9	\$39.9	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date (12/29/96)	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) This is the first time this contract is reported in the SAR. As of Dec 96, there are no cost or schedule variances.

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

b. Procurement --
 (U) LRIP 4:
 Textron Defense Systems, Wilmington MA
 F08626-94-C-0006, FPIF/FFP
 Award: January 11, 1995
 Definitized: December 30, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$106.4	\$119.3	260

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$112.3	\$126.0	281	\$110.1	\$110.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.2	\$-4.8
Cumulative Variances To Date (12/29/96)	\$3.3	\$-4.9
Net Change	\$2.1	\$-0.1

Explanation of Change:

(U) The changes (increase) to current target and ceiling price are due to addition of the fault tolerant nose electronics task.

Quantity change (increased) due to a cost underrun on LRIP 3. 21 additional units are being bought on this contract with LRIP 3 funds.

The changes (decrease) to estimated price at completion for both contractor and program manager are due to the contractor currently underrunning the contract price (85% complete at 82% of the contract price).

The favorable cost variance increased due to manufacturing management underrunning in the floor support, sustaining product engineering, and production planning and control areas due to delays on LRIPs 1-3 which required resources planned for LRIP 4. Operating efficiencies and uncompensated time have been effected, and therefore, LRIP 4 tasks are being completed on schedule and under cost.

The unfavorable schedule variance increased due to delay of deliveries due to altimeter and noise issues as explained in Section 7. The program will be back on schedule in May 1997 with completion of LRIP 4 deliveries.

(U) FRP 1:
 Textron Systems Division, Wilmington MA
 F08626-96-C-0001, FPIF
 Award: June 17, 1996
 Definitized: June 17, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$157.1	\$172.3	500

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$164.2	\$180.1	500	\$163.9	\$163.9

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date (12/29/96)	\$0.0	\$0.3
Net Change	\$0.0	\$0.3

Explanation of Change:

(U) This is the first time this contract is reported in the SAR.

The change (increase) from initial contract price to current price is due to addition of JSOW SEEK EAGLE units.

The favorable schedule variance is due to early receipt of materials for the projectile.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY83-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-04)	<u>Total</u>
RDT&E	255.7	19.8	3.6	-	279.1
Procurement	643.0	153.9	143.3	857.2	1797.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	898.7	173.7	146.9	857.2	2076.5

b. Annual Summary -- SFW

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1983				2.9	4.2
1984				11.2	16.7
1985				23.1	35.4
1986				15.6	24.6
1987				14.1	23.1
1988				17.0	28.7
1989				19.2	33.9
1990				14.9	27.1
1991				12.0	22.7
1992				5.0	9.7
1993					

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

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994					
1995				0.7	1.4
1996				4.5	9.5
1997				8.7	18.7
1998				9.0	19.8
1999				1.6	3.6
Subtotal	84			159.5	279.1

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	260	4.2	43.2	47.5	108.5
1996	500	3.8	65.3	69.2	160.8
1997	542	3.0	61.1	64.1	152.0
1998	556	2.4	61.1	63.5	153.9
1999	352	3.5	54.4	57.9	143.3
2000	516		67.8	67.8	171.3
2001	504		65.3	65.4	168.8
2002	502		64.4	64.4	170.2
2003	752		87.4	87.4	236.6
2004	265		39.7	39.7	110.3
Subtotal	4749	16.9	609.7	626.9	1575.7

(U) FY95-04 funds have a separate appropriation (3011, Procurement of Ammunition, AF). However, SAR software does not include this new Appropriation, therefore FY95-04 Procurement is shown in the Appropriation 3020 (Missile Procurement, AF).

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992	98	15.6	40.8	56.6	112.9
1993	22	1.0	7.7	8.7	17.7
1994	131	9.7	34.1	44.0	91.1
Subtotal	251	26.3	82.6	109.3	221.7

(U) Procurement funding does not include SEEK EAGLE funding of \$10.8M. (\$2.0M - FY94, \$4.2M - FY95, \$4.6M - FY96)

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Sensor Fuzed Weapon, December 31, 1996

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5084	43.2	692.3	895.7	2076.5

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	155	155
Procurement	308	286

(U) Percent Total Program Quantities Delivered: 8.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 455.1

(U) Percent Total Program Expended: 21.9%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The SFW is a no maintenance/wooden round weapon. As such, it will require: no scheduled maintenance; limited unscheduled repairs and stockpile sampling; no shop or operational checkout, testing or test equipment; preload checks and tasks limited to quick visual checks. Field level maintenance activities will be restricted to unscheduled, exterior, on-equipment activities - i.e. corrosion control, desiccant change in the storage container, and lug and lanyard replacement. No special training, support equipment, or personnel are required to maintain the SFW system. The SFW will be compatible with existing munitions handling/loading equipment. All support equipment needed to support the SFW is already in the inventory.

The elements that account for the Operating and Support (O&S) costs per weapon per year are warranty testing (\$83.00), disposal costs (\$20.00), manpower (\$12.00) and second destination transportation (\$4.00). Distributing those costs over five thousand weapons with a ten year shelf life yields a cost of approximately \$119.00 (BY79\$) per weapon per year. The latest cost estimate for the O&S costs is dated 9 Nov 95.

b. (U) Costs -- (FY 1979 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per SFW	Avg Annual Cost Per NO ANTECEDENT
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A

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Sensor Fuzed Weapon, December 31, 1996

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

b. (U) Costs -- (FY 1979 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per SFW	Avg Annual Cost Per NO ANTECEDENT
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
WARRANTY TESTING	0.1	0.0
Total	0.1	0.0

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

PROGRAM: E-2C AEW (HAWKEYE)

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): E-2C Hawkeye/Carrier Based Airborne Early Warning Command and Control System
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
E-2 AND ATDS PROGRAM OFFICE Mr. Walter E. Bahr
PEO(T) AIRCRAFT PROGRAMS (PMA-231) Assigned: August 2, 1996
1421 JEFFERSON DAVIS HIGHWAY DSN 664-2282 x4377
ARLINGTON, VA 22243-5120 COMM (703) 604-2282 x4377
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0204152N Project , E0463, E2321
PROCUREMENT:
(U) APPN 1506 ICN 0195 (Navy)
MILCON:
(U) PE 0204611N

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FOR OPEN PUBLICATION**

**AS AMENDED
MAR 24 1997 9**

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

**Security Objection
to Open Publication
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97-C-0139

Ann D. Anderson

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E-2C AEW (HAWKEYE), December 31, 1996

5. (U) References:

E-2C Aircraft

SAR Baseline (Production Estimate):

(U) The Acquisition Decision Memorandum for E-2C New Production Milestone III was approved 27 October 1994 by ASN RD&A. Approval was granted to begin E-2C Group II full rate production beginning with four aircraft in FY 95.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated October 27, 1994.

Mission Computer Upgrade

SAR Baseline (Development Estimate):

(U) The Acquisition Decision Memorandum for E-2C Mission Computer Upgrade Milestone IV/II was approved 27 October 1994 by ASN RD&A. Approval was granted to enter into the Engineering and Manufacturing Development phase for the Mission Computer Upgrade along with five low rate initial production units in FY 97 and three units in FY 98.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated October 27, 1994.

6. (U) Mission and Description:

(U)

The Grumman built E-2C "Hawkeye" is a twin-engine, carrier-based, Combat-Information-Center aircraft which extends task force defense perimeters by providing early warning of approaching enemy air and surface units and vectoring interceptors and strike aircraft to the attack. Carrying a crew of five, the E-2C also provides area surveillance, intercept, search and rescue, communication relay, and strike/air traffic control. Principal subsystems include APS-125/138/139/145 radar and ALR-73 Passive Detection Systems which allow the E-2C to detect emitters/targets well beyond radar range.

In order to take advantage of improved sensor and communication capabilities resulting from the Update Development Program (UDP II), to exploit emerging Commercial Off-The-Shelf technologies, and to address supportability issues with the current mission computer, plans and funds exist to replace the E-2C weapon system's antiquated tactical computer (which predates the E-2C aircraft). The replacement computer's hardware and software will be integrated into the onboard subsystems encompassing complex sensor inputs and outputs.

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E-2C AEW (HAWKEYE), December 31, 1996

7. (U) Executive Summary:

(U) Studies initiated in the late 1980's confirmed the need for an upgrade to the current E-2C computer and possible upgrade approaches. Funding was identified and a Mission Computer Upgrade (MCU) Milestone IV/II was approved by ASN(RDA) September 94, with an Engineering and Manufacturing Development (E&MD) contract for MCU development and integration signed with Grumman Aerospace Corporation November 94. First flight of an MCU equipped developmental test aircraft took place January 24, 1997 as planned; first flight was successful. Low rate initial production is scheduled for FY 97 and FY 98, and final system testing is planned for FY 99. Full rate production and Initial Operational Capability is planned for FY 00.

During this Selected Acquisition Report (SAR) reporting period additional funding was added to our RDT&E program starting in fiscal year 1998. The additional RDT&E dollars are for a new start, Advanced Technology Transition Demonstration effort that initiates the application of new radar technologies which can be common to both sea based and land based airborne early warning platforms. The resulting detection system will specifically provide an improved overland capability for Cruise Missile Defense (CMD), advanced auto detect and track, Non-Cooperative Target Recognition classification technologies and will continue to enhance E-2C capabilities. These technologies and resultant equipment will be demonstrated in the ground environment in fiscal year 1999 and flight tested in fiscal years 2000 and 2001 leading to a planned Milestone II approval and Engineering and Manufacturing Development start in fiscal year 2001.

Funding was added to the aircraft procurement program to buy additional aircraft and support in fiscal years 1997 through 1999 and for production support in fiscal years 2005 and 2006.

As a result of the additional funding, the E-2C program has experienced an acquisition program baseline cost breach in RDT&E and procurement accounts for the aircraft end item. The program manager has submitted the required program deviation report and rebaseline change request as of February 13, 1997.

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E-2C AEW (HAWKEYE), December 31, 1996

8. (U) Threshold Breaches:

E-2C Aircraft

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	Yes
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

The E-2C program has deviated from its current approved baseline, dated 27 October 1994, for the following reasons: (1) additional funding was added to our RDT&E budget starting in FY 1998 for the Radar Modernization Program (RMP). This program was added to our budget by OPNAV CODE N8 as a new start; (2) Additional funding was added in FY 97 as a result of moving two aircraft from FY 04 to FY 97 plus support for the moved aircraft; (3) Additional funding provided for aircraft procurement and support in FY 98 and 99, and for support in FY 04 and 05. A Program Deviation Report (PDR) and proposed baseline change have been submitted to ASN (RDA) for approval.

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E-2C AEW (HAWKEYE), December 31, 1996

8c. (U) Threshold Breaches (Cont'd):
Mission Computer Upgrade

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:
E-2C Aircraft

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
IOC	APR 92	APR 92	APR 92
Milestone III	JUN 94	JUN 94	OCT 94
FRP Contract Award	JUN 94	JUN 94	DEC 94
FOC	OCT 94	OCT 94	OCT 94
FOT&E	JUN 97	JUN 97	JUN 97
Organic Support Capability Date	JUN 98	JUN 98	JUN 98
Service Depot Support Date	JUN 99	JUN 99	JUN 99

b. Current Change Explanations -- None.

Mission Computer Upgrade

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone II	SEP 94	SEP 94	SEP 94
Development Contract Award	SEP 94	SEP 94	NOV 94
Preliminary Design Review Complete	MAR 95	MAR 95	AUG 95
Critical Design Review Complete	SEP 95	SEP 95	FEB 96
Qualification Testing	FEB 96	FEB 96	MAR 96
First Flight of Developmental Test Aircraft	SEP 96	SEP 96	JAN 97
Navy Program Review - LRIP I	MAR 97	MAR 97	JUL 97

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E-2C AEW (HAWKEYE), December 31, 1996

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

Mission Computer Upgrade

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Low-Rate Initial Production I Contract Award	MAR 97	MAR 97	AUG 97 (Ch-1)
Navy Program Review - LRIP II	MAR 98	MAR 98	JUN 98 (Ch-1)
Low-Rate Initial Production Contract Award	MAR 98	MAR 98	AUG 98 (Ch-1)
Low-Rate Initial production, First Delivery	MAR 98	MAR 98	JUN 98 (Ch-1)
First Flight of Production Representative Aircraft	SEP 98	SEP 98	SEP 98
Navy Final DT&E (Complete)	MAY 99	MAY 99	MAY 99
Initial Operational Capability	JUN 99	JUN 99	JUN 99
Navy IOT&E Complete	DEC 99	DEC 99	SEP 99
Milestone III	NOV 99	NOV 99	NOV 99
Full Rate Production Contract Award	MAR 00	MAR 00	MAR 00
Organic Support Capability, Non-developmental Items	AUG 00	AUG 00	AUG 00
First Aircraft Equipped with FRP Unit	SEP 01	SEP 01	SEP 01
Organic Support Capability, Developmental Items	JAN 03	JAN 03	JAN 03
Service Depot Support, Developmental Item	JAN 03	JAN 03	JAN 03

b. (U) Current Change Explanations --

CH-1 Estimate revised to reflect the most current program status.

	<u>From</u>	<u>To</u>
LRIP I Contract Award	Jul 97	Aug 97
Navy Program Review - LRIP II	Mar 98	Jun 98
LRIP II Contract Award	Mar 98	Aug 98
LRIP I, First Delivery	Mar 98	Jun 98

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E-2C AEW (HAWKEYE), December 31, 1996

10. (U) Performance Characteristics:
E-2C Aircraft

a. Performance --

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Take off weight	55000	55000 / 55000	55000	55000
Length	57'6"	57'6" / 57'6"	57'6"	57'6"
Span	80'7"	80'7" / 80'7"	80'7"	80'7"
Engine				
Number	2	2 / 2	2	2
Type	T56-A-	T56-A- / T56-A-	T56-A-	T56-A-
	427	427 / 427	427	427
Crew	5	5 / 5	5	5
Speed (KIAS)				

(b)(1)



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E-2C AEW (HAWKEYE), December 31, 1996

11. (U) Total Program Cost and Quantity (Dollars in Millions):
E-2C Aircraft

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0.0	0.0	154.7
Procurement	2422.0	2422.0	2562.0
Airframe & Changes	(1914.2)		(2009.3)
Engine & Accessories	(206.2)		(200.6)
Electronics	(87.5)		(73.1)
Armament & Other GFE	(5.6)		(8.4)
Total Flyaway	(2213.5)		(2291.4)
Other Weapon Systems	(141.1)		(218.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(67.4)		(52.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 94 Base-Year \$	2422.0	2422.0	2716.7
Escalation	542.0	542.0	442.8
Development (RDT&E)	(0.0)	(0.0)	(23.7)
Procurement	(542.0)	(542.0)	(419.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2964.0	2964.0	3159.5

(U) The FY 00 unit cost assumes there are two (2) FMS aircraft being procured. The two (2) FMS aircraft used for pricing in FY 00 are as yet unidentified; however, France has expressed intentions of purchasing two additional aircraft. France has not indicated in what year they will purchase the aircraft. The FY 00 price depends on the two (2) FMS buy in that year. If these two FMS aircraft are not procured the FY 00 unit cost will change.

The E-2C program has deviated from its current approved baseline, dated 27 October 1994, for the following reasons: (1) additional funding was added to our RDT&E budget starting in FY 1998 for the Radar Modernization Program (RMP). This program was added to our budget by OPNAV CODE N8 as a new start; (2) Additional funding was added in FY 97 as a result of moving two aircraft from FY 04 to FY 97 plus support for the moved aircraft; (3) Additional funding provided for aircraft procurement and support in FY 98 and 99, and for support in FY 04 and 05. A Program Deviation Report (PDR) and proposed baseline change have been submitted to ASN (RDA) for approval.

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E-2C AEW (HAWKEYE), December 31, 1996

11b. (U) Total Program Cost and Quantity (Cont'd):
E-2C Aircraft

b. (U) Quantity --

Development (RDT&E)	N/A	0	0
Procurement	36	36	36
Total	36	36	36

(U) There are no Low Rate Initial Production (LRIP) quantities approved for the E-2C reprocured aircraft.

c. (U) Foreign Military Sales --

Sales to date are 4 for Israel for a total of \$178.8M, 13 for Japan for a total of \$860.1M, 6 for Egypt for a total of \$734.1M, 4 for Singapore for a total of \$318.3M, and 2 for France for a total of \$529.8M. FMS sales to Taiwan total \$201.5M in support of 4 direct commercial sale (DCS) aircraft.

International Cooperative Program

	FY 92	FY 93 in millions)	FY 94	Total
SD FYDP (Nunn) PE 0603790D	.225	.350	.800	1.375
EGYPT	2.880	2.880		5.760
Total	3.105	3.230	.800	7.135

d. (U) Nuclear Costs --
None

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E-2C AEW (HAWKEYE), December 31, 1996

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	205.7	205.7	225.0
Procurement	196.5	196.5	152.0
Airframe & Changes	(196.5)		(87.3)
Non-Recurring			(0.3)
Total Flyaway	(196.5)		(87.6)
Mod Spares			(5.4)
ICS Rework, Support, Othe			(40.0)
Installation			(12.8)
Total Other Wpn Sys			(58.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(6.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 94 Base-Year \$	402.2	402.2	377.0
Escalation	81.7	81.7	48.4
Development (RDT&E)	(18.2)	(18.2)	(14.0)
Procurement	(63.5)	(63.5)	(34.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	483.9	483.9	425.4
b. (U) Quantity --			
Development (RDT&E)	3	3	3
Procurement	74	74	73
Total	77	77	76

Note: Excludes 11 RDTE prototypes from the SAR Baseline and 11 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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E-2C AEW (HAWKEYE), December 31, 1996

12. (U) Unit Cost Summary:

E-2C Aircraft

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 94 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	2716.7	2422.0	
(2) Quantity	36	36	
(3) Unit Cost	75.464	67.278	+12.17
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	2562.0	2422.0	
(2) Quantity	36	36	
(3) Unit Cost	71.167	67.278	+5.78

(U) The FY 00 unit cost assumes there are two (2) FMS aircraft being procured. The two (2) FMS aircraft used for pricing in FY 00 are as yet unidentified; however, France has expressed intentions of purchasing two additional aircraft. France has not indicated in what year they will purchase the aircraft. The FY 00 price depends on the two (2) FMS aircraft buys in that year. If these two FMS aircraft are not procured the FY 00 unit cost will change.

Mission Computer Upgrade

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 94 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	377.0	402.2	
(2) Quantity	76	77	
(3) Unit Cost	4.961	5.223	-5.02
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	152.0	196.5	
(2) Quantity	73	74	
(3) Unit Cost	2.082	2.655	-21.58

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E-2C AEW (HAWKEYE), December 31, 1996

13. (U) Cost Variance Analysis:
E-2C Aircraft

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	2964.0	-	2964.0
Previous Changes:				
Economic	-	-164.8	-	-164.8
Quantity	-	-	-	-
Schedule	-	+116.5	-	+116.5
Engineering	-	-	-	-
Estimating	-	-28.5	-	-28.5
Other	-	-	-	-
Support	-	-8.0	-	-8.0
Subtotal	-	-84.8	-	-84.8
Current Changes:				
Economic	-	-1.4	-	-1.4
Quantity	-	-	-	-
Schedule	-	-32.3	-	-32.3
Engineering	+178.4	-	-	+178.4
Estimating	-	+59.5	-	+59.5
Other	-	-	-	-
Support	-	+76.1	-	+76.1
Subtotal	+178.4	+101.9	-	+280.3
Total Changes	+178.4	+17.1	-	+195.5
Current Estimate	178.4	2981.1	-	3159.5

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E-2C AEW (HAWKEYE), December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):
E-2C Aircraft

(U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	2422.0	-	2422.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+67.8	-	+67.8
Engineering	-	-	-	-
Estimating	-	-36.0	-	-36.0
Other	-	-	-	-
Support	-	+2.9	-	+2.9
Subtotal	-	+34.7	-	+34.7
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+154.7	-	-	+154.7
Estimating	-	+46.1	-	+46.1
Other	-	-	-	-
Support	-	+59.2	-	+59.2
Subtotal	+154.7	+105.3	-	+260.0
Total Changes	+154.7	+140.0	-	+294.7
Current Estimate	154.7	2562.0	-	2716.7

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Radar Modernization Program (New Start) (Engineering)	+154.7	+178.4
RDT&E Subtotal	+154.7	+178.4

(2) Procurement

Revised escalation indices. (Economic)	N/A	-11.0
Economic adjustment for negative program change. (Economic)	N/A	+9.6
Acceleration of annual procurement buy profile in FY 1997. (Schedule)	0.0	-32.3
Adjustment for Current and Prior Inflation. (Estimating)	+1.2	+1.4
Increased estimate of aircraft cost (Estimating)	+44.9	+58.1

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E-2C AEW (HAWKEYE), December 31, 1996

13b. (U) Cost Variance Analysis (Cont'd):
E-2C Aircraft

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
Repricing of Initial Spares (Support)	-11.9	-13.5
Repricing of Integrated Logistics Support, Peculiar Ground Support Equipment, Training and Publication cost (Support)	+70.8	+89.3
Procurement Subtotal	+105.3	+101.9

Mission Computer Upgrade

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	223.9	260.0	-	483.9
Previous Changes:				
Economic	-6.4	-24.2	-	-30.6
Quantity	-	-	-	-
Schedule	-	+7.7	-	+7.7
Engineering	-	-	-	-
Estimating	+24.4	-110.3	-	-85.9
Other	-	-	-	-
Support	+9.7	+67.1	-	+76.8
Subtotal	+27.7	-59.7	-	-32.0
Current Changes:				
Economic	+0.5	+1.9	-	+2.4
Quantity	-	-5.7	-	-5.7
Schedule	-	+3.0	-	+3.0
Engineering	-	-	-	-
Estimating	+6.3	-13.8	-	-7.5
Other	-	-	-	-
Support	-19.4	+0.7	-	-18.7
Subtotal	-12.6	-13.9	-	-26.5
Total Changes	+15.1	-73.6	-	-58.5
Current Estimate	239.0	186.4	-	425.4

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E-2C AEW (HAWKEYE), December 31, 1996

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

Mission Computer Upgrade

(U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	205.7	196.5	-	402.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+4.7	-	+4.7
Engineering	-	-	-	-
Estimating	+21.7	-99.2	-	-77.5
Other	-	-	-	-
Support	+8.3	+58.2	-	+66.5
Subtotal	+30.0	-36.3	-	-6.3
Current Changes:				
Economic	-	-	-	-
Quantity	-	-3.5	-	-3.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+5.9	-10.9	-	-5.0
Other	-	-	-	-
Support	-16.6	+6.2	-	-10.4
Subtotal	-10.7	-8.2	-	-18.9
Total Changes	+19.3	-44.5	-	-25.2
Current Estimate	225.0	152.0	-	377.0

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.2
	Economic adjustment for negative program change. (Economic)	N/A	+0.7
	Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
	Repricing of support cost (Estimating)	-10.8	-13.2
	Reclassification of variances from previous SAR (Estimating)	+8.3	+9.7
	Reclassification of variances from previous SAR (Support)	-8.3	-9.7
	Correction to reconcile flyaway/support and the reclassification of previous SAR variances from support to flyaway (Estimating)	+8.3	+9.7
	(Support)	-8.3	-9.7
	RDT&E Subtotal	-10.7	-12.6
(2)	<u>Procurement</u>		

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E-2C AEW (HAWKEYE), December 31, 1996

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Economic adjustment for negative program change. (Economic)	N/A	+1.9
Quantity variance associated with deletion of 1 unit from 74 to 73. (Quantity)	-3.5	-5.7
Stretchout of annual procurement buy profile. (Schedule)	0.0	+3.0
Repricing of Flyaway Costs (Estimating)	-10.9	-13.8
Repricing of Initial Spares (Support)	-4.2	-5.3
Repricing of Mod Spares (Support)	-4.7	-5.5
Repricing of Integrated Logistics Support, Training, Peculiar Ground Support Equipment and Publication Cost (Support)	+12.7	+8.0
Repricing of Installation cost (Support)	+2.4	+3.5
Procurement Subtotal	-8.2	-13.9

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):
E-2C Aircraft

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
82.33	-4.62	--	+2.34	+4.96	+0.86	--	+1.89	+5.43	87.76

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
82.33	-4.62	+0.01	+2.34	--	+0.86	--	+1.89	+0.48	82.81

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E-2C AEW (HAWKEYE), December 31, 1996

14c. (U) Unit Cost and Other History (Cont'd):
E-2C Aircraft

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	JUN 94	OCT 94
FUE/IOC	N/A	N/A	APR 92	APR 92
Total Cost	N/A	N/A	2964	3159.5
Total Quantity	N/A	N/A	36	36
Prog Acq Unit Cost	N/A	N/A	82.33	87.76

Mission Computer Upgrade

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.28	-2.14	+0.71	+1.57	--	-0.47	--	-0.35	-0.68	5.60

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
3.51	-2.23	+0.31	+1.64	--	-0.58	--	-0.10	-0.96	2.55

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	SEP 94	SEP 94	N/A	SEP 94
Milestone III	NOV 99	NOV 99	N/A	NOV 99
FUE/IOC	JUN 99	JUN 99	N/A	JUN 99
Total Cost	483.9	483.9	N/A	425.4
Total Quantity	77	77	N/A	76
Prog Acq Unit Cost	6.28	6.28	N/A	5.6

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E-2C AEW (HAWKEYE), December 31, 1996

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

a. RDT&E --			Initial Contract Price	
(U) <u>Mission Computer Upgrade:</u>			<u>Target</u>	<u>Ceiling</u>
Grumman Aerospace Corp, Bethpage NY				<u>Qty</u>
N00019-93-C-0205, CPIAF			\$155.2	\$0.0
Award: November 30, 1994				0
Definitized: November 30, 1994				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$155.2	\$0.0	0	\$140.0	\$140.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.4	\$-2.2
Cumulative Variances To Date (12/31/96)	\$5.3	\$-2.9
Net Change	\$3.9	\$-0.7

Explanation of Change:

(U) Cost: The cumulative CV improved to \$5,249K during the October-January reporting periods. If indirect costs are excluded from the calculation of CPI, it equates to 1.04. The following direct variances are at the fourth level of the CWBS. The overhead cumulative CV through January was \$2,621K, G&A was \$1,207K, and Prime Mission Product Application Software (PMP APP S/W) is -\$76K.

Schedule: The unfavorable cumulative SV improved during the October through January reporting months. In January, the cumulative SV is -\$2,910K. Indirect costs account for 50% (-\$1,446K) of the cumulative SV. Indirect SV will not impact program schedule. The -\$1,446K indirect SV is indirect cost that has not yet been applied to behind schedule direct costs. The SPI equates to 0.96 if indirect costs are excluded from the calculation. The following direct elements are the primary drivers of the SV: Computer Hardware is behind schedule -\$1,034K but deliveries are now occurring. This effort is subcontracted to Raytheon for the design and manufacture of Mission Computer hardware units. Prime Mission Product Application Software (PMP APP S/W) schedule variance is -\$354K which is driven by Build 0 Test and Build 1 Design/Code cost accounts. The schedule variance is primarily due to the aggressive schedule set. NG is progressing well from a technical perspective and continues to hire more personnel for the software development effort to resolve this situation.

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E-2C AEW (HAWKEYE), December 31, 1996

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

b. Procurement --

(U) <u>FY 95 PRODUCTION A/C:</u>	Initial Contract Price		
GRUMMAN AEROSPACE CORP, BETHPAGE NY	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-94-C-0020, FFP	\$231.2	\$0.0	4
Award: December 16, 1994			
Definitized: April 25, 1996			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$231.2	\$0.0	4	\$231.2	\$231.2

Explanation of Change:

(U) Cost and schedule variance reporting is not required for this FFP contract.

(U) <u>FY 96 Production A/C:</u>	Initial Contract Price		
Grumman Aerospace Corp, Bethpage NY	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-94-C-0020, FFP	\$168.5	\$0.0	4
Award: December 16, 1994			
Definitized: April 25, 1996			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$168.5	\$0.0	4	\$168.5	\$168.5

Explanation of Change:

(U) Cost and schedule variance reporting is not required for this FFP contract.

(U) <u>FY 97 Production A/C:</u>	Initial Contract Price		
Grumman Aerospace Corp, Bethpage NY	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-96-C-0049, FFP	\$256.0	\$0.0	4
Award: April 4, 1996			
Definitized: N/A			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$256.0	\$0.0	4	\$256.0	\$256.0

Explanation of Change:

(U) Cost and schedule variance reporting is not required for this FFP contract.

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E-2C AEW (HAWKEYE), December 31, 1996

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

Total Program

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

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-06)</u>	<u>Total</u>
RDT&E	189.3	64.9	48.2	115.0	417.4
Procurement	842.7	266.3	328.7	1729.8	3167.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1032.0	331.2	376.9	1844.8	3584.9

E-2C Aircraft

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

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-06)</u>	<u>Total</u>
RDT&E	-	25.5	37.9	115.0	178.4
Procurement	834.1	262.2	326.7	1558.1	2981.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	834.1	287.7	364.6	1673.1	3159.5

Mission Computer Upgrade

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

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-04)</u>	<u>Total</u>
RDT&E	189.3	39.4	10.3	-	239.0
Procurement	8.6	4.1	2.0	171.7	186.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	197.9	43.5	12.3	171.7	425.4

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E-2C AEW (HAWKEYE), December 31, 1996

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

b. Annual Summary -- E-2C Aircraft

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994					
1995					
1996					
1997					
1998				23.2	25.5
1999				33.8	37.9
2000				21.8	25.0
2001				35.3	41.3
2002				35.1	42.0
2003				5.5	6.7
2004					
Subtotal				154.7	178.4

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				36.6	37.8
1995	4		250.1	270.0	284.5
1996	3		178.4	197.9	212.8
1997	4	1.4	268.2	272.3	299.0
1998	3	9.7	202.8	233.9	262.2
1999	4		254.3	285.4	326.7
2000	4		217.2	240.5	281.2
2001	4		232.9	241.4	288.5
2002	4		232.7	254.5	311.3
2003	4		232.5	258.8	324.5
2004	2	24.9	133.3	165.2	212.5
2005		53.0		79.3	104.6
2006				26.2	35.5
Subtotal	36	89.0	2202.4	2562.0	2981.1

(U) The FY 00 unit cost assumes there are two (2) FMS aircraft being procured. The two (2) FMS aircraft used for pricing in FY 00 are as yet unidentified; however, France has expressed intentions of purchasing two additional aircraft. France has not indicated in what year they will purchase the aircraft. The FY 00 price depends on the two (2) FMS buy in that year. If these two FMS aircraft are not procured the FY 00 unit cost will change.

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E-2C AEW (HAWKEYE), December 31, 1996

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

E-2C Aircraft

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	36	89.0	2202.4	2716.7	3159.5

b. Annual Summary -- Mission Computer Upgrade

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994				17.8	18.0
1995				48.1	49.7
1996				56.5	59.6
1997				57.6	62.0
1998				35.8	39.4
1999				9.2	10.3
2000					
2001					
2002					
2003					
Subtotal	3			225.0	239.0

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994					
1995					
1996					
1997	5		6.0	7.8	8.6
1998	1		1.2	3.7	4.1
1999				1.7	2.0
2000	7	0.3	7.9	32.0	37.4
2001	5		6.2	16.5	19.7
2002	9		11.0	14.5	17.7
2003	10		12.2	20.3	25.5
2004	36		42.8	55.5	71.4
2005					
2006					
2007					
2008					
2009					
2010					
Subtotal	73	0.3	87.3	152.0	186.4

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E-2C AEW (HAWKEYE), December 31, 1996

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

Mission Computer Upgrade

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	76	0.3	87.3	377.0	425.4

17. (U) Delivery/Expenditure Information:

E-2C Aircraft

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	36	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 339.5

(U) Percent Total Program Expended: 10.7%

Mission Computer Upgrade

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	3	3
Procurement	73	0

(U) Percent Total Program Quantities Delivered: 3.9%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 103.4

(U) Percent Total Program Expended: 24.3%

18. (U) Operating and Support Costs:

E-2C Aircraft

a. (U) Assumptions and Ground Rules --

Flight Hours Per Aircraft Per Month	42
Number of Aircraft/Squadron	4
Consumption Rate, Gal/Hr	344.0
POL Cost, JP-5, Per Barrel, FY 90	35.7

Date of estimate 12/94.

There is no antecedent program.

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E-2C AEW (HAWKEYE), December 31, 1996

18b. (U) Operating and Support Costs (Cont'd):
E-2C Aircraft

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Squadron	Avg Annual Cost Per (Antecedent)
Mission Pay & Allowances	6.8	0.0
Unit Level Consumption	4.2	0.0
Intermediate Maintenance	1.9	0.0
Depot Maintenance	1.8	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.4	0.0
Indirect Costs	N/A	N/A
Total	15.1	0.0

Mission Computer Upgrade

a. (U) Assumptions and Ground Rules --

No current information is available at this time for the Mission Computer Upgrade

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

Cost Element		
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Total	N/A	N/A

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AS OF DATE: December 31, 1996

<u>SUBJECT</u>	<u>PAGE</u>
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Performance Characteristics	5
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Unit Cost and Other History	10
Contract Information	11
Program Funding Summary	12
Delivery/Expenditure Information	14
Operating and Support Costs	14



JAVELIN

1. (U) Designation and Nomenclature (Popular Name): Javelin
2. (U) DoD Component: Army

Joint Participants:
USMC

3. (U) Responsible Office and Telephone Number:

Department of Army
PEO - Tactical Missiles
ATTN: SFAE-MSL-AM
RSA, AL 35898-5720

COL William D. Knox
Assigned: August 22, 1996
DSN 746-4266; COMM (205) 876-4266

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

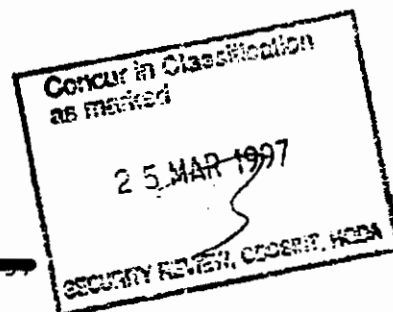
RDT & E:

(U) PE 63612
(U) PE 64611

PROCUREMENT:

(U) APPN 2032 ICN CA0269 (Army)
(U) APPN 2032 ICN HO6102 (Army)
(U) APPN 2032 ICN HO6300 (Army)
(U) APPN 1109 ICN O38061 (Navy)

AS AMENDED



DECLASSIFY ON: AS DATE: 5 May 90 with Addendum 1, 2, and 3

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★★★重要程度★★★

97-C-ATF

Javelin, December 31, 1996

5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline dated June 15, 1989.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated February 7, 1995.

6. (U) Mission and Description:

(U) The Javelin (AAWS-M) is a manportable antitank weapon system designed to provide high lethality against advanced armor and is envisioned as a simple-to-operate, easily and economically maintained, rugged and reliable infantry system for the U.S. Army and U.S. Marine Corps (USMC). The Javelin is comprised of two major components: a reusable Command and Launch Unit (CLU) and a missile sealed in a disposable launcher container. The CLU incorporates an integrated day/night sight and provides target engagement capability in adverse weather. The CLU may be used in stand alone mode for battlefield surveillance and target detection. For operation of the system, the round must be mated with the CLU. The CLU will provide a go/no-go status of the CLU and round. The missile, with a warhead designed against both conventional and reactive armor, may be used at the gunner's discretion in top attack or direct fire mode. Top attack is the normal mode of operation and direct fire mode is for engaging targets under cover. The Javelin will replace the DRAGON.

7. (U) Executive Summary:

(U) The Milestone Decision Review I (MDR I)/Defense System Acquisition Review Council (DSARC) review process was completed with the issue of the Secretary of Defense Decision Memorandum (SDDM) on 15 May 86 authorizing the Advanced Antitank Weapon System-Medium (AAWS-M) and the AAWS-Heavy entry into the Proof of Principle (POP) phase. Three AAWS-M POP contracts, \$30 million each for a period of performance of 27 months, were awarded on 28 Aug 86 to Ford Aerospace and Communications Corporation, Hughes Aircraft Company, and Texas Instruments, Incorporated.

Following successful completion of the POP program by all three contractors, the Full Scale Development (FSD)/Low Rate Initial Production (LRIP) Request For Proposal (RFP) was released on 6 Sep 88, and the proposals were received on 7 Nov 88. On 9 Feb 89, the Army announced that the Texas Instruments and Martin Marietta Imaging Infrared Fire-&-Forget (IIR F&F) technology was selected for the FSD/LRIP contract award, contingent upon Department of Army (DA) and Office of Secretary of Defense (OSD) program approval. The Under Secretary of the Army Acquisition Decision Memorandum, dated 17 Mar 89, authorized the AAWS-M to proceed into the FSD phase, subject to Defense Acquisition Board (DAB) review. The Secretary of Defense Acquisition Decision Memorandum (ADM) was issued on 19 Jun 89 approving entry into the FSD phase. A contract was awarded to a Texas Instruments/Martin Marietta Joint Venture on 21 Jun 89.

Javelin was selected as the popular name for the AAWS-M Weapon System requirements. A DAB review was held 5 Dec 90 which approved a change to the Acquisition Program Baseline (APB), increasing the system weight threshold to 49.5 pounds. As a result of cost growth and technical performance problems related to the extensive effort to maintain the success-oriented 36 month schedule, the

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Javelin, December 31, 1996

7. (U) Executive Summary (Cont'd):

Baseline Test directed by OSD exacerbating an already demanding (compressed) test schedule, Focal Plane Array (FPA) performance growth being slower than anticipated and weight reduction efforts being more difficult than expected, the Army Acquisition Executive (AAE) and the Defense Acquisition Executive (DAE) approved a restructured 54-month Engineering and Manufacturing Development (EMD) phase.

All Engineering and Manufacturing Development (EMD) testing (both developmental and operational with two minor exceptions) was completed in Dec 93.

A fixed price incentive, Low Rate Initial Production (LRIP) I contract was awarded 23 Jun 94 to TI/Martin Javelin Joint Venture.

As a result of the 20 Jun 94 Defense Acquisition Board (DAB) review, the Army was directed to submit a Cost Reduction Plan (CRP) to OSD by 1 Sep 94 and to add an LRIP III to provide time to complete development of the new warhead. On 31 Aug 94, the CRP was approved by the Army Acquisition Executive (AAE) and forwarded to OSD. The CRP resulted in \$1.4 B being returned to the Army.

On 22 Dec 94 a letter contract was definitized which continues alternate warhead development and the Enhanced Producibility Program (EPP) I was implemented during the fourth Qtr CY 94. On 7 Feb 1995, the proposed Acquisition Program Baseline (APB) incorporating an 11 year program with full cost and quantity reductions was approved.

A fixed price incentive (with a cost plus incentive fee provision for Interim Contractor Support) contract for Low Rate Initial Production II (LRIP II) was awarded on 9 Mar 95. In Aug 95 production of the low cost Missile Simulation Round (MSR) was begun at the Ft. Benning, GA Training Support Center. The rollout ceremony for the first Javelin production round was held 29 Sep 95 at the Lockheed Martin Pike County Operations Plant located in Troy, AL.

The JAVELIN Material Release was formally approved on 26 Jun 96 which allowed the first unit to be equipped ahead of schedule on 27 Jun 96. All phases of Live Fire lethality testing have been successfully completed. The first baseline flight test of a missile with several EPP modifications was successfully completed on 14 Oct 96. The first full-up Enhanced Producibility Program (EPP) missile was successfully flown on 28 Jan 97 at Redstone Arsenal, AL. The Low Rate Initial Production (LRIP) Command Launch Unit (CLU) demonstrated compatibility (i.e. the capability to successfully download software and fire) with the EPP and LRIP missile configurations. In Jan 97, the EPP CLU demonstrated the capability to successfully download software to both EPP and LRIP missile configurations.

The Low Rate Initial Production (LRIP) III Firm Fixed Price (FFP) contract was awarded for \$173.7 M on 29 Feb 96. Included in the contract were basic effort and options for Interim Contractor Support (ICS) and Total Package Fielding on a Cost Plus Incentive Fee (CPIF) basis. The Request For Proposal (RFP) for a 3 year multi-year production contract was issued 23 Feb 96. The proposal was received on 3 Sep 96 and the technical evaluation was completed on 30 Sep 96. An updated proposal was requested and received on 20 Dec 96 and the technical evaluation was completed on 21 Jan 97. Contract negotiations began 11 Mar 97.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Joint Service Op Requirement Approved	APR 86	APR 86	APR 86
Milestone I (DSARC)	MAY 86	MAY 86	MAY 86
Proof of Principle Contract Award	AUG 86	AUG 86	AUG 86
Proof of Principle Complete	DEC 88	DEC 88	DEC 88
Milestone II (DAB)	MAY 89	MAY 89	JUN 89
FSD Contract Award	JUN 89	JUN 89	JUN 89
Pre-Prod Qual Test			
Start	JUN 90	JUN 90	JUN 90
Complete	JAN 92	DEC 93	DEC 93
Training Force Dev Test and Experimentation (FDT&E)			
Start	MAR 91	FEB 93	FEB 93
Complete	AUG 91	APR 93	APR 93
Prototype Delivery	APR 91	NOV 92	NOV 92
IOT&E			
Start	JAN 92	SEP 93	SEP 93
Complete	APR 92	DEC 93	DEC 93
LRIP Decision (DAB)	JUN 92	JUN 94	JUN 94
LRIP I Contract Award	JUN 92	APR 94	JUN 94
LRIP II Contract Award	JUN 93	MAR 95	MAR 95
First LRIP Delivery	SEP 93	OCT 95	OCT 95
Prod Verification Test			
Start	SEP 93	OCT 95	NOV 95
Complete	FEB 94	APR 96	APR 96
LRIP III Contract Award	N/A	MAR 96	FEB 96
LRIP II Delivery	N/A	OCT 96	OCT 96
Limited User Test			

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Start	N/A	APR 96	APR 96
Complete	N/A	MAY 96	JUN 96 (Ch-1)
Live Fire Test			
Start	FEB 94	JUN 96	JUN 96
Complete	MAY 94	DEC 96	DEC 96
First Unit Equipped	FEB 94	JUN 96	JUN 96
IOC	DEC 95	N/A	OCT 96 (Ch-2)
Milestone IIIB (DAB)	JUN 94	N/A	N/A
Full Rate Production (ASARC)	N/A	APR 97	APR 97
Full Rate Production Contract Award	JUN 94	MAY 97	MAY 97
LRIP III Delivery	N/A	OCT 97	OCT 97
First Full Rate Production Delivery	JUN 95	OCT 98	OCT 98
Follow-on Operational Test and Evaluation			
Start	N/A	OCT 98	OCT 98
Complete	N/A	DEC 98	DEC 98
Organic Field Level Support Capability	N/A	JAN 99	JAN 99
Organic Depot Level Support Capability	N/A	JUL 01	JUL 01

b. (U) Current Change Explanations --

(Ch-1) Limited User Test Complete changed from May 96 to June 96 to reflect actual date accomplished.

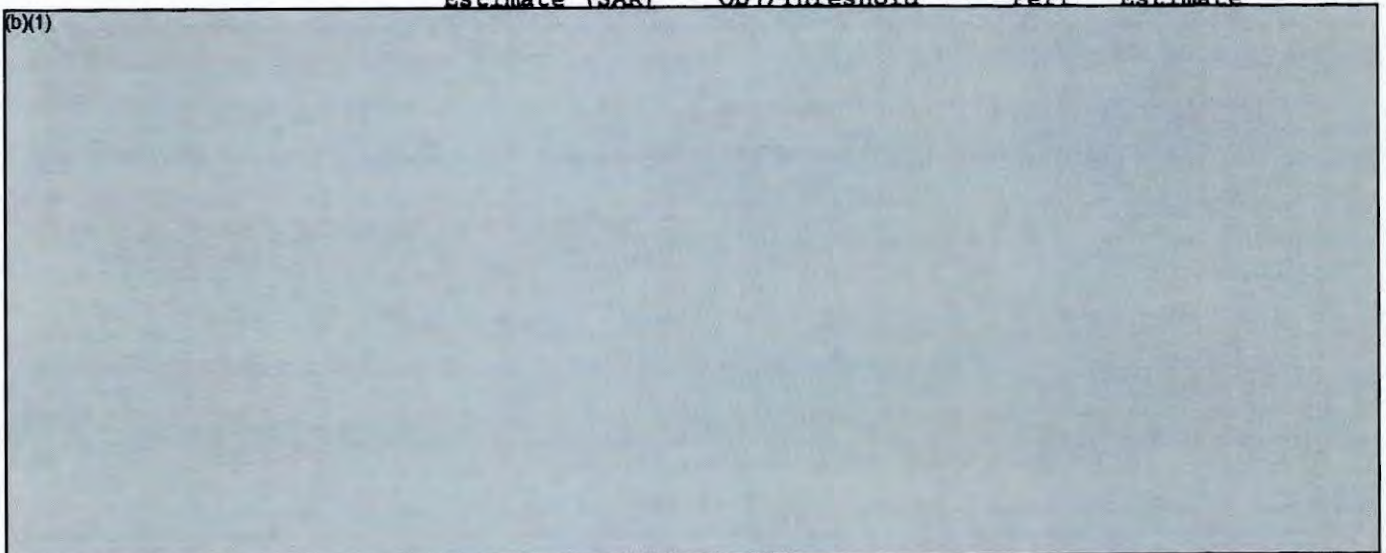
(Ch-2) Initial Operational Capability (IOC) date changed from August 96 to October 96 to reflect actual completion.

10. (U) Performance Characteristics:

a. Performance --

Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
-------------------------------	--	---------------------------	---------------------

(b)(1)



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

(U) Objectives/thresholds/current estimates are at MS III except P(k/e). Values shown are objectives representing desired performance and minimum acceptable thresholds.

1. (U) Minimum range (Full) and maximum range. Full lethality must be met at this range.

2. (U) Probability of hit given a reliable round (Ph/reliable round). Hit probabilities are specified for 7 km visibility (day/night) in benign environments. Must hit a fully exposed standard NATO target (2.3m H x 2.3m W x 4.6m L) stationary or moving (crossing velocity up to 20 km/hr) at all ranges (min to max). The hit probability must be attained given any attack azimuth or elevation angle (relative to target) given a shot with a reliable system.

(b)(1)

ACRONYMS:

FO - Fog Oil
WP - White Phosphorous
MTBOMF - Mean Time Between Operational Mission Failures.
MTTR - Mean Time To Repair.
IOT&E - Initial Operational Test and Evaluation.

b. (U) Current Change Explanations --

Ch-1 Revised demonstrated performance and current estimate values based on additional analysis of available data as follows:

(b)(1)

b. (U) Missile operational reliability demonstrated performance changed from .78 to .82 and current estimate changed from .93 to .91.

c. (U) Command Launch Unit Mean Time Between Operational Mission Failures demonstrated performance changed from 77 hours to 205 hours and current estimate changed from 142 hours to 160 hours.

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	549.2	718.4	736.1
Procurement	2849.6	2313.6	2394.0
Round Flyaway	(2447.2)		(1730.7)
CLU Flyaway	(240.3)		(369.2)
Total Flyaway	(2687.5)		(2099.9)
Other Weapon System	(39.0)		(44.0)
Training Devices	(96.7)		(192.4)
Plant Closure			(14.7)
Total Other Wpn Sys	(135.7)		(251.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.4)		(43.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	3398.8	3032.0	3130.1
Escalation	537.7	999.7	719.5
Development (RDT&E)	(-1.4)	(29.2)	(30.8)
Procurement	(539.1)	(970.5)	(688.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3936.5	4031.7	3849.6

(U) Values shown include USMC program.

b. (U) Quantity --

Development (RDT&E)	81	48	48
Procurement	70550	31269	28967
Total	70631	31317	29015

Note: Excludes 165 RDTE prototypes from the SAR Baseline and 154 from the Current Estimate that are not considered fully configured.

(U) A system is comprised of rounds, CLUs, associated training devices and initial spares with the round the designated unit of measure. Of the total procurement quantity shown above, 2585 rounds (FY94-703, FY95-872, and FY96-1010) or 8.9% will be produced during Low Rate Initial Production (LRIP). Congressional increase of \$35.5M in FY 96 allowed the quantity to change from 557 to 1010 rounds with an accompanying increase of CLUs and associated training devices.

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (FEB 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	3130.1	3032.0	
(2) Quantity	29015	31317	
(3) Unit Cost	0.108	0.097	+11.34
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	2394.0	2313.6	
(2) Quantity	28967	31269	
(3) Unit Cost	0.083	0.074	+12.16

(U) The changes in unit costs since the last report are due to the USMC missile quantity reduction and Army CLU quantity increase.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	547.8	3388.7	-	3936.5
Previous Changes:				
Economic	-4.6	-156.1	-	-160.7
Quantity	-	-1523.9	-	-1523.9
Schedule	+102.0	+693.4	-	+795.4
Engineering	+7.6	+21.2	-	+28.8
Estimating	+92.3	+549.0	-	+641.3
Other	-	-	-	-
Support	-	+108.8	-	+108.8
Subtotal	+197.3	-307.6	-	-110.3
Current Changes:				
Economic	-	-3.3	-	-3.3
Quantity	-	-105.1	-	-105.1
Schedule	-	+17.6	-	+17.6
Engineering	+17.4	+9.9	-	+27.3
Estimating	+4.4	-20.8	-	-16.4
Other	-	-	-	-
Support	-	+103.3	-	+103.3
Subtotal	+21.8	+1.6	-	+23.4
Total Changes	+219.1	-306.0	-	-86.9
Current Estimate	766.9	3082.7	-	3849.6

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

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	549.2	2849.6	-	3398.8
Previous Changes:				
Quantity	-	-1017.6	-	-1017.6
Schedule	+97.1	-	-	+97.1
Engineering	+6.3	+18.6	-	+24.9
Estimating	+65.0	+489.2	-	+554.2
Other	-	-	-	-
Support	-	+56.1	-	+56.1
Subtotal	+168.4	-453.7	-	-285.3
Current Changes:				
Economic	-	-	-	-
Quantity	-	-71.9	-	-71.9
Schedule	-	-	-	-
Engineering	+14.1	+7.6	-	+21.7
Estimating	+4.4	-13.5	-	-9.1
Other	-	-	-	-
Support	-	+75.9	-	+75.9
Subtotal	+18.5	-1.9	-	+16.6
Total Changes	+186.9	-455.6	-	-268.7
Current Estimate	736.1	2394.0	-	3130.1

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Added funding for Lethality Improvement Tracker Enhancement program. (Engineering)	+1.0	+1.2
	Added funding for Advanced Main Charge Warhead program. (Engineering)	+13.1	+16.2
	Revised estimate to increase prior year amounts to actuals. (Estimating)	+4.4	+4.4
	RDT&E Subtotal	+18.5	+21.8
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-10.6
	Economic Adjustment for negative program change. (Economic)	N/A	+7.3
	Total Quantity variance associated with decrease of 2302 USMC rounds.	-94.5	-134.7
	Quantity decrease of 2302 USMC rounds. (Quantity)	-71.9	-105.1
	Allocation to Engineering variance due to quantity change. (Engineering)	-0.8	-1.1
	Allocation to Estimating variance due to quantity change. (Estimating)	-21.8	-27.9
	Redistribution of FY procurement round schedule. (Schedule)	0.0	+17.6

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Net increase in CLU quantity from 3264 to 3506. (Engineering)	+8.4	+11.0
Revised in-house estimate. (Estimating)	+7.4	+6.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.9	+1.0
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Correction for initial spares estimating change in other weapon system. (Support)	-32.7	-43.8
Upgrade Field Tactical Trainer and Basic Skills Trainer. (Support)	+73.3	+96.5
Increased initial spares due to increase in CLUs and change in estimating methodology. (Support)	+20.5	+28.5
Added Plant Closure costs. (Support)	+14.7	+22.0
Procurement Subtotal	-1.9	+1.6

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.06	-0.01	+0.02	+0.03	--	+0.02	--	+0.01	+0.07	0.13

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.05	-0.01	+0.02	+0.02	--	+0.02	--	+0.01	+0.06	0.11

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	MAY 86	N/A	MAY 86
Milestone II	N/A	JUN 89	N/A	JUN 89
Milestone III	N/A	JUN 92	N/A	APR 97
FUE/IOC	N/A	DEC 95	N/A	OCT 96
Total Cost	N/A	3936.5	N/A	3849.6
Total Quantity	N/A	70631	N/A	29015
Prog Acq Unit Cost	N/A	0.06	N/A	0.13

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

a. Procurement --

(U) LRIP II:

TI/Martin Joint Venture, Lewisville TX
DAAH01-95-C-0095, FPI/CPIF
Award: March 9, 1995
Definitized: March 9, 1995

Initial Contract Price
Target Ceiling Qty

\$167.6 \$181.4 872

Current Contract Price
Target Ceiling Qty
\$167.3 \$181.3 872

Estimated Price At Completion
Contractor Program Manager
\$181.7 \$182.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.7	\$-0.4
Cumulative Variances To Date (12/31/96)	\$-2.3	\$-7.7
Net Change	\$-4.0	\$-7.3

Explanation of Change:

(U) The unfavorable schedule variance is related to the missile and training. The unfavorable cost variance is related to the missile and partially offset by a positive cost variance in the System Engineering/Program Management area.

(U) Contract Comments:

Contract estimated prices do not include Initial Contractor Support.

(U) LRIP III:

TI/Martin Joint Venture, Lewisville TX
DAAH01-96-C-0147, FFP/CPIF
Award: February 29, 1996
Definitized: N/A

Initial Contract Price
Target Ceiling Qty

\$164.8 N/A 1015

Current Contract Price
Target Ceiling Qty
\$162.7 N/A 1015

Estimated Price At Completion
Contractor Program Manager
\$162.7 \$162.7

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

(U) Contract estimated prices do not include Initial Contractor Support which is a Cost Plus Incentive Fee element. Contractor Cost Performance Reports are not received since the contract is a primarily a Firm Fixed Price (FFP) contract. Ceiling price does not apply since the contract is Firm Fixed price and has a CPIF element.

Contract DAAH01-94-C-0023, Low Rate Initial Production I, is over 90% complete and is no longer reported.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY86-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-06)	<u>Total</u>
RDT&E	753.6	8.0	5.3	-	766.9
Procurement	871.4	185.2	417.3	1608.8	3082.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1625.0	193.2	422.6	1608.8	3849.6

b. Annual Summary -- Javelin

Appropriation: 2040 Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY90 Dollars Nonrec</u>	<u>Flyaway FY90 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1986				62.0	55.1
1987				45.9	42.0
1988				31.0	29.5
1989				99.8	98.9
1990				135.6	139.5
1991				76.2	81.3
1992				111.9	122.3
1993				89.1	99.7
1994				41.4	47.2
1995				25.7	29.9
1996				1.9	2.2
1997				4.9	6.0
1998				6.5	8.0
1999				4.2	5.3

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

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	48			736.1	766.9

Appropriation: 1109 Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	141	0.5	21.5	31.0	38.2
1998	194	1.1	25.2	33.4	42.1
1999	741	4.8	55.3	67.3	86.5
2000	888	3.6	52.1	64.3	84.4
2001	403		19.3	23.4	31.4
Subtotal	2367	10.0	173.4	219.4	282.6

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				16.0	18.3
1994	703	41.4	147.7	177.3	206.1
1995	872	8.3	150.0	179.1	212.6
1996	1010	1.4	146.5	166.8	200.9
1997	1020	2.7	128.8	158.7	195.3
1998	1080	2.7	102.0	113.7	143.1
1999	3316	18.9	213.0	257.4	330.8
2000	5458	20.3	296.6	358.7	470.8
2001	5403		271.6	310.4	416.4
2002	7037	5.5	311.1	352.8	484.5
2003				11.8	16.6
2004	701		48.0	57.2	82.7
2005				8.1	12.0
2006				6.6	10.0
Subtotal	26600	101.2	1815.3	2174.6	2800.1

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	26648	101.2	1815.3	2910.7	3567.0
Navy	2367	10.0	173.4	219.4	282.6
Grand Total	29015	111.2	1988.7	3130.1	3849.6

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17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	202	48
Procurement	109	109

(U) Percent Total Program Quantities Delivered: 0.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1080.9

(U) Percent Total Program Expended: 28.1%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The Javelin system support concept is consistent with existing Army policy as follows:

(1) Command Launch Unit (CLU) is a 3 level organic support concept. Unit level is responsible for visual inspection, exterior cleaning, battery replacement and troubleshooting thru the Built In Test (BIT) capability. Removal/replacement of components will be accomplished at the Direct Support (DS) level. Depot level capability will exist for complete overhaul/repair of the unit.

(2) Maintenance of the round is a "wooden round" concept.

(3) Contractor Logistics Support (CLS) of training devices will be used for the life of the system.

Interim Contractor Support (ICS) for supply support and maintenance above unit level will be utilized for the first 60 months. CLU repair will consist of complete repair of the CLU's economically repairable circuit cards, assemblies, and components. Missile repair (resulting from surveillance checks) will be performed by the system's prime contractor.

Fielding began in Jun 96. Sustainment covers 20 (full deployment) years of operation, maintenance, and modification. Military pay and allowances represent over 63% of the sustainment program costs not including contractor support costs. Sustainment for the antecedent system, DRAGON, covers 20 (full deployment) years of operation, maintenance, and modification.

Mission Pay and Allowance includes crew pay and allowance, maintenance pay and allowance, and system project management. Unit Level Consumption consists of replenishment reparable, replenishment consumables, transportation, petroleum, oil, and lubricants plus ammunition/missiles. Intermediate Maintenance is field maintenance civilian labor. Depot Maintenance includes publications, civilian labor and material. Interim contractor support for the system and contractor logistics support for training devices make up the Contractor Support costs. Sustaining Support consists of system software maintenance, training device software maintenance, modifications/kits, system test and evaluation and demilitarization. Indirect Support includes system specific replacement training, costs associated with permanent change of station, and base operations.

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

Data source: Javelin - Project Office Estimate, updated Feb 97, certified by MICOM Cost Analysis, average over 12 years fully fielded (i.e. no ramp up or down) (sustainment years (FY 04 through FY 15)), Army only; Antecedent - DRAGON II Life Cycle Cost Estimate, dated Aug 1984, 20 years sustainment, Army only.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Year JAVELIN	Avg Annual Cost Per Year DRAGONII (ANTECEDENT)
Mission Pay & Allowances	46.4	87.2
Unit Level Consumption	9.5	21.8
Intermediate Maintenance	0.0	0.3
Depot Maintenance	0.5	20.3
Contractor Support	6.2	0.0
Sustaining Support	3.1	4.5
Indirect Costs	9.2	33.7
Total	74.9	167.8

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: MMIII GRP

AS OF DATE: December 31, 1996

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- (U) Designation and Nomenclature (Popular Name): Minuteman III Guidance Replacement Program
- (U) DoD Component: USAF
- (U) Responsible Office and Telephone Number:
 OO-ALC/LM COL TERENCE CROSSEY
 6014 DOGWOOD AVENUE Assigned: June 1, 1994
 HILL AFB, UT 84056-5816 DSN 777-8645; COMM (801) 777-8645
- (U) Program Elements/Procurement Line Items:
 RDT&E:
 (U) PE 0101213F (Shared)
 (U) PE 0604312F
 (U) PE 0604851F
 PROCUREMENT:
 (U) APPN 3020 ICN LGM30G (Air Force)

SAF/PAS

97--0081

CONGRESSIONAL

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 FOR OPEN PUBLICATION

FEB 28 1997 24

LIEUTENANT GENERAL PETER A. DELOACH
 AND SECURITY REVIEW BOARD
 SECRETARY OF DEFENSE

Classified by: MULTIPLE SOURCES

Declassify on: Originating Agency Determination Required (ORDA)

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MMIII GRP, December 31, 1996

5. (U) References:

SAR Baseline (Development Estimate):

(U) Acquisition Decision Memorandum dated August 31, 1993.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated July 12, 1995.

6. (U) Mission and Description:

(U) The Guidance Replacement Program (GRP) upgrades and extends the life of the Minuteman III guidance system through the year 2020. As a result of various arms control initiatives, the Minuteman III is projected to become the only land-based ICBM in the Triad when Peacekeeper is retired. The guidance electronics will be replaced since current electronic components continue to degrade and are projected to become unreliable as early as 1997 and unsupportable as early as 1998. GRP replaces 1960's guidance system electronics and protects the option for future implementation of the Mark 21 RV/W87 warhead and an advanced inertial measurement unit (IMU), if required.

7. (U) Executive Summary:

(U) The System Program Office (SPO) completed a detailed program review to assess the impact of continued negative cost and schedule trends. The conclusion was the program while making significant progress on all contract tasks was not performing consistent with the Jul 95 Acquisition Program Baseline (APB). Problems were centered around delays in the build of operational models (OMs) which were needed for completion of development testing and initial operational test and evaluation. The OM build delays were due to late parts deliveries and correction of anomalies found during engineering model tests (EM). There was also a delay in the completion of the code and initial checkout of the operational software. These delays necessitated a rebaselined program, which was briefed to the Program Executive Officer (PEO), Air Force Space Command (AFSPC), and the Air Force Operational Test and Evaluation Center (AFOTEC) on 20 Nov 96. The program funding profile was adjusted to this new baseline which increased low rate initial production (LRIP) and full rate production by 9 months. The operational impacts of the rebaselined program were of great concern to the user but acceptable. A Program Deviation Report (PDR) and revised APB have been submitted to the PEO and are in coordination.

The Aerospace Vehicle Engineering (AVE) EM tests at the Strategic Missile Integration Complex (SMIC) were completed. Testing at Vandenberg AFB's missile launch test facilities is underway. AVE EM module level vibration and radiation testing is continuing with good results. Correction of anomalies from engineering tests in the EMs have been verified and are being incorporated in OM modules. A fit check/maintainability demonstration was successfully conducted with mock-ups of the missile guidance set radiation shields in Dec 96.

The Peculiar Support Equipment (PSE) integrated product team (IPT) conducted several critical design reviews of depot hardware and software configuration

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7. (U) Executive Summary (Cont'd):

items as well as maintenance support equipment. The build of the first OM PSE was completed and all other OMs are nearing completion.

The Trainer IPT successfully completed the missile guidance set/reentry system (MGS/RS) trainer preliminary design review.

The System Test and Operational Support (ST&OS) IPT completed build of the modified MOD 7 telemetry wafer. Testing is proceeding much smoother and faster than planned. The Mod 7 support station (known as the Electrical-Electronic Equipment Test Station-Vandenberg, EEETS-V) completed build and is undergoing testing. The critical design review (hardware and software) for the EEETS-V was successfully conducted on 4 Dec 96.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

As a result of a review of program status and Air Force actions to reduce funds available in FY98, the PEO directed a rebaseline of the program. A Program Deviation Report (PDR) and a proposed Acquisition Program Baseline (APB) has been submitted to the PEO. Several milestones have breached the APB and have been proposed to be changed along with the proposal to delete Organic Support Capability and Service Depot Support Date. The RDT&E and Procurement cost baselines have been adjusted accordingly, and a revised APB is in the coordination cycle. A Procurement APB Breach occurred as a result of a restructure in the production profile to address fact of life changes and the delay in the completion of the EMD program.

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9. (U) Schedule:

a. Milestones --

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>	
Milestone I/II AFSARC	AUG 93	AUG 93	AUG 93	
Engineering and Manufacturing	AUG 93	AUG 93	AUG 93	
Development Contract Award				
Preliminary Design Review (PDR)	SEP 94	FEB 96	FEB 96	
Complete				
Critical Design Review (CDR) Complete	SEP 95	FEB 97	JUL 97	(Ch-1)
AF QT&E				
Start	MAY 95	MAY 96	JUN 96	(Ch-1)
Complete	MAY 97	AUG 97	APR 98	(Ch-1)
Low Rate Initial Production (LRIP)	JUL 96	JUN 97	MAR 98	(Ch-1)
Contract Award				
AF QOT&E Integration Demonstration	NOV 96	JAN 98	OCT 98	(Ch-1)
Flight (IDF)				
Milestone III AFSARC	MAY 97	MAR 98	DEC 98	(Ch-1)
First Asset Delivery (FAD) to User	SEP 97	SEP 98	MAY 99	(Ch-1)
Organic Support Capability	SEP 97	SEP 98	N/A	(Ch-1)
Service Depot Support Date	SEP 98	SEP 99	N/A	(Ch-1)
Initial Operational Capability (IOC)	MAR 98	JUL 99	JAN 00	(Ch-1)

b. (U) Current Change Explanations --

As a result of a review of program status and Air Force actions to reduce funds available in FY98, the PEO directed a rebaseline of the program. A Program Deviation Report (PDR) and a proposed Acquisition Program Baseline (APB) has been submitted to the PEO. Several milestones were proposed to be changed along with the proposal to delete Organic Support Capability and Service Depot Support Date. The following information is provided to show changes in the current estimate since the previous report.

Critical Design Review (CDR) Complete	From Feb 97 to Jul 97
AFQT&E Start	From May 96 to Jun 96
AFQT&E Complete	From Aug 97 to Apr 98
Low Rate Initial Production (LRIP)	From Jun 97 to Mar 98
Contract Award	
AFQOT&E Integration Demonstration	From Jan 98 to Oct 98
Flight (IDF)	
Milestone III AFSARC	From Mar 98 to Dec 98
First Asset Delivery (FAD) to user	From Sep 98 to May 99
Organic Depot Support	From Sep 98 to Delete
Service Depot Support Date	From Sep 99 to Delete
Initial Operational Capability (IOC)	From Jul 99 to Jan 00

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10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

b. Current Change Explanations -- None.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	423.3	467.1	496.0
Procurement	1040.3	1044.1	1128.8
Total Fly-Away	(950.9)		(1023.2)
Total Weapon Other System	(6.8)		(6.3)
Peculiar Support	(47.9)		(50.3)
Initial Spares	(34.7)		(49.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 93 Base-Year \$	1463.6	1511.2	1624.8
Escalation	172.6	327.6	264.3
Development (RDT&E)	(29.0)	(42.8)	(35.9)
Procurement	(143.6)	(284.8)	(228.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1636.2	1838.8	1889.1
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	652	652	652
Total	652	652	652

Note: Excludes 11 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

(U) The LRIP quantities approved at Milestone II were 46. This is the only LRIP Buy.

c. (U) Foreign Military Sales --

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

None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUL 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 93 BY\$)	1624.8	1511.2	
(2) Quantity	652	652	
(3) Unit Cost	2.492	2.318	+7.51
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 93 BY\$)	1128.8	1044.1	
(2) Quantity	652	652	
(3) Unit Cost	1.731	1.601	+8.12

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	452.3	1183.9	-	1636.2
Previous Changes:				
Economic	-5.4	-3.3	-	-8.7
Quantity	-	-	-	-
Schedule	+63.7	+71.4	-	+135.1
Engineering	-26.0	+18.9	-	-7.1
Estimating	+9.1	+18.3	-	+27.4
Other	-	-	-	-
Support	-	-16.6	-	-16.6
Subtotal	+41.4	+88.7	-	+130.1
Current Changes:				
Economic	-0.7	-10.1	-	-10.8
Quantity	-	-	-	-
Schedule	-	+20.4	-	+20.4
Engineering	-	-	-	-
Estimating	+38.9	+33.2	-	+72.1
Other	-	-	-	-
Support	-	+41.1	-	+41.1
Subtotal	+38.2	+84.6	-	+122.8
Total Changes	+79.6	+173.3	-	+252.9
Current Estimate	531.9	1357.2	-	1889.1

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

(U) Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	423.3	1040.3	-	1463.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	+56.0	+26.0	-	+82.0
Engineering	-24.4	+15.4	-	-9.0
Estimating	+7.0	+8.3	-	+15.3
Other	-	-	-	-
Support	-	-18.9	-	-18.9
Subtotal	+38.6	+30.8	-	+69.4
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+34.1	+22.6	-	+56.7
Other	-	-	-	-
Support	-	+35.1	-	+35.1
Subtotal	+34.1	+57.7	-	+91.8
Total Changes	+72.7	+88.5	-	+161.2
Current Estimate	496.0	1128.8	-	1624.8

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.5
Cost of restructure and stretchout of the RDT&E program. (Estimating)	+33.6	+38.4
RDT&E Subtotal	+34.1	+38.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-10.1
Stretchout of annual procurement buy profile/addition of 2 program years (2002-2003) (Schedule)	0.0	+20.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Restructure of production profile to address decrease in initial production funding (Estimating)	+22.3	+32.9
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Change in Initial Spares (Support)	+4.0	+5.0

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in Peculiar Support. The amount of Peculiar Support Equipment increased. (Support)	+32.9	+38.3
Change in Total Weapon Other System. Change in requirements to Training and Technical Publications. (Support)	-1.9	-2.3
Procurement Subtotal	+57.7	+84.6

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.51	-0.03	--	+0.24	-0.01	+0.15	--	+0.04	+0.39	2.90

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.82	-0.02	-0.01	+0.14	+0.03	+0.08	--	+0.04	+0.26	2.08

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	AUG 93	N/A	AUG 93
Milestone II	N/A	AUG 93	N/A	AUG 93
Milestone III	N/A	MAY 97	N/A	DEC 98
FUE/IOC	N/A	MAR 98	N/A	JAN 00
Total Cost	N/A	1636.2	N/A	1889.1
Total Quantity	N/A	652	N/A	652
Prog Acq Unit Cost	N/A	2.51	N/A	2.9

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

a. RDT&E --			Initial Contract Price	
(U) MMIII GRP - Electronics:			<u>Target</u>	<u>Ceiling</u>
Boeing North Ame. Intl, Anaheim CA				<u>Qty</u>
F04704-93-C-0020, CPAF			\$253.2	N/A
Award: August 31, 1993				0
Definitized: August 31, 1993				
Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$372.7	N/A	0	\$422.1	\$422.1
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (12/29/96)			\$-8.4	\$-2.9
Net Change			\$-26.6	\$-9.4
			\$-18.2	\$-6.5

Explanation of Change:

(U) The delta between the initial contract price (\$253.2M) and the current contract price (\$372.7M) are due to the following reasons; The award fee (\$23.3M) was not included in the initial contract price, but is included in the current contract price, the FY95 program restructure resulted in an upward adjustment of \$43M and drove the stretch out of Engineering Manufacturing Development to Sep 98, and the additional effort to modify the Guidance & Control Lab Test Station. In addition, several smaller contract modifications have been made to address other equitable adjustments to definitize the cost of work that was unknown at contract award, i.e., repair of defective government furnished equipment (\$20M). Finally, a recognition of \$32.5M of cost growth to the program has been included in the current contract price.

Cost variance is driven by added resources needed to resolve build problems with Aerospace Vehicle Equipment (AVE), Peculiar Support Equipment (PSE), Operational Models (OMs), and increased complexity in the operational software development. The Estimate at Completion will be adjusted above the \$341M over target baseline to reflect the program restructure.

Schedule variances have been driven by delays in the completion of drawings and the receipt of materials to support the build of operational model (OM) peculiar support equipment (PSE) and delays to the completion of Operational Model (OM) Aerospace Vehicle Equipment (AVE) modules due to the validation and incorporation of design changes that resulted from design anomalies during engineering model tests.

The contractors will be submitting equitable adjustments in Feb 97 for the government directed program rebaselining. Incorporation of supplemental agreements to all contracts will be completed by the end Jun 97. The period of performance for the Boeing North American Engineering Manufacturing Development effort will extend through May 99.

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

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

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

<u>Appropriation</u>	<u>Prior Years (FY93-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-05)</u>	<u>Total</u>
RDT&E	444.0	66.9	21.0	-	531.9
Procurement	72.9	102.2	180.6	1001.5	1357.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	516.9	169.1	201.6	1001.5	1889.1

b. Annual Summary -- MM III GRP

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY93 Dollars Nonrec	Flyaway FY93 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				52.8	53.7
1994				81.5	84.4
1995				88.1	93.0
1996				102.8	110.7
1997				92.9	102.2
1998				59.6	66.9
1999				18.3	21.0
Subtotal				496.0	531.9

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY93 Dollars Nonrec	Flyaway FY93 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	4		9.1	9.1	10.0
1997	10	14.6	24.5	56.4	62.9
1998	32	13.4	58.6	89.6	102.2
1999	74	20.5	113.6	155.2	180.6
2000	163	23.3	215.9	258.0	306.8
2001	163	27.0	197.1	237.9	289.0
2002	139	27.1	161.9	198.7	247.0
2003	67	19.3	79.6	106.1	135.2
2004		12.0		12.0	15.7
2005		5.7		5.8	7.8

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

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY93 Dollars Nonrec	Flyaway FY93 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	652	162.9	860.3	1128.8	1357.2

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	652	162.9	860.3	1624.8	1889.1

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDTE&E	3	3
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 327.4

(U) Percent Total Program Expended: 17.3%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The concept of operations is based on 500 deployed guidance systems which operate continuously. This is a modification to the current (antecedent) guidance system (NS-20). As such Operating and Support (O&S) costs are not new. Calculations are based on historical guidance repair data, which has varied little since Minuteman III was fielded in the early 1970s. Personnel costs are based on the current manning levels associated with guidance system repair. These levels will not change because maintenance personnel have multiple tasks and qualifications that drive overall manning requirements. Repair costs are calculated as the number of projected annual repairs, multiplied by the unit repair cost. Unit level consumption costs are based on costs associated with deployment of missile wing personnel to missile sites to remove and replace guidance systems, and the annual user costs associated with maintaining guidance related maintenance support equipment. Repair and unit level consumption costs will decrease as a result of this modification. The increase in reliability of the electronics will result in fewer guidance system repairs and fewer maintenance actions by field personnel. NOTE: The calculated costs to repair the guidance set compares system level Missile Guidance System (MGS) repair. O&S data was extracted from the routine program office estimate dated Oct 96.

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

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Year-NS-50 System	Avg Annual Cost Per Year-NS-20 Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	3.5	3.5
Intermediate Maintenance	16.8	24.4
Depot Maintenance	4.1	4.5
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	24.4	32.4

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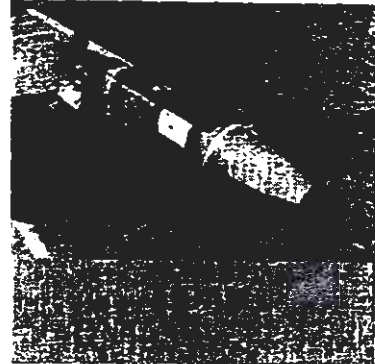
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: JDAM

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Joint Direct Attack Munition (JDAM)

2. DoD Component: USAF

Joint Participants:
USAF, USN

3. Responsible Office and Telephone Number:

ASC/YU, Bldg 11 GM-15 OSCAR L. SOLER
 Joint Direct Attack Munition Assigned: January 2, 1996
 102 West D Ave Suite 300 DSN 872-3526; COMM 904-882-3526
 Eglin AFB, FL 32542-6807

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604618F
 PE 0604618N

PROCUREMENT:

APPN 1507 ICN 0550 (Navy)
 APPN 3020 ICN JDAM00 (Air Force)

Air Force and Navy RDT&E funding includes the Product Improvement Program (PIP).

Air Force and Navy Procurement funding does not include PIP funding. Navy Procurement funding includes BLU-109 but not Joint Programmable Fuze.

SAF/PAS

97--0087

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 AND SECURITY REVIEW (OASD-PA)
 DEPARTMENT OF DEFENSE

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JDAM, December 31, 1996

5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated September 20, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated September 20, 1995.

6. Mission and Description:

Operation DESERT STORM confirmed the need for a more accurate weapon delivery capability in adverse weather conditions from medium/high altitudes. Failure to satisfy this requirement will allow the enemy to continue to take advantage of the sanctuary of weather and/or prevent United States air power from prosecuting a conflict on its own terms. The JDAM is an Air Force and Navy munitions program to correct these shortfalls, with the Air Force as the Executive Service. JDAM will upgrade the existing general purpose bombs (MK-84, BLU-109, and MK-83/BLU-110) by integrating them with a tail guidance kit consisting of an Inertial Navigation System (INS) aided by a Global Positioning System (GPS). JDAM will provide an accurate (13 meters) adverse weather capability. The threshold platforms for the JDAM MK-84 and BLU-109 are the B-52H & FA-18C/D. The threshold platforms for the MK-83/BLU-110 are the F-22A & AV-8B. The services will certify other aircraft (e.g. B-1B, B-2A, F-16C/D, F-14D, F-15E, FA-18E/F, S-3, P-3) to deliver JDAM when funding becomes available. The JDAM Product Improvement Program (PIP) will investigate and develop improvement options for the JDAM system.

7. Executive Summary:

On 1 February 1996, the Flight Termination System (FTS) was cancelled. FTS was to be used to destroy JDAMs that would violate range boundaries when dropped during test. This action will save JDAM approximately \$3.9M. Canceling the FTS also eliminated the need for a "C-Band" beacon which saved another \$2M.

In February 1996, JDAM successfully completed the fourth and final B-1B "Vibrations and Acoustics Flights" at Edwards Air Force Base. This concluded the flight test activities on the B-1B until August 1997 when aircraft software is completed.

Alliant Defense Electronics Systems was awarded the contract for the Common Munitions Built-in-Test (BIT) and Reprogramming Equipment (CMBRE) for JDAM in February 1996. Alliant held a Preliminary Design Review (PDR) in May 1996 and a Critical Design Review (CDR) in August 1996.

On 20 May 1996, AF/CC approved JDAM for release to approved countries, as either Foreign Military Sales (FMS) or Direct Commercial Sales (DCS). Also, SAF/IAW provided a "JDAM Foreign Sales Policy Statement." The Defense Security Assistance Agency (DSAA) approved release of Price and Availability Data to the approved countries in July 1996.

The "JDAM Performance Incentives Program" was disapproved by USD(A&T) on 23 May

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JDAM, December 31, 1996

7. Executive Summary (Cont'd):

1996. JDAM will not expend any further effort in this area until Congressional legislation provides the statutory authority to implement it.

The Cost as An Independent Variable (CAIV) Plan, required by USD(A&T) for all post Milestone II programs, was incorporated into the JDAM Single Acquisition Management Plan (SAMP) in August 1996.

On 4 December 1996, JDAM procurement funds were designated appropriation 3011 (Procurement of Ammunition, AF).

JDAM aircraft integration and flight testing progressed rapidly in 1996. The following safe separation drops were conducted with Separation Test Vehicles (STVs): 22 from the FA-18C/D, 12 from the B-52H, 6 from the B-1B, 14 from the F-16C/D and 2 from the B-2A. JDAM conducted the following captive flights with Guided Test Vehicles (GTVs) in preparation for free flight: 8 on the FA-18C/D, 9 on the F-16C/D and 4 on the B-2A. As of 31 December 1996, 8 free flight GTV drops from the F-16C/D were completed: 6 were 2000# MK-84s and 2 were 2000# BLU-109s.

Program funding for evaluating terminal seeker technologies was deleted from the Product Improvement Program (PIP) during the FY97 budget cycle. The PIP Milestone I, established in the Acquisition Program Baseline (APB) for September 1999, was to approve further seeker development. The change in PIP funding defers this milestone.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 0	JUN 92	JUN 92	JUN 92
Milestone I	OCT 93	OCT 93	OCT 93
Dem/Val Contract Award	APR 94	APR 94	APR 94
Critical Design Review Complete	AUG 95	AUG 95	AUG 95
Milestone II	SEP 95	SEP 95	SEP 95
Exercise EMD Contract Option	OCT 95	OCT 95	OCT 95
DT&E/TECHEVAL			
Start (Flight Tests)	OCT 95	OCT 95	DEC 95
Complete (2000 lb Kit)	DEC 97	DEC 97	OCT 97
Complete (1000 lb Kit) - Weapon Only	FEB 98	FEB 98	FEB 98
Operational Assessment			
Start	OCT 95	OCT 95	OCT 95
Complete	MAR 97	MAR 97	JAN 97 (Ch-1)
IOT&E/OPEVAL (Dedicated)			
Start	SEP 97	SEP 97	SEP 97
Complete (2000 lb Kit)	DEC 97	DEC 97	DEC 97
OT&E/OPEVAL			
Complete (1000 lb Kit/F-22)	MAY 01	MAY 01	MAY 01
Exercise Lot 1 Option	APR 97	APR 97	APR 97
Exercise Lot 2 Option (FRP)	APR 98	APR 98	APR 98
Lot 1 Production First Delivery	APR 98	APR 98	APR 98 (Ch-2)
Milestone III (2000 Lb)/LRIP (1000 Lb)	APR 98	APR 98	APR 98
Required Assets Availability	N/A	N/A	N/A
Required Assets Availability (AF)	MAR 99	MAR 99	MAR 99
Initial Operational Capability	N/A	N/A	N/A
Initial Operational Capability (FA-18)	SEP 99	SEP 99	SEP 99
Milestone III (1000 Lb on F-22)	SEP 01	SEP 01	SEP 01
Milestone I JDAM PIP	SEP 99	SEP 99	N/A

Milestone I JDAM PIP was previously changed from September 1999 to N/A. The Milestone I JDAM PIP was a decision point for further development of terminal seeker. Terminal seeker development was deleted during the FY97 budget cycle. This was a fact-of-life schedule breach.

1/ The Required Assets Availability Milestone date will be provided once ACC identifies what is required for RAA.

NOTE: LRIP 1 Decision will be based on completion of Group 1 Threshold aircraft for DT&E/IOT&E.

Milestones and dates reflect the JDAM accelerated program.

Lot 1 Decision will be based on sufficient testing on B-52, FA-18, B-2, B-1, and F-16.

ACRONYMS: AUR - All Up Round

LRIP - Low Rate Initial Production

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9a. Schedule (Cont'd):

RAA - Required Assets Availability

b. Current Change Explanations --

(Ch-1) Operational Assessment Complete changed from March 1997 to January 1997 due to lead time for the approval of the Operational Assessment (OA) report prior to April 1997 LRIP decision.

(Ch-2) Lot 1 Production First Delivery changed from May 1998 to April 1998 because the first delivery is 12 months after Lot 1 contract award which is April 1997.

10. Performance Characteristics:

a. Performance --

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
	Adverse	Adverse / Adverse	Adverse	Adverse
Weather Capability				
Accuracy (CEP)				
(Meters)				
GPS Available,	13	13 / 13	10.4	13
Impact Angles >	Horizon-	Horizon- / Horizon-		Horizon-
60 Deg	tal	tal / tal		tal
	Targets	Targets / Targets		Targets
Inflight Re-targeting	Yes	Yes / Yes	Captive	Yes
Capability (captive			Flight	
carry)				
Carrier Operability	Yes	Yes / Yes	Yes	Yes
Warhead Compatibility	MK-82,	MK-82, / BLU-109,	BLU-109,	BLU-109,
	MK-83	MK-83 / MK-84,	MK-84,	MK-84,
		/ MK-83	MK-83	MK-83
		/ (F-22)	(F-22)	(F-22)
Aircraft				
Compatibility				
Bomber	B-1B,	B-1B, / B-52H	Captive	B-52H
	B-2	B-2 /	Flight	
Fighter Attack	FA-18	FA-18 / FA-18C/	Captive	FA-18C/
	C/D	C/D / D,	Flight	D,
	(MK-83),	(MK-83), / F-22A,		F-22A,
	F-16	F-16 / AV-8B		AV-8B
	C/D,	C/D, /		
	FA-18	FA-18 /		
	E/F,	E/F, /		
	F-117A,	F-117A, /		
	F-15E,	F-15E, /		
	P-3,	P-3, /		
	S-3,	S-3, /		
	F-14	F-14 /		
	A/B/D	A/B/D /		

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
Mission Reliability	.90	.90 / .90	TBD	.90
JDAM PIP Accuracy (CEP) (Meters)	3	3 / 3	TBD	8
JDAM PIP Weather Capability	Adverse	Adverse / Adverse	TBD	Adverse
JDAM PIP Warhead Compatibility	MK-82, MK-83	MK-82, / BLU-109, MK-83 / MK-84	TBD	BLU-109, MK-84

1/ Adverse weather is defined as natural/man-made conditions such as rain, haze, dust, smoke, fog, snow, ice, wind, and/or clouds that preclude the use of current inventory precision guided munitions.

2/ Assumes GPS quality hand-off from aircraft. In addition, the target location error (TLE) portion of the total system error is allocated to be 7.2 meters CEP. If TLE is larger than 7.2 meters CEP, the total system CEP will increase accordingly. For impact angles between 60 degrees and 35 degrees (with GPS available) accuracy degradation up to 19 meters CEP against horizontal targets is an objective.

3/ Inflight programming/targeting will be possible through MIL-STD-1553/1760 data bus interface to the weapon from existing aircraft stores management hardware and modified software.

4/ JDAM will be capable of operation on aircraft carriers to include withstanding 25 aircraft carrier catapult launches and arrested landings, and operating within the carriers' electromagnetic environments.

5/ Physical compatibility with the B-1B, B-2, FA-18C/D, AV-8B and B-52H were successfully demonstrated during actual fit test in EMD Phase 1. F-22A physical compatibility was also demonstrated using computerized physical fit analysis during this phase. Integration with the F-15E, F-16C/D, F-117, FA-18E/F, F-14D, S-3, and P-3 will be addressed as follow-on integration efforts. The A-6E aircraft was deleted by Chief of Naval Operations (CNO) Letter, Serial Number N880D5/4UG59112, dated 2 February 1994. The F-111F has been deleted (Reference AF/XOR Message 2601112 January 1994).

6/ F-22 compatibility will be limited to internal carriage of the MK-83/BLU-110 configuration. The AV-8B is an unfunded, non-key performance parameter, threshold aircraft.

7/ Mission reliability commences when the aircrew accepts the loaded aircraft and ends at weapon impact. Mission reliability for the guidance kits does not include reliability for the fuze. Mission reliability, a component of Guidance Kit system reliability, is used because the other component of system reliability (10 year storage reliability) cannot be demonstrated during development and operational testing.

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10a. Performance Characteristics (Cont'd):

ACRONYMS: CEP - Circular Error Probable

DEG - Degree

GPS - Global Positioning System

MSL - Mean Sea Level

PIP - Product Improvement Program

TBD - To Be Determined

b. Current Change Explanations -- None.

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	490.3	490.3	445.8
Procurement	2090.6	2090.6	1633.3
Hardware	(1638.9)		(1352.2)
Tooling & Test Equipmen	(7.9)		(0.8)
System Engineering & Pr	(40.5)		(7.9)
Containers	(39.9)		(20.8)
Warranty	(73.3)		(3.4)
Engineering Change Orde	(46.8)		(40.8)
Lot Acceptance Test	(15.8)		(0.0)
Nonrecurring Flyaway	(60.7)		(45.3)
Total Flyaway	(1923.8)		(1471.2)
Warhead	(65.4)		(49.4)
Product Support Cost	(79.8)		(90.4)
Total Other Wpn Sys	(145.2)		(139.8)
Peculiar Support	(21.6)		(22.3)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 95 Base-Year \$	2580.9	2580.9	2079.1
Escalation	811.4	811.4	358.0
Development (RDT&E)	(27.0)	(27.0)	(15.9)
Procurement	(784.4)	(784.4)	(342.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3392.3	3392.3	2437.1

NOTE: This baseline does not include funding for the Joint Programmable Fuze (\$5.3M TY\$ for RDT&E) (\$87.7M TY\$ for Procurement).

Air Force and Navy RDT&E funding includes the Product Improvement Program (PIP). Air Force and Navy Procurement funding does not include PIP funding. Navy Procurement funding includes BLU-109 (2,848 units for \$57.1M TY\$) but not Joint Programmable Fuze.

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

b. Quantity --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	630	630	620
Procurement	<u>87496</u>	<u>87496</u>	<u>87496</u>
Total	88126	88126	88116

Note: Excludes 81 RDTE prototypes from the SAR Baseline and 81 from the Current Estimate that are not considered fully configured.

NOTE: The Low Rate Initial Production (LRIP) quantities approved in the Acquisition Decision Memorandum (ADM) at Milestone II were 425 units. Subsequent FY97 budget cycle decisions approved a buy-to-budget approach for determining annual quantities. With the lower than expected unit costs, LRIP quantities will be 937.

c. Foreign Military Sales --
To be determined.

d. Nuclear Costs --
None.

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	DCR Baseline (SEP 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	2079.1	2580.9	
(2) Quantity	88116	88126	
(3) Unit Cost	0.024	0.029	-17.24
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	1633.3	2090.6	
(2) Quantity	87496	87496	
(3) Unit Cost	0.019	0.024	-20.83

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	517.3	2875.0	-	3392.3
Previous Changes:				
Economic	-9.1	-128.0	-	-137.1
Quantity	+17.1	-	-	+17.1
Schedule	-	-8.3	-	-8.3
Engineering	-	-	-	-
Estimating	-19.1	-743.3	-	-762.4
Other	-	-	-	-
Support	-	-31.0	-	-31.0
Subtotal	-11.1	-910.6	-	-921.7
Current Changes:				
Economic	+1.8	-20.8	-	-19.0
Quantity	-0.3	-	-	-0.3
Schedule	-	+5.9	-	+5.9
Engineering	-19.0	-	-	-19.0
Estimating	-27.0	+19.8	-	-7.2
Other	-	-	-	-
Support	-	+6.1	-	+6.1
Subtotal	-44.5	+11.0	-	-33.5
Total Changes	-55.6	-899.6	-	-955.2
Current Estimate	461.7	1975.4	-	2437.1

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	490.3	2090.6	-	2580.9
Previous Changes:				
Quantity	+16.0	-	-	+16.0
Schedule	-	-6.9	-	-6.9
Engineering	-	-	-	-
Estimating	-19.6	-462.1	-	-481.7
Other	-	-	-	-
Support	-	-9.5	-	-9.5
Subtotal	-3.6	-478.5	-	-482.1
Current Changes:				
Economic	-	-	-	-
Quantity	-0.3	-	-	-0.3
Schedule	-	-	-	-
Engineering	-16.5	-	-	-16.5
Estimating	-24.1	+16.4	-	-7.7
Other	-	-	-	-
Support	-	+4.8	-	+4.8
Subtotal	-40.9	+21.2	-	-19.7
Total Changes	-44.5	-457.3	-	-501.8
Current Estimate	445.8	1633.3	-	2079.1

NOTE: Difference between Planning Estimate (PE) and Development Estimate (DE)

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

has been accounted for in previous estimating changes.

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.8
Economic adjustment for negative program change. (Economic)	N/A	+2.6
Air Force quantity decrease from 516 to 506 units. (Quantity)	-0.3	-0.3
Product Improvement Program (PIP) funding eliminated. (Air Force) (Engineering)	-16.5	-19.0
Reduction due to Small Business Innovative Research (SBIR) (NAVY). (Estimating)	-1.4	-1.4
Navy funds decreased due to identified savings. (Estimating)	-3.6	-3.9
Navy funds decreased due to Defense Business Operations Fund (DBOF) and Navy Comptroller adjustments. (Estimating)	-2.1	-2.8
Revised estimate due to changes in estimating methodology. (Navy) (Estimating)	+0.2	+0.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Air Force funds identified as excess. (Air Force) (Estimating)	-14.2	-15.9
Air Force Materiel Command (AFMC) Zero Base Transfer (ZBT). (Air Force) (Estimating)	-0.2	-0.2
Reduction in RDT&E funds due to inflation (Air Force). (Estimating)	-0.2	-0.2
Congressional General Reductions. (Air Force) (Estimating)	-2.8	-3.0
Reduction due to Small Business Innovative Research (SBIR). (Air Force) (Estimating)	-0.8	-0.8
Revised estimate due to changes in estimating methodology. (Air Force) (Estimating)	+0.7	+0.7
RDT&E Subtotal	-40.9	-44.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-20.8
Revision of annual procurement buy profile for the Navy. (Schedule)	N/A	+3.9
Stretch out of annual procurement buy profile for the Air Force by one year. (Schedule)	N/A	+2.0

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate due to change in estimating methodology. (Navy) (Estimating)	-0.3	-0.2
Revised estimate due to change in buy-to-budget profile. (Navy) (Estimating)	+0.4	+0.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.3
Revised estimate due to change in estimating methodology. (Air Force) (Estimating)	N/A	N/A
Revised estimate due to change in buy-to-budget profile. (Air Force) (Estimating)	+15.9	+18.7
Addition of funds for SEEK EAGLE efforts. (Estimating)	+0.2	+0.3
Revised estimate for Peculiar Support for the Navy. (Support)	+1.2	+1.7
Revised estimate for warhead costs for the Navy. (Support)	+0.3	+0.3
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Revised estimate for Product Support Cost for the Air Force. (Support)	+3.2	+4.0
Procurement Subtotal	+21.2	+11.0

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.04	--	--	--	--	-0.01	--	--	-0.01	0.03

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14b. Unit Cost and Other History (Cont'd):

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.03	--	--	--	--	-0.01	--	--	-0.01	0.02

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	OCT 93	OCT 93	N/A	OCT 93
Milestone II	OCT 95	SEP 95	N/A	SEP 95
Milestone III	JUL 99	APR 98	N/A	APR 98
FUE/IOC	SEP 99	SEP 99	N/A	SEP 99
Total Cost	681.5	3392.3	N/A	2437.1
Total Quantity	378	88126	N/A	88116
Prog Acq Unit Cost	1.8	0.04	N/A	0.03

NOTE: SAR Planning Estimate (PE) total cost and total quantity only reflect RDT&E values.

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

a. RDT&E --

JDAM:
McDonnell Douglas Corp, St Louis MO
F08626-94-C-0003, CPAF
Award: October 11, 1995
Definitized: October 11, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$70.5	\$0.0	630

Current Contract Price		
Target	Ceiling	Qty
\$75.2	\$0.0	620

Estimated Price At Completion	
Contractor	Program Manager
\$75.2	\$86.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/96)	\$0.0	\$-1.0
Net Change	\$0.0	\$-1.0

Explanation of Change:

The current contract price changed from \$70.5M to \$75.2M to include the following contract modifications: AV-8B Wind Tunnel Test Support, Production Improvement Program (PIP), B-2 Weapon Simulation Support at Northrop, Air Force Mission Support System (AFMSS) Training and 6 Degree-of-Freedom (DOF), Additional Load Trainers, Option for Fifth Joint

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15. Contract Information (Cont'd):

Common Test Set (JCTS), 6 DOF/AV-8B Integration, Built-in-Test (BIT)/Operational Flight Program (OFP) and Provide Disk Drives, Mini MAINS Development, Margin Testing, Deletion of 10 Guided Test Vehicles (GTVs), Additional Support at Northrop, Hardware-in-Loop (HIL) Weapon Simulation (WS) Global Positioning System (GPS) Receiver Software Download Capability, Integrated Telemetry Analysis System (ITAS), and Anti-JAM Support at Johns Hopkins.

The current contract quantity changed from 630 units to 620 units due to the deletion of 10 Air Force GTVs identified for margin testing.

The cumulative unfavorable schedule variance is primarily due to late hardware deliveries to purchase order schedules, specifically: Telemetry PCM Encoders (16), Inertial Measurement Units (IMUs) (45), S-Band Transmitters (26), Tail Actuator System (TAS) (15), Mission Computers (50), and Power Supplies (73). Late procurement accounts for \$826K of the variance. Qualification testing on both the Telemetry Pallet and TAS were behind schedule pending resolution of failure analyses. The Telemetry Pallet Qualification testing was completed in mid December. The majority of the TAS Qualification Testing is projected to be complete in January 1997 with a final stiffness test to be completed in March 1997.

Variances do not impact the program manager's estimate at completion.

Contract Comments:

Program manager's estimate at completion incorporates the cost of efforts not included in the prime contractor's final proposal. These costs were identified by the Source Selection Evaluation Group and were recognized by the Source Selection Authority during source selection.

Cost and Schedule variances are based on Contract Performance Report (CPR) dated 31 December 1996.

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

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

<u>Appropriation</u>	<u>Prior Years (FY93-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	376.3	31.6	24.2	29.6	461.7
Procurement	23.0	96.3	103.2	1752.9	1975.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	399.3	127.9	127.4	1782.5	2437.1

b. Annual Summary -- JDAM

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				23.8	23.2
1994				7.9	7.9
1995				22.8	23.1
1996				25.4	26.3
1997				30.3	32.0
1998				11.1	12.0
1999				10.6	11.7
2000				10.0	11.2
2001				12.3	14.1
Subtotal	114			154.2	161.5

The Joint Programmable Fuze (JPF) funding (\$5.3M TY\$) is not included in this Navy Funding Summary. JPF is not part of the JDAM program but is budgeted in the JDAM Navy RDT&E and Procurement PEs.

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				21.9	21.5
1994				62.1	61.9
1995				61.9	62.9
1996				77.7	80.5
1997				35.0	37.0
1998				18.1	19.6

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

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999				11.3	12.5
2000				1.2	1.4
2001				1.0	1.2
2002				1.4	1.7
Subtotal	506			291.6	300.2

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	668	4.7	11.5	31.7	35.0
1999	898	4.8	15.7	36.4	41.0
2000	785	3.5	13.9	29.1	33.5
2001	641	3.6	11.6	23.9	28.1
2002	809	3.5	13.2	23.4	28.2
2003	2712	3.6	42.7	47.8	59.0
2004	2685	3.8	41.1	46.5	58.8
2005	5201	3.9	78.0	84.1	109.2
2006	6269	4.2	92.5	102.7	136.8
2007	4828	4.2	71.0	77.1	105.4
Subtotal	25496	39.8	391.2	502.7	635.0

The Joint Programmable Fuze (JPF) funding (\$87.7M TY\$) is not included in this Navy Funding Summary. JPF is not part of the JDAM program but is budgeted in the JDAM Navy RDT&E and Procurement PEs. Navy Procurement funding includes BLU-109 (2,848 units for \$57.1M TY\$).

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	937	0.8	16.0	21.6	23.0
1998	2673	1.3	46.7	56.4	61.3
1999	2620	0.5	46.4	56.1	62.2
2000	6325	1.1	114.0	126.5	143.2
2001	10122	1.8	185.6	201.6	233.1
2002	10617		176.1	189.3	223.8
2003	10592		169.8	180.0	218.0
2004	10315		160.9	170.9	212.4
2005	7799		119.2	128.2	163.4

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

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	62000	5.5	1034.7	1130.6	1340.4

Note 1: JDAM procurement funds have been designated 3011 (Procurement of Ammunition, AF). However, the SAR software does not include this new Appropriation, therefore FY97-05 procurement was left in Appropriation 3020 (Missile Procurement, AF) in order to make valid comparisons with the Dec 95 SAR.

Note 2: FY98 procurement funding of \$61.3M includes \$0.3M SEEK EAGLE funds that are not included in the APB cost.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	25610	39.8	391.2	656.9	796.5
USAF	62506	5.5	1034.7	1422.2	1640.6
Grand Total	88116	45.3	1425.9	2079.1	2437.1

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RD&E	68	68
Procurement	0	0

Percent Total Program Quantities Delivered: 0.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 246.5

Percent Total Program Expended: 10.1%

Contractually, 68 Guided Test Vehicles (GTVs) were planned to be delivered by 31 December 1996. Engineering and Manufacturing Development (EMD) Phase II planned 40 MK-84 GTVs and 28 BLU-109 GTVs to be delivered. In total, 68 GTVs were planned and delivered.

Expenditures reflect program office records as of 31 December 1996.

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JDAM, December 31, 1996

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Operating and Support (O&S) costs include both Air Force and Navy dollars.

O&S costs were updated in November 1995 from the Defense Acquisition Board (DAB) position to reflect the increase in Navy quantities from 12,000 to 25,496 units.

The Air Force JDAM O&S cost estimate is based on the use of an O&S cost model named the Financial O&S Estimate (FINOEST) developed by the Air Force Cost Center in Washington, D.C. The model was used for the Milestone (MS) I, MS II, and source selection deliberations to calculate the estimated O&S costs for the JDAM program. FINOEST calculates the O&S costs based on the association between known variables and the JDAM design (labor rates, failure rates, time to assemble, transportation costs, etc.).

The following are the assumptions that were used in forming the Air Force O&S cost estimate: Total Air Force JDAM inventory of 62,000 units. JDAM will have a 20 year extended repair warranty to cover all repairs. Air Force will have two levels of maintenance; Organizational and Depot Level. The JDAM kit has a 20 year operating life. Air Force will conduct 50 drops a year of JDAM kits. The 50 drops a year will require Telemetry (TM) and Flight Termination Systems (FTS). One half of a percent of the total JDAM failures will not be covered by the extended repair warranty. The extended repair warranty does not cover overseas transportation costs. Estimate does not take into account any Navy Working Capital Fund activities.

There is no antecedent system for the Air Force JDAM.

The cost drivers for the Air Force O&S cost estimate were Telemetry and Flight Termination Systems for the 50 yearly drops along with the Range Support costs for the drops.

The Navy O&S costs are based on the NAVAIR O&S cost model.

The following are the assumptions that were used in forming the Navy O&S cost estimate: utilized the Air-4.2.5 Air-Launched Missile Model, 12 carriers are deployed per year, there are 350 JDAMs per carrier, there are 50 firings per year, there is a ten percent container failure rate per year, contractual support is identified for first two years of operations, and there is an expected 20 year operating life.

The cost drivers for the Navy O&S cost estimate were Range Evaluation for practice bomb drops, Sustaining Engineering/Program Management, Transportation, and Organizational Maintenance Handling/Inspection.

There is no antecedent system for the Navy JDAM.

The Other category includes Integrated Logistics Support (ILS) functions such as quality surveillance and Naval Weapon Systems (NWS) handling/processing costs.

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JDAM, December 31, 1996

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

Contractor support costs for the Navy will begin in FY98 and continue for the first two years of operation. The Navy will use the contractor support as "tech rep" support for any Navy unique requirements at the Naval Weapon Stations and aboard the aircraft carriers.

Based on the 20 year extended repair warranty, the Air Force does not have a requirement for contractor support. The 20 year extended maintenance repair warranty begins with Lot 1 and will cover any repairs required.

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Total Cost for 87,496 JDAM Units	N/A
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.0	0.0
Indirect Costs	0.0	0.0
Mission Personnel	6.7	0.0
Sustaining Engineering	7.2	0.0
System & Inventory Manag	1.8	0.0
Contractor Support	0.6	0.0
AFMSS	14.4	0.0
Other	5.7	0.0
Support Costs	0.0	N/A
Consumable Material	2.7	N/A
TM/FTS	56.3	N/A
Range Support	45.3	N/A
Technical Data Managemen	0.2	N/A
Transportation	6.9	N/A
Non-Warranted Repair Cos	0.1	N/A
Total	147.9	0.0

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N-25 UHF FOLLOW-ON

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: UHF FOLLOW-ON

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): UHF Follow-on Communications Satellite System

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

PEO for Space, Comms & Sensors	CAPT James W. Loisele
Communications Satellite Program	Assigned: January 21, 1996
2451 Crystal Drive	DSN 332-2879; COMM (703)-602-2879
Arlington, VA 22245-5200	

4. Program Elements/Procurement Line Items:

PROCUREMENT:

APPN 1507 ICN 30243000 (Navy) (Shared)

5. References:

SAR Baseline (Production Estimate):

Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated June 16, 1993.

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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UHF FOLLOW-ON, December 31, 1996

6. Mission and Description:

The existing constellation of Ultra High Frequency (UHF) communication satellites provides key command and control links for mobile forces of the DoD and other Government Agencies. As Executive Agent, the Navy is charged with maintaining the continuity of the space segment. The UHF Follow-On Program provides a new generation of communication satellites to replenish the existing constellation. The current configuration includes a UHF and a EHF package. The last three satellites, F8 - F10, will incorporate a Global Broadcast Service (GBS) system consisting of four 24 Mbps transponders, three downlink spot beams and two uplink receive systems. This will provide the DoD with an advanced state of the art communication capability to meet the needs identified during Desert Storm.

7. Executive Summary:

Due to the urgent need to satisfy DoD communication requirements, the Secretary of Defense designated the UHF Follow-On Program a major acquisition program in May 1988.

A Defense Acquisition Board (DAB) Milestone IIIA decision was made on July 22, 1988 authorizing the program to enter production. After full and open competition, a firm fixed price contract was awarded to Hughes Aircraft Company on July 29, 1988. Congress approved a multiyear procurement of this system in the FY89 Defense Authorization Act.

The first UHF Follow-on (UHF) satellite, F1, was launched on March 25, 1993 and subsequently declared a total loss as a result of underperformance of the launch vehicle. The Government received \$199M in contract remedies for the loss.

F2 through F7 have been successfully launched over the past five years. In July 1994, following a very successful OT-III, Commander, Operational Test and Evaluation Force (COMOTEVFOR) reported satellite F2 to be operationally effective and suitable.

On November 1, 1995, following a very successful OT-IIIB, Commander, Operational Test and Evaluation Force (COMOTEVFOR) reported F4 and the EHF Space Package to be operationally effective and suitable.

In February 1996, DoD forwarded a special FY96 Above Threshold Reprogramming request to Congress in order to initiate integrating an Interim Global Broadcast Service capability on UFO satellite eight through ten.

The seventh UFO satellite was successfully launched on July 25, 1996 and turned over for operational use on October 23, 1996. This satellite incorporates an Enhanced EHF (EEHF) package, which nearly doubles the EHF capacity of the previous three satellites. The EEHF package included the first use in space of multi-chip module (MCM) technology. The eighth UFO satellite (F8) is progressing towards a Payload Readiness Review and bus/payload mate in May 1997. F8 is on schedule for launch by March 1998. The production schedules

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UHF FOLLOW-ON, December 31, 1996

7. Executive Summary (Cont'd):

for the ninth and tenth satellites have been modified for the incorporation of a GBS System.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
	MAY 88	N/A	MAY 88
Designation as a Major Defense Acquisition Program			
Milestone IIIA (DAB)	JUL 88	JUL 88	JUL 88
Contract award	JUL 88	JUL 88	JUL 88
System Requirement Review (SRR)	OCT 88	OCT 88	OCT 88
Product Acceptance Test & Evaluation (PAT&E)-G (Start Ground Testing)	NOV 88	NOV 88	NOV 88
Preliminary Design Review (PDR)	APR 89	APR 89	APR 89
Critical Design Review (CDR)	MAR 90	MAR 90	MAR 90
DAB Program Review	MAY 90	MAY 90	MAY 90
PAT&E-I (Start in-orbit testing)	SEP 92	OCT 93	OCT 93
OT-III	OCT 92	APR 94	APR 94
IOC	DEC 92	DEC 93	DEC 93
OT-IV (Satellite No. 4 w/EHF)	FEB 95	FEB 95	AUG 95
IOC (Satellite No. 4 w/EHF)	TBD	MAY 95	MAR 95

b. Current Change Explanations -- None.

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UHF FOLLOW-ON, December 31, 1996

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
Launch capability	Dual Launch Compat- ible	Dual / launch / compat- / ible /	Expend- able launch vehicle	Expend- able launch vehicle	Expend- able launch vehicle
Nuclear Hardening	Comply with SM- 416-84 levels	Comply / with SM- / 416-84 / levels /	Comply with SM- 416-84 levels	Comply with SM- 416-84 levels	Comply with SM- 416-84 levels
Anti-jam uplink channel capacity for fleet broadcast (per satellite)	3	3 / 1	3	3	3
Effective Isotropic Radiated Power (EIRP) and capacity for UHF channels:					
25 KHz channels w/20 dBW (channels)	3	3 / 2	3	3	3
25 KHz channels w/26 dBW (channels)	15	15 / 14	15	15	15
5 KHz channels w/20 dBW (channels)	21	21 / 20	21	21	21
UHF Interoperability	Compat- ible with all existing UHF termi- nals except fre- quency hoppers	Compat- / ible / with all/ existing/ UHF / termi- / nals / except / fre- / quency / hoppers	Compat- ible with all existing UHF termi- nals except fre- quency hoppers	Compat- ible with all existing UHF termi- nals except fre- quency hoppers	Compat- ible with all existing UHF termi- nals except fre- quency hoppers
EHF Requirements (for satellites 4-9)					

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UHF FOLLOW-ON, December 31, 1996

10a. Performance Characteristics (Cont'd):

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>		<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
EHF Crossbanding	EHF uplink may be down- linked on SHF, (20 GHZ) UHF, or both	EHF uplink may be down- linked on SHF, (20 GHZ), UHF, or both	/ EHF / uplink / may be / down- / linked / on SHF / (20 GHZ), / UHF or / both	EHF uplink may be down- linked on SHF (20 GHZ) UHF, or both	EHF uplink may be down- linked on SHF (20 GHZ) UHF, or both
EHF interoperability	Compat- tible with Milstar termi- nals and MIL-STD- 1582	Compat- ible with Milstar termi- nals and MIL-STD- 1582	/ Compat- / ible / with / Milstar / termi- / nals and / MIL-STD- / 1582	Compat- ible with Milstar termi- nals and MIL-STD- 1582	Compat- ible with Milstar termi- nals and MIL-STD- 1582
EHF EIRP for Earth coverage antenna (dBW)	27	27	/ 27	27	27
EHF EIRP for 5 degree steerable spot beam antenna (dBW within 2.5 degree of boresight)	37	37	/ 37	37	37
EHF Capability					
Communication Channels	7	7	/ 7	7	7
Telemetry & Command Channel	1	1	/ 1	1	1
Broadcast uplink Channels	3	3	/ 3	3	3
System Availability (%)	95	95	/ 90	99	95
Mean mission duration					
Years	10	10	/ 10	10	10
Years Design Life	14	14	/ 14	14	14
Fuel Quantity					
Years station keeping	14	14	/ 14	14.5	14
15 degree/day move	1	1	/ 1	1	1

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10a. Performance Characteristics (Cont'd):

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
	Success- ful command execu- tion & teleme- try recep- tion using NSA approved devices	Success- ful / Success- ful / command / execu- tion & / tion & teleme- / teleme- try / try recep- / recep- tion / tion using / using NSA / NSA approved / approved devices / devices	Success- ful command execu- tion & teleme- try recep- tion using NSA approved devices	Success- ful command execu- tion & teleme- try recep- tion using NSA approved devices
Cryptographically secure command & telemetry links				
Anti-jam broadcast and command	DIA Validate NTIC threat level (Clas- sified)	DIA / DIA validate / valdtd NTIC / NTIC threat / threat level / level (clas- / (clas- sified) / sified)	/DIA valdtd NTIC threat level (clas- sified)	DIA validate NTIC threat level (class- fied)
Autonomy (Up to one month): Probability of reacquisition (%)	95	95 / 90	95	95
Frequency Plan	As required by MJCS 68-88	As / MJCS required/ 68-88 by MJCS / 68-88 /	As required by MCM 234-96	As required by MCM 234-96 (Ch-1)

b. Current Change Explanations --

(Ch-1) MCM-234-96, dated October 3, 1996 replaced the original UHF Follow-On Communication Satellite Requirements (MJCS-68-88 dated May 13 1988).

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

a. Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	0.0	0.0	0.0
Procurement	1479.1	1526.4	1557.6
Flyaway	(1479.1)		(1557.6)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 88 Base-Year \$	<u>1479.1</u>	<u>1526.4</u>	<u>1557.6</u>
Escalation	237.0	318.9	308.3
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(237.0)	(318.9)	(308.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>1716.1</u>	<u>1845.3</u>	<u>1865.9</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	10	10	9
Total	<u>10</u>	<u>10</u>	<u>9</u>

Procurement of the tenth satellite (F10) was funded with contract remedies resulting from the loss of the first satellite (F1).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUN 93 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 88 BY\$)	1557.6	1526.4	
(2) Quantity	9	10	
(3) Unit Cost	173.067	152.640	+13.38
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 88 BY\$)	1557.6	1526.4	
(2) Quantity	9	10	
(3) Unit Cost	173.067	152.640	+13.38

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	1716.1	-	1716.1
Previous Changes:				
Economic	-	+21.7	-	+21.7
Quantity	-	-113.2	-	-113.2
Schedule	-	-	-	-
Engineering	-	+149.7	-	+149.7
Estimating	-	+94.2	-	+94.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+152.4	-	+152.4
Current Changes:				
Economic	-	-1.2	-	-1.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-1.4	-	-1.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-2.6	-	-2.6
Total Changes	-	+149.8	-	+149.8
Current Estimate	-	1865.9	-	1865.9

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	1479.1	-	1479.1
Previous Changes:				
Quantity	-	-90.7	-	-90.7
Schedule	-	+2.5	-	+2.5
Engineering	-	+112.1	-	+112.1
Estimating	-	+55.7	-	+55.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+79.6	-	+79.6
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-1.1	-	-1.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-1.1	-	-1.1
Total Changes	-	+78.5	-	+78.5
Current Estimate	-	1557.6	-	1557.6

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-1.2
	Adjustment for Current and Prior Inflation. (Estimating)	+0.9	+1.2
	Revised estimating change in Global Broadcast System engineering. (Estimating)	-2.0	-2.6
	Procurement Subtotal	-1.1	-2.6

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UHF FOLLOW-ON, December 31, 1996

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
171.61	+2.28	+6.49	--	+16.63	+10.31	--	--	+35.71	207.32

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
171.61	+2.28	+6.49	--	+16.63	+10.31	--	--	+35.71	207.32

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	JUL 88	JUL 88
FUE/IOC	N/A	N/A	DEC 92	DEC 93
Total Cost	N/A	N/A	1716.1	1865.9
Total Quantity	N/A	N/A	10	9
Prog Acq Unit Cost	N/A	N/A	171.61	207.32

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

a. Procurement --

UHF FOLLOW-ON:

Hughes Aircraft Company, El Segundo CA

N00039-88-C-0300, FFP

Award: July 29, 1988

Definitized: July 29, 1988

Initial Contract Price		
Target	Ceiling	Qty
\$1374.7	N/A	10

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1755.1	N/A	10	\$1755.1	\$1755.1

Explanation of Change:

None.

Contract Comments:

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

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UHF FOLLOW-ON, December 31, 1996

15. Contract Information (Cont'd):

The current contract price includes the addition of an EHF capability which was contained in a contract modification executed on December 13, 1990 and a GBS capability which was added on March 1, 1996. Procurement of the tenth satellite is funded with the contract remedies resulting from the loss of the first satellite. The number of deliveries has therefore increased from nine to ten.

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

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

<u>Appropriation</u>	<u>Prior Years (FY87-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	1865.9	-	-	-	1865.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1865.9	-	-	-	1865.9

b. Annual Summary -- UHF FOLLOW-ON

Appropriation: 1507 Weapons Procurement, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY88 Dollars Nonrec</u>	<u>Flyaway FY88 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1987				22.6	23.3
1988	1	88.3	187.6	115.6	123.9
1989				142.6	158.8
1990	2		246.2	277.3	319.5
1991	3	90.8	439.7	207.3	244.9
1992	3		479.3	207.8	251.7
1993				200.5	247.4
1994				132.5	167.1
1995		5.1		102.2	131.3
1996		14.6		66.6	87.4
1997		6.0		82.6	110.6
Subtotal	9	204.8	1352.8	1557.6	1865.9

Procurement of the tenth satellite (F10) was funded with contract remedies resulting from the loss of the first satellite (F1).

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	9	204.8	1352.8	1557.6	1865.9

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	7	7

Percent Total Program Quantities Delivered: 77.8%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1624.6

Percent Total Program Expended: 87.1%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The support functions for UHF Follow-On will be similar to those required for the existing UHF communications satellite constellation. Costs are born by the Program Executive Officer for Space, Communications and the Naval Space Command. The operations and support cost estimate was made in February 1990 in support of a SECDEF Cost Analysis Improvement Group (CAIG) review. The antecedent annualized costs listed represent the average costs for the FLTSAT satellite constellation for FY 1986 to FY 1988.

b. Costs -- (FY 1988 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per UHF Follow-On	Avg Annual Cost Per FLTSAT Support
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Anomaly Analysis	N/A	0.6
GSE & I	N/A	0.5
Orbital Support	1.6	2.0
Total	1.6	3.1

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N-1 AAV

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: AAV

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1. Designation and Nomenclature (Popular Name): Advanced Amphibious Assault Vehicle (AAAV)

2. DoD Component: USMC

3. Responsible Office and Telephone Number:

DRPM AAA

COL JAMES FEIGLEY

DEPT. OF THE NAVY U.S. MARINE CORPS Assigned: July 6, 1993

991 ANNAPOLIS WAY

DSN : COMM (703) 493-6300

WOODBIDGE, VA 22191-1215

4. Program Elements/Procurement Line Items:

RD&E:

PE 0603611M (Shared) B0020 Project

5. References:

SAR Baseline (Planning Estimate):

Approved Acquisition Program Baseline dated March 17, 1995.

Approved Program:

Approved Acquisition Program Baseline (APB) dated March 17, 1995.

6. Mission and Description:

The Advanced Amphibious Assault Vehicle (AAAV) Program will field a successor to the Marine Corps' current amphibious vehicle, the Assault Amphibious Vehicle Model 7A1(AAV7A1). The AAAV will provide the principal means of tactical surface mobility for the Marine Air Ground Task Force (MAGTF) during both ship-to-objective maneuver and subsequent combat operations ashore. The AAAV

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6. Mission and Description (Cont'd):

will provide the Marine Corps with the capabilities to execute the full range of its littoral warfare missions as well as the requisite survivability, offensive firepower, and mobility to support future combat operations ashore. The AAAV replaces the AAV7A1 Vehicle.

7. Executive Summary:

Program Decision Memorandum (PDM) II provided additional funding in the amount of \$107 million from FY97-01 to accelerate the program nine (9) months to shorten the Dem/Val phase. Source Selection was completed and the Demonstration/Validation contract was awarded to General Dynamics Land Systems on 13 June 1996. The contract required the contractor and government to collocate in the Washington D.C. area. To support this requirement General Dynamic Land Systems established a new division, General Dynamics Amphibious Systems, and purchased a building in Woodbridge, Va. The contractor moved on 5 August 1996 and the Direct Reporting Program Manager (DRPM) AAAV on 23 September 1996.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I DAB Review	MAR 95	MAR 95	MAR 95
Dem/Val Contract Award	FEB 96	FEB 96	JUN 96 (Ch-1)
AAAV(P) Prototype Delivery	OCT 00	OCT 00	JAN 00
Development Test (DT1)			
Start	OCT 00	OCT 00	JAN 00
Complete	JUN 01	JUN 01	OCT 00
Operational Test (OT1/EDA)			
Start	JUN 01	JUN 01	OCT 00
Complete	OCT 01	OCT 01	JAN 01
Milestone II DAB Review	JAN 02	JAN 02	APR 01
Award of E&MD Contract	FEB 02	FEB 02	MAY 01
EMD Prototype Deliveries			
Start	OCT 04	OCT 04	JUN 03
Complete	MAR 05	MAR 05	OCT 03
Developmental Testing II			
Start	NOV 04	NOV 04	JUL 03
Complete	SEP 06	SEP 06	JUN 05
Award of LRIP	JUL 05	JUL 05	JAN 04
LRIP Vehicle #1 Delivery	JAN 07	JAN 07	JUL 05
IOT&E			
Start	JAN 07	JAN 07	SEP 05
Complete	JUL 07	JUL 07	APR 06
Live Fire Testing (LFT&E)			
Start	JAN 06	JAN 06	JUN 04
Complete	JAN 07	JAN 07	JUN 05
Milestone III DAB Review	OCT 07	OCT 07	APR 06
IOC	DEC 07	DEC 07	JUN 06
Full Rate Production Deliveries Start	JUL 09	JUL 09	JAN 08
Organic Support Capability	MAY 10	MAY 10	JUN 09
Service Depot Support	MAY 10	MAY 10	JUN 09
FOC	MAY 14	MAY 14	DEC 12

b. Current Change Explanations --

(Ch-1) The Demonstration/Validation contract award date was changed from the end of May 96 to 13 June 96. A Request For Proposal(RFP) for Demonstration and Validation was released 30 June 95. Proposals were received on 29 September 1995. Coincident with the receipt of the proposals OSD provided additional funding (\$107M) to the program and directed a nine (9) month acceleration of the Dem/Val Phase. The RFP was amended, revised proposals were received and the Demonstration/Validation contract was awarded 13 June 1996. For FY97 the Defense committees appropriated an increase of \$20 million to accelerate the fielding of the AAAV. The next SAR will reflect the revised schedule based on the \$20 million increase.

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10. Performance Characteristics:

a. Performance --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
High Water Speed (kts) (SS-3, 36 in SWH)	25	25 / 20	TBD	20
Forward Speed on a Hard Surface Road (kph)	72	72 / 69	TBD	69
Armor Protection Against (mm/m)	30/1000	30/1000 / 14.5/300	TBD	14.5/300
Carry Capacity (Marines)	18	18 / 17	TBD	17
Firepower (M) (MER)	2000	2000 / 1500	TBD	1500
Reliability (hrs) MTBCMF	95	95 / 70	TBD	70

*Performance Characteristics reflect JROC approved key performance parameters, dated 27 February 1995.

b. Current Change Explanations --
None.

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

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	725.0	725.0	782.3
Procurement	0.0	N/A	
Total Sailaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 93 Base-Year \$	725.0	725.0	782.3
Escalation	209.1	209.1	151.8
Development (RDT&E)	(209.1)	(209.1)	(151.8)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	934.1	934.1	934.1
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	N/A	N/A	0
Total	N/A	0	0

Note: Excludes 13 RDTE prototypes from the SAR Baseline and 12 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

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

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	934.1	-	-	934.1
Previous Changes:				
Economic	-60.8	-	-	-60.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+60.8	-	-	+60.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.0	-	-	+0.0
Current Changes:				
Economic	-3.3	-	-	-3.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3.3	-	-	+3.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	+0.0	-	-	+0.0
Current Estimate	934.1	-	-	934.1

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

Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	725.0	-	-	725.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+52.9	-	-	+52.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+52.9	-	-	+52.9
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+4.4	-	-	+4.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.4	-	-	+4.4
Total Changes	+57.3	-	-	+57.3
Current Estimate	782.3	-	-	782.3

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-3.3
	Adjustment for current and prior inflation. (Estimating)	+0.1	+0.1
	Refinement of estimate to reflect programmatic changes. (Estimating)	+4.3	+3.2
	RDT&E Subtotal	+4.4	0.0
(2)	<u>O&M</u>		
	(Economic)	N/A	0.0
	O&M Subtotal	0.0	0.0

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

- a. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.
- b. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	MAR 95	N/A	N/A	MAR 95
Milestone II	JAN 02	N/A	N/A	APR 01
Milestone III	OCT 07	N/A	N/A	APR 06
FUE/IOC	DEC 07	N/A	N/A	JUN 06
Total Cost	934.1	N/A	N/A	934.1
Total Quantity	0	N/A	N/A	0
Prog Acq Unit Cost	0	N/A	N/A	0

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

a. RDT&E --		Initial Contract Price		
DEM/VAL:		Target	Ceiling	Qty
GENERAL DYNAMICS, WOODBRIDGE, VA				
M6785496-C-0038, CPAF		\$217.0	\$217.0	0
Award: June 13, 1996				
Definitized: June 13, 1996				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$217.0	\$217.0	0	\$217.0	\$217.0
Previous Cumulative Variances		Cost Variance	Schedule Variance	
Cumulative Variances To Date (12/31/96)		N/A	N/A	
Net Change		\$-1.5	\$-1.1	
		\$-1.5	\$-1.1	

Explanation of Change:

This data is from the first cost performance report after the contract was baselined in December 96. Cost and schedule variances to date are not significant.

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

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

<u>Appropriation</u>	<u>Prior Years (FY95-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-06)</u>	<u>Total</u>
RDT&E	117.1	60.1	106.2	650.7	934.1
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	117.1	60.1	106.2	650.7	934.1

b. Annual Summary -- AAAV

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY93 Dollars Nonrec</u>	<u>Flyaway FY93 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				22.4	23.6
1996				29.9	32.2
1997				55.8	61.3
1998				53.6	60.1
1999				92.7	106.2
2000				81.1	94.8
2001				95.2	113.7
2002				110.4	134.7
2003				125.7	157.0
2004				55.4	71.0
2005				43.0	56.5
2006				17.1	23.0
Subtotal				782.3	934.1

(U) Program Decision Memorandum (PDM) II provided additional funding in the amount of \$107 million from FY97-01 to accelerate the program nine (9) months to shorten the Dem/Val phase. Congress increased the AAAV Program by \$6.0 million in FY 96 for Engine Development and system technical risk reduction. OSD marked (decremented) the FY96 President's Budget \$2.1 million. In addition, OSD issued programmatic marks against FY97-01 (as augmented by PDM II) decreasing funds by \$18.8 million. The total decrement was \$20.9 million; any potential schedule impact has not been determined. For FY97 the defense committees appropriated an increase of \$20 million to accelerate the fielding of the AAAV. OSD marked (decremented) the FY97 President's Budget \$4.3 million. In addition, OSD issued programmatic marks against FY98-01 decreasing funds by \$2.5 million. The Total decrement was \$6.8 million.

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				782.3	934.1

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 39.5

Percent Total Program Expended: 4.2%

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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N-17 NSSN

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: NEW ATTACK SUB

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): New SSN/NEW ATTACK SUBMARINE
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
NEW ATTACK SUBMARINE PROGRAM OFFICE CAPT DAVID BURGESS
PEO SUBMARINES Assigned: November 17, 1993
2531 JEFFERSON DAVIS HIGHWAY DSN 332-3700; COMM (703) 602-3700
ARLINGTON, VA 22242-5168
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0603561N
(U) PE 0603570N
(U) PE 0604558N
PROCUREMENT:
(U) APPN 1611 ICN 201300 (Navy)
(U) APPN 1611 ICN 201310 (Navy)
(U) APPN 1810 ICN 276200 (Navy) (Shared)
(U) APPN 1810 ICN 902099 (Navy)

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5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline dated June 30, 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated June 30, 1995.

6. (U) Mission and Description:

(U) The New Attack Submarine Program is bringing forward a critical national security asset designed to flexibly address the unique multi-mission requirements of the post-Cold War era. Capable of performing traditional submarine missions, dominating the littoral battle space and adapting to future requirements, the New Attack Submarine will satisfy any assigned role well into the Twenty-First Century. Intended to replace the fleet of SSN 688 Class submarines ending service in large numbers early next century, the New Attack Submarine is characterized by state-of-the-art stealth, enhanced features for special operations forces, and cost effective Command, Control, Communication and Intelligence capability. With an array of armament including the MK48 (ADCAP) torpedo and cruise missile vertical launch capability, the New Attack Submarine maintains total undersea superiority at an affordable cost.

7. (U) Executive Summary:

(b)(1)



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(b)(1)

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Milestone 0	AUG 92	AUG 92	AUG 92	
Milestone I	AUG 94	AUG 94	AUG 94	
Milestone II	JUN 95	JUN 95	JUN 95	
New Attack Submarine Integrated Product and Process Development Contract Award	OCT 95	OCT 95	JAN 96	
Program Review (LRIP)	SEP 97	SEP 97	JAN 97	(Ch-1)
Organizational Support (by Fast Cruise)	APR 04	APR 04	APR 04	
Lead Ship Delivery	JUN 04	JUN 04	JUN 04	
LFT&E Shock Tests	OCT 04	OCT 04	OCT 04	

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Initial Operational Test & Evaluation			
Start	JUL 04	JUL 04	JUL 04
Complete	OCT 04	OCT 04	OCT 04
IOC (Lead Ship)	OCT 05	OCT 05	OCT 05
Intermediate Support (by IOC)	OCT 05	OCT 05	OCT 05
Milestone III	OCT 07	OCT 07	OCT 07
Depot Shipyard Support	AUG 15	AUG 15	AUG 15
Related Programs			
NSSN COMMAND AND CONTROL SYSTEM			
FY95 Open Architecture Demo	OCT 95	OCT 95	SEP 95
Complete			
C&CS Module Start Fabrication	JUN 99	JUN 99	JUN 99
GFE C&CS Delivered to Shipyard	DEC 00	DEC 00	DEC 00
LBTS Integration and Test Complete	APR 02	APR 02	APR 02
C&CS Module delivered to ship	MAY 02	MAY 02	MAY 02
NSSN Reactor Plant			

(b)(1)

(U) *The New Attack Submarine Program Office is tracking the six year earlier delivery of the MK-48 ADCAP weapon system.

b. (U) Current Change Explanations --

Ch-1. Program Review LRIP target date changed from Sep 97 to accomplishment in Jan 97.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Radiated Noise				
Broadband Noise				
5 and 10 knots	Figure	Figure / Figure	TBD	Figure
(prior to	A.1	A.1 / A.1		A.1
installation of	(Except	(Except / (Except		
hull coating)	in Port	in Port / in Port		
	and	and / and		
	casualty	casualty/ casualty		
		/ as noted		
		/ below)		

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

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u> Figure
Greater than or equal to 15 knots	Figure A.1 (All horizon- tal aspect)	Figure / Figure A.1 / A.1 (All / (beam horizon- / aspect tal / only). aspect)	TBD	A.1

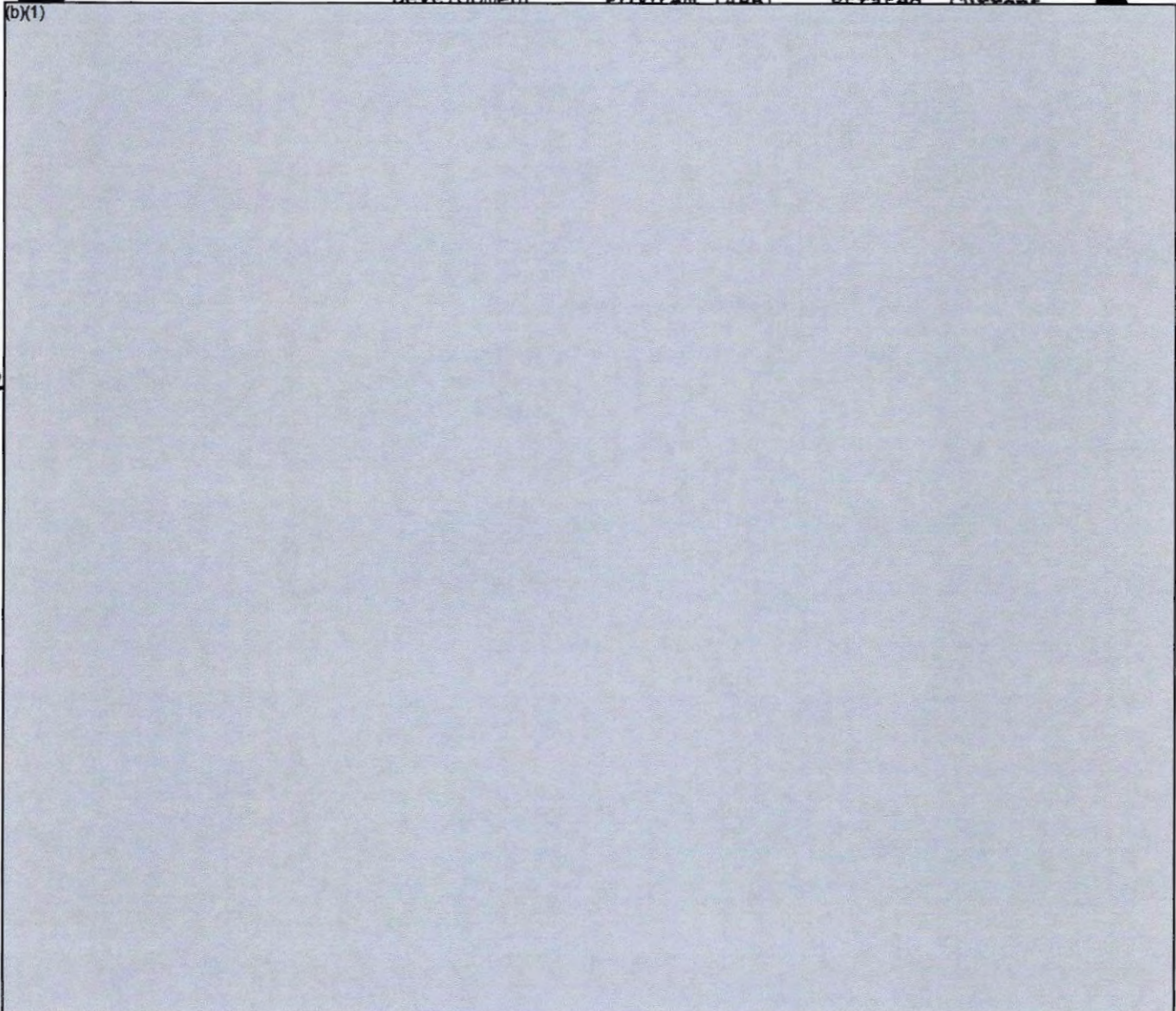
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10a. (U) Performance Characteristics (Cont'd):

	Development	Approved Program (APB)	Demon- strated	Current
(b)(1)				

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

Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
-------------------------------	--	---------------------------	---------------------

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b. Current Change Explanations -- None.

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

	Development <u>Estimate (SAR)</u>	Approved <u>Program (AFB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	3405.0	3405.0	3408.1
Procurement	42228.1	42228.1	44323.4
Flyaway	(42130.9)		(44266.4)
Other Wpn System Costs	(16.5)		(53.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(80.7)		(3.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 95 Base-Year \$	45633.1	45633.1	47731.5
Escalation	25447.7	25447.7	19302.4
Development (RDT&E)	(409.0)	(409.0)	(299.1)
Procurement	(25038.7)	(25038.7)	(19003.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	71080.8	71080.8	67033.9

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>30</u>	<u>30</u>	<u>30</u>
Total	30	30	30

(U) Note--An LRIP quantity not to exceed 14 New Attack Submarines was assigned at Milestone II by USD (A&T). The New SSN acquisition profile builds 1 or 2 ships per year for a total quantity of 30 ships and supports the JCS requirements for attack submarine force levels. The length of time from start of construction through operational testing for the lead ship is approximately nine years. A delay of this length between the first and follow ships would neither support force level requirements nor sustain the fragile submarine industrial base.

c. (U) Foreign Military Sales --
None

d. (U) Nuclear Costs --
\$12,288M (TY\$).

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUN 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	47731.5	45633.1	
(2) Quantity	30	30	
(3) Unit Cost	1591.050	1521.103	+4.60
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	44323.4	42228.1	
(2) Quantity	30	30	
(3) Unit Cost	1477.447	1407.603	+4.96

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	3814.0	67266.8	-	71080.8
Previous Changes:				
Economic	-122.1	-7050.5	-	-7172.6
Quantity	-	-	-	-
Schedule	-	+96.4	-	+96.4
Engineering	-	-	-	-
Estimating	+35.2	+833.9	-	+869.1
Other	-	-	-	-
Support	-	+17.7	-	+17.7
Subtotal	-86.9	-6102.5	-	-6189.4
Current Changes:				
Economic	-3.5	+945.1	-	+941.6
Quantity	-	-	-	-
Schedule	-	+1428.2	-	+1428.2
Engineering	-31.6	-	-	-31.6
Estimating	+15.2	-147.9	-	-132.7
Other	-	-	-	-
Support	-	-63.0	-	-63.0
Subtotal	-19.9	+2162.4	-	+2142.5
Total Changes	-106.8	-3940.1	-	-4046.9
Current Estimate	3707.2	63326.7	-	67033.9

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

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDTE&	PROC	MILCON	TOTAL
Development Estimate	3405.0	42228.1	-	45633.1
Previous changes:				
Quantity	-	-	-	-
Schedule	-	+88.6	-	+88.6
Engineering	-	-	-	-
Estimating	+26.5	+1796.7	-	+1823.2
Other	-	-	-	-
Support	-	+10.7	-	+10.7
Subtotal	+26.5	+1896.0	-	+1922.5
Current changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-27.7	-	-	-27.7
Estimating	+4.3	+250.2	-	+254.5
Other	-	-	-	-
Support	-	-50.9	-	-50.9
Subtotal	-23.4	+199.3	-	+175.9
Total changes	+3.1	+2095.3	-	+2098.4
Current Estimate	3408.1	44323.4	-	47731.5

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDTE&</u>		
Revised escalation indices. (Economic)	N/A	-4.7
Economic adjustment for negative program change. (Economic)	N/A	+1.2
NSSN Electronic Surveillance Measures (ESN) (formerly ASTECS) descope and restructured to meet fiscal constraints. NSSN ESM system will satisfy threshold requirements in ORD. (Engineering)	-27.7	-31.6
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.6
Refined cost estimates (Estimating)	+3.7	+14.6
RDTE& Subtotal	-23.4	-19.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+943.1
Economic adjustment for negative program change. (Economic)	N/A	+2.0

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revision in the procurement profile due to a change in the NSSN acquisition strategy from a single source procurement to a teaming arrangement between EB and NNS. (Schedule)	0.0	+1428.2
Adjustment for Current and Prior Inflation. (Estimating)	+9.8	+10.6
Revision of the initial Outfitting cost estimate based on recent information from SSN21. (Estimating)	-701.6	-1296.2
Refined cost estimates in the Other Procurement Navy (OPN) appropriation (Estimating)	-0.6	-0.4
Reduction in Initial Spares funding in FY02 and 03. (Support)	-52.7	-63.3
Increase in Other Wpn System Costs (Trainers) funding in FY02 and 03. (Support)	+1.8	+0.3
Revision of the NSSN acquisition strategy to reflect a teaming arrangement between the ship builders in response to congressional direction to include NNS in the construction program. (Estimating)	+942.6	+1138.1
Procurement Subtotal	+199.3	+2162.4

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2369.36	-207.70	-0.01	+50.82	-1.05	+24.55	--	-1.51	-134.90	2234.46

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2242.23	-203.51	-0.01	+50.82	--	+22.87	--	-1.51	-131.34	2110.89

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	AUG 94	AUG 94	N/A	AUG 94
Milestone II	JUN 95	JUN 95	N/A	JUN 95
Milestone III	OCT 07	OCT 07	N/A	OCT 07
FUS/IOC	OCT 05	OCT 05	N/A	OCT 05
Total Cost	N/A	71080.8	N/A	67033.9
Total Quantity	N/A	30	N/A	30
Prog Acq Unit Cost	N/A	2369.36	N/A	2234.46

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

a. RDT&E --

(U) Design Studies IRPD:

Gen Dyn, EB Corp, Groton, CT

N00024-95-C-2103, CPFF

Award: February 21, 1995

Definitized: February 21, 1995

Initial Contract Price
Target Ceiling Qty

\$439.2 N/A 0

Current Contract Price
Target Ceiling Qty
\$439.2 N/A 0

Estimated Price At Completion
Contractor Program Manager
\$439.2 \$439.2

Cost Variance Schedule Variance

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

N/A N/A
N/A N/A
N/A N/A

Explanation of Change:

None.

(U) Contract Comments:

This is a level of effort type contract with cost reporting at the task level.

(U) NSSN/Sonar Combat Ctrl:

Lockheed Martin Fed Syst, Manassas VA

N00024-96-C-6226, CPAF

Award: April 24, 1996

Definitized: April 24, 1996

Initial Contract Price
Target Ceiling Qty

\$99.6 N/A 1

Current Contract Price
Target Ceiling Qty
\$120.5 N/A 1

Estimated Price At Completion
Contractor Program Manager
\$120.5 \$120.5

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

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
	N/A	N/A
Cumulative Variances To Date (12/31/96)	<u>\$-0.9</u>	<u>\$-1.1</u>
Net Change	\$-0.9	\$-1.1

Explanation of Change:

- (U) The unfavorable cost and schedule variances are driven by:
1. Unplanned effort associated with Integrated Baseline Review.
 2. Resolution of platform integration issues.

b. Procurement --	Initial Contract Price		
(U) <u>IPPD96 Contract:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Gen Dyn, EB Corp, Groton, CT			
N00024-95-C-2100, CPFF	\$1437.7	N/A	0
Award: January 29, 1996			
Definitized: May 9, 1996			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1437.7	N/A	0	\$1437.7	\$1437.7

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
	N/A	N/A
Cumulative Variances To Date (12/31/96)	<u>\$-13.0</u>	<u>\$-9.6</u>
Net Change	\$-13.0	\$-9.6

Explanation of Change:

(U) The Navy awarded a letter contract to Electric Boat for the NSSN design on January 29, 1996 which was definitized on May 9, 1996. The Initial Contract Price and Current Contract Price has been revised to reflect the final negotiated price. The Contractor Earned Value Management System (EVMS) has not yet been validated for the design contract. This is the first time an EVMS has been used for a ship design contract. The validation review is scheduled for March 1997. The negative cost and schedule variances are under management review, however, other metrics used by the program office indicate that the design is on schedule.

(U) <u>Nuclear Components:</u>	Initial Contract Price		
Westinghouse Electric, Schenectady NY	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-96-C-4053, CPFF			
Award: December 15, 1995	\$61.6	N/A	0
Definitized: December 15, 1995			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$114.5	N/A	0	\$114.5	\$114.5

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

None.

(U) Nuclear Components:
 Westinghouse Electric Co., Monroeville PA
 N00024-96-C-4051, CPFF
 Award: December 15, 1995
 Definitized: December 15, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$105.6	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$224.3	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$224.3	\$224.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

None.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY92-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-20)	<u>Total</u>
RDT&E	1800.3	396.5	292.2	1218.2	3707.2
Procurement	1570.7	2599.8	2057.6	57098.6	63326.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3371.0	2996.3	2349.8	58316.8	67033.9

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

b. Annual Summary -- NEW ATTACK SUBMARINE

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				23.9	22.8
1993				67.9	66.3
1994				367.3	365.3
1995				449.1	455.7
1996				413.6	428.2
1997				437.0	462.0
1998				367.4	396.5
1999				265.2	292.2
2000				203.4	228.9
2001				192.2	220.8
2002				134.3	157.7
2003				150.7	181.1
2004				75.6	93.2
2005				115.3	145.8
2006				86.9	112.8
2007				51.8	69.0
2008				6.5	8.9
Subtotal				3408.1	3707.2

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996		142.9		733.2	790.3
1997		270.7		709.1	780.4
1998	1	938.0	1758.4	2312.6	2599.8
1999	1		1884.8	1790.9	2057.6
2000				652.3	766.5
2001	1		1760.8	1466.1	1763.4
2002	1		1765.5	1712.6	2110.9
2003				819.0	1035.5
2004	1		1659.3	2151.1	2790.2
2005	2		2970.5	2477.5	3297.1
2006	2		2827.7	2802.8	3827.0
2007	2		2788.1	2751.3	3854.6
2008	2		2759.1	2721.4	3911.8
2009	2		2736.6	2723.7	4016.7
2010	2		2717.9	3055.6	4623.5
2011	2		2719.2	3239.2	5028.6
2012	3		4015.7	3967.5	6319.4
2013	3		3989.5	3603.6	5889.0

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

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2014	3		3952.3	2708.6	4541.5
2015	2		2609.4	1569.7	2700.4
2016				61.5	108.6
2017				74.4	134.8
2018				74.4	138.3
2019				62.5	119.2
2020				25.8	50.5
Subtotal	30	1351.6	42914.8	44266.4	63255.6

(U) Note- Nonrecurring Flyaway consists of Detail Design and Design Transfer for FY 96-98

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002				23.1	27.5
2003				3.7	4.5
2004				4.3	5.4
2005				13.8	17.7
2006				12.1	16.0
Subtotal				57.0	71.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	30	1351.6	42914.8	47731.5	67033.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1280.8

(U) Percent Total Program Expended: 1.9%

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17. (U) Delivery/Expenditure Information (Cont'd):

(U) Total expenditures as of 10 Feb 97.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Operations and Support (O&S) costs are developed at the ship level, on an annual cost per ship basis by cost category and appropriation, with total and annual average cost over the submarine's expected service life. Costs are estimated for all categories listed in the CAIG O&S Cost Estimating Guide using historical data from operating submarine classes. Maintenance and Personnel costs are the major contributors to the total O&S Program. The source of this cost estimate is the New Attack Submarine PR97 PLCCE dated October 28, 1996. Antecedent data is not available.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Ship	
Mission Pay & Allowances	5.2	0.0
Unit Level Consumption	3.0	0.0
Intermediate Maintenance	2.0	0.0
Depot Maintenance	11.3	0.0
Contractor Support	0.0	0.0
Sustaining Support	3.9	0.0
Indirect Costs	0.0	0.0
Indirect Support	5.9	0.0
	0.0	0.0
	0.0	0.0
Total	31.3	0.0

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)

PROGRAM: CMU

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Cheyenne Mountain Upgrade (CMU)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

ESC/SR

GM-15 DAVID J. STEELE

50 GRIFFISS STREET

Assigned: December 6, 1996

HANSCOM AFB, MA 01731-1622

DSN 834-8408; COMM (719) 556-8408

STEELEJ@HANSCOM.AF.MIL

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

RDT&E:

(U) PE 0102310F

(U) PE 0305906F (Shared)

PROCUREMENT:

(U) APPN 3080 ICN 833160 (Air Force)

(U) APPN 3080 ICN 83790S (Air Force) (Shared) Spares

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CONGRESSIONAL

DIRECTORATE FOR ACQUISITION,
AND SECURITY SYSTEM (OASD-PA)
DEPARTMENT OF DEFENSE

~~Classified by: Multiple Sources~~

~~Downgrade Instructions: Not Subject to Automatic Downgrade~~

~~Declassify on: Originating Agency Determination Required (UFGW)~~

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5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE approved APB dated 12 February 1990, Subject: Acquisition Program Baseline (APB), Cheyenne Mountain Upgrade Program.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated January 14, 1997.

6. (U) Mission and Description:

(U) The CMU program develops system capabilities to ensure fully capable, timely and reliable day-to-day processing of all tactical warning mission data for atmospheric, ballistic missile and space threats. These capabilities must endure natural or man-made disturbances, jamming, sabotage and other effects to ensure the availability of Integrated Tactical Warning and Attack Assessment (ITW/AA) information in peacetime and through a conflict until physically destroyed. The capacity of the CMU "system of systems" and their interfaces is sufficient to handle both single event, and small and large scale raids. It also provides credible warning data to all U.S. forces and the National Command Authorities (NCA). Transmission of missile warning sensor messages to the Cheyenne Mountain AFB (CMAFB) and the Alternate Processing and Correlation Center (APCC), and forward fixed users is processed by the Survivable Communications Integration System (SCIS) equipment. Warning messages from air and intelligence sources are transmitted to the CMAFB correlation center directly. Space warning data is provided to CMAFB through Space Defense Operation Center (SPADOC) and Alternate SPADOC at Dahlgren Naval Space Surveillance Center. Messages are routed through the Communications System Segment Replacement (CSSR) and passed to the mission centers. These mission centers (SPADOC for CMAFB only), Air Defense Operations Center (ADOC), and the Missile Warning Center (MWC) use the Command Center Processing and Display System Replacement (CCPDS-R) and Granite Sentry to process the information and generate displays critical to decision makers.

7. (U) Executive Summary:

(U) The program is 90 percent expanded, as a result this is the final SAR. The 1989 Defense Appropriations Act directed a consolidation of six ongoing development programs under the Cheyenne Mountain Upgrade (CMU) program. These programs were being developed to correct deficiencies in the existing communications, processing, and display systems within the Integrated Warning and Attack Assessment (ITW/AA) system. The Defense Acquisition Board (DAB) approved the consolidated acquisition and integration approach in September 1989 and the Defense Acquisition Executive approved the Acquisition Program Baseline (APB) on 12 February 1990. This phased acquisition called for incremental deliveries of capability for space defense, air warning, missile warning, communications and message processing elements.

In the early 1990's, all CMU elements achieved some successes as measured against the APB. However, in 1993 significant resource contention problems

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7. (U) Executive Summary (Cont'd):

impacted the program's ability to conduct development testing while supporting operational needs. Shortages of available hardware, manpower and test time overstressed the capabilities of the Cheyenne Mountain Complex (CMC) community to conduct the operational mission and testing simultaneously. In March 1994, the CMU Program declared a formal breach of its APB schedule.

Beginning in early 1994, independent reviews of the CMU program were conducted by a SAF/AQ "red team", an independent SAF/AQ sponsored "Senior Review Team", and by the GAO. These efforts combined to produce a complete replanning of the remaining CMU acquisition effort. It rebaselined CMU acquisition milestones into mission oriented phase milestones, scheduled operational assessments on the Air and Space Warning subsystems, and provided dedicated operational testing. The Replan required an increase in the CMU 3600 appropriation by \$48M and added 36 months to the CMU program schedule. The Air Force Acquisition Executive approved the revised APB on 24 September 1994.

Phase I program content includes: Command Center Processing and Display System - Replacement (CCPDS-R) single string, Survivable Communications Integration System (SCIS) mini-net, Strategic Summary Displays, Space Defense Operations Center (SPADOC) 4C Version 2 with the Communications System Segment and the Alternate Processing and Correlation Center (APCC) (Missile Warning Mission capability).

Phase II program content includes: CCPDS-R Vertical Release 96V-1 and five additional Processing Display Subsystems (PDSs) (ACOM, PACOM, EUCOM, NDOC, CIW), remaining SCIS sites with I4 software, Communications System Segment Replacement (CSSR) Vertical Release 96V-1 and Automated Tracking And Monitoring System (ATAMS) Vertical Release 96V-1.

Phase III program content includes: CCPDS-R Vertical Release 96V-1, ATAMS 97V-1, Communications Center Output Message Set (CCOMS) 96V-2, PDS Air CCOMS 96V-2, and four additional PDSs; SCIS Air CCOMS 96V-2, SCIS status to ATAMS 96V-1; CSSR ATAMS 97V-1; Granite Sentry FOC 96V-2; and SSCN (CMAS; A/MWC; PE; PPW; DDC; OGS; EGS; PARCS; and BMEWS I, II, and III).

Phase IV program content includes: CSSR CMP and Vertical Release 97V-2 Test Architecture; SPADOC interface to CSSR and vertical Release 97V-2 Test Architecture; Granite Sentry Vertical Release 97V-1 Test Architecture; CSSR interface to the Intelligence Data Handling System (IDHS); SSCN (1 MCCCs and 6 MGTs). Phases I through IV constitute the total CMU Program.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Granite Sentry Phase II	MAR 90	N/A	N/A
Granite Sentry (Phase III) (Missile & Space Wrng)	MAR 91	DEC 91	DEC 91
SPADOC 4B IOC	APR 91	JUL 91	JUL 91
CSSR Tech Control & Message Processing	APR 91	N/A	N/A
Granite Sentry (Missile Wrng) IOC	N/A	DEC 91	DEC 91
Granite Sentry (NCC) IOC	N/A	DEC 91	DEC 91
Granite Sentry Phase IVA IOC	MAR 92	N/A	N/A
SCIS Installation/Checkout Complete	MAR 92	N/A	N/A
CCPDS-R Missile Warning (Common Subsystem) IOC	SEP 93	N/A	SEP 94
CSSR Operational Date (Blck Tech Control)	N/A	SEP 93	FEB 94
Granite Sentry Phase IVB	SEP 93	N/A	N/A
Granite Sentry Phase V	MAR 94	N/A	N/A
CSSR P3I	SEP 94	N/A	N/A
CSSR Installation Complete (APCC)	N/A	SEP 94	FEB 94
SCIS (Additional Media)	DEC 94	N/A	N/A
OPCC Missile Warning	DEC 94	N/A	N/A
CCPDS-R (SAC Force Management) IOC	DEC 94	N/A	N/A

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

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>	
Granite Sentry Phase VI IOC	MAR 95	N/A	N/A	
SPADOC 4C IOC	SEP 95	N/A	N/A	
OPCC (Air Warning/CCP) IOC	DEC 95	N/A	N/A	
Systems of Systems IOT&E	DEC 95	N/A	N/A	
System Turnover/PMRT	SEP 96	N/A	N/A	
CMU Phase I Delivery	N/A	NOV 95	SEP 95	
CMU Phase II Delivery	N/A	APR 96	AUG 96	
Missile Warning IOT&E	N/A	JUN 96	OCT 96	(Ch-1)
CMU Phase III Delivery	N/A	APR 97	APR 97	
Air Warning OA	N/A	JUN 97	JUN 97	
CMU Phase IV Delivery	N/A	APR 98	APR 98	
Space Warning OA	N/A	JUN 98	MAR 98	(Ch-2)
Integrated Mission IOT&E	N/A	MAR 99	MAR 98	(Ch-2)

(U) ACRONYMS

APCC Alternate Processing and Correlation Center
 CCP Command Center Processor
 CCPDS-R Command Center Processing and Display System Replacement
 CMU Cheyenne Mountain Upgrade
 CSSR Communications System Segment Replacement
 NCC NORAD Command Center
 OPCC Offutt Processing and Correlation Center
 P3I Pre-Planned Product Improvement
 SAC Strategic Air Command
 SCIS Survivable Communications Integration System

b. (U) Current Change Explanations --

(Ch-1) Missile Warning IOT&E changed from Aug 96 to Oct 96 to reflect actual completion.

(Ch-2) Integrated mission IOT&E and Space Warning OA changed from Mar 99 to Mar 98 due to combining the Space Control Mission with CMU integrated mission operational testing. They had previously been scheduled as two separate, sequential tests.

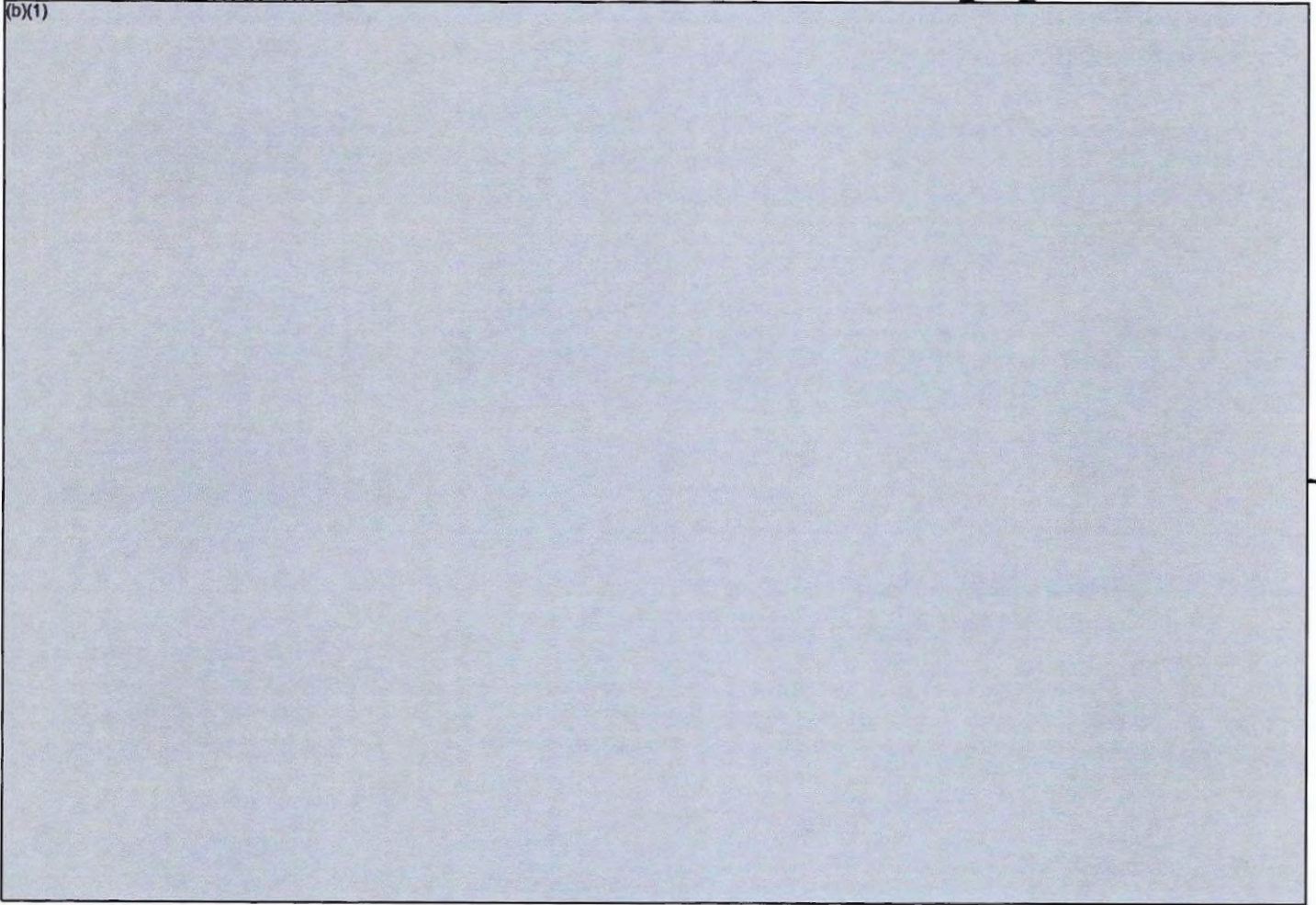
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10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Message Accountability (1 loss in)				



b. Current Change Explanations -- None.

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

a. (U) Cost --	Development <u>Estimate (SAR)</u>	Approved <u>Program (APR)</u>	Current <u>Estimate</u>
Development (RDT&E)	1188.1	1230.4	1325.4
Procurement	321.2	347.6	347.2
Flyaway	(321.2)		(315.1)
Other Wpn Sys Cost	(0.0)		(9.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(22.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 89 Base-Year \$	1509.3	1578.0	1672.6
Escalation	71.7	85.0	78.0
Development (RDT&E)	(58.4)	(63.6)	(81.9)
Procurement	(13.3)	(21.4)	(-3.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	1581.0	1663.0	1750.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1</u>	<u>1</u>	<u>1</u>
Total	1	1	1

(U) Since CMU consists of a complex mix of subsystems for which a conventional unit of measure is not valid, a nominal quantity of one will be used for unit cost reporting.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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CMU, December 31, 1996

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JAN 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 89 BY\$)	1672.6	1578.0	
(2) Quantity	1	1	
(3) Unit Cost	1672.600	1578.000	+5.99
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 89 BY\$)	347.2	347.6	
(2) Quantity	1	1	
(3) Unit Cost	347.200	347.600	-0.12

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1246.5	334.5	-	1581.0
Previous Changes:				
Economic	-17.6	-3.0	-	-20.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+3.6	-	-	+3.6
Estimating	+184.5	-29.4	-	+155.1
Other	-	-	-	-
Support	-	+42.3	-	+42.3
Subtotal	+170.5	+9.9	-	+180.4
Current Changes:				
Economic	+0.1	-15.7	-	-15.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+1.7	-	+1.7
Estimating	-9.8	+14.5	-	+4.7
Other	-	-	-	-
Support	-	-1.6	-	-1.6
Subtotal	-9.7	-1.1	-	-10.8
Total Changes	+160.8	+8.8	-	+169.6
Current Estimate	1407.3	343.3	-	1750.6

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1188.1	321.2	-	1509.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+3.0	-	-	+3.0
Estimating	+141.9	-22.4	-	+119.5
Other	-	-	-	-
Support	-	+33.2	-	+33.2
Subtotal	+144.9	+10.8	-	+155.7
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+1.4	-	+1.4
Estimating	-7.6	+14.9	-	+7.3
Other	-	-	-	-
Support	-	-1.1	-	-1.1
Subtotal	-7.6	+15.2	-	+7.6
Total Changes	+137.3	+26.0	-	+163.3
Current Estimate	1325.4	347.2	-	1672.6

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.3
Economic adjustment for negative program change. (Economic)	N/A	+0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.3
Withdrawal of excess FY92-FY94 funds. (Estimating)	-0.3	-0.3
FY96 adjustments due to the following reductions: MSTI Reprogramming, Space Architecture Reprogramming, and Omnibus Reprogramming for Bosnia II. (Estimating)	-5.5	-7.1
FY97 adjustments due to the following reductions: Congressional RDT&E and SBIR. (Estimating)	-1.7	-2.3
FY98 and FY99 reductions due to BES adjustments. (Estimating)	-0.4	-0.4
Estimation error due to rounding (Estimating)	+0.1	N/A
RDT&E Subtotal	-7.6	-9.7
(2) <u>Procurement</u>		

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised escalation indices. (Economic)	N/A	-15.7
Transfer of excess of FY96 ICS funds to procurement to support new requirements. (Engineering)	+1.4	+1.7
Adjustment for Current and Prior Inflation. (Estimating)	+15.5	+14.7
Withdrawal of excess FY93 and FY94 procurement funds. (Estimating)	-0.2	-0.2
Adjustment for Current and Prior Inflation. (Support)	+0.9	+0.9
Change in Initial Spares (Support)	-0.3	-0.4
Change in Other Wpn Sys Cost (Support)	-1.7	-2.1
Refinement of program estimate (Estimating)	-0.4	N/A
Procurement Subtotal	+15.2	-1.1

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1581.00	-36.20	--	--	+5.30	+159.80	--	+40.70	+169.60	1750.60

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
334.50	-18.70	--	--	+1.70	-14.90	--	+40.70	+8.80	343.30

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	1581	N/A	1750.6
Total Quantity	N/A	1	N/A	1
Prog Acq Unit Cost	N/A	1581	N/A	1750.6

(U) CMU did not go through the normal acquisition milestones.

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

a. RDT&E --

(U) SCIS:

E - Systems, St. Petersburg, FL

F19628-86-C-0131, FPIF/AF

Award: August 21, 1986

Definitized: August 21, 1986

Initial Contract Price
Target Ceiling Qty

\$26.9 \$30.3 6

Current Contract Price
Target Ceiling Qty
\$104.2 \$117.7 26

Estimated Price At Completion
Contractor Program Manager
\$107.0 \$106.5

Previous Cumulative Variances
Cumulative Variances To Date (01/23/97)
Net Change

Cost Variance Schedule Variance
\$-11.1 \$-0.2
\$-10.5 \$0.0
\$0.6 \$0.2

Explanation of Change:

(U) The net change in cost and schedule variances is due to continued efficiencies being achieved on the contract.

There was no overall impact to the contract or program.

CPR reporting completed in Apr 96. Program was completed 27 May 96 and this is the final report for the SCIS program.

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

(U) CCPDS-R:
TRW INC., Carson, CA
F19628-87-C-0047, FPIF/AF
Award: June 3, 1987
Definitized: June 3, 1987

Initial Contract Price		
Target	Ceiling	Qty
\$58.9	\$64.3	0

Current Contract Price		
Target	Ceiling	Qty
\$235.7	\$252.6	21

Estimated Price At Completion	
Contractor	Program Manager
\$235.3	\$234.0

Previous Cumulative Variances
Cumulative Variances To Date (12/29/95)
Net Change

Cost Variance	Schedule Variance
\$-2.7	\$-0.4
\$-2.7	\$-0.4
\$0.0	\$0.0

Explanation of Change:

(U) The net change in cost and schedule variances is due to the definitization of a major contract change relating to the Phase II IOC schedule adjustment and the Aug 94 CMU replan. Contract work proceeded without sufficient budget during negotiations in late 1994, causing the negative variance. Upon definitization in May 1995, all budget was distributed and the variance was eliminated.

The contractor continues to carry approximately \$2.1M in management reserve, which is close to the cumulative negative cost variance.

As this contract is over 90% complete, this is the final report for the CCPDS-R Program.

(U) SPADOC-4C:
Lockheed Martin, Colorado Springs CO
F19628-91-C-0169, CPIF/AF
Award: October 25, 1991
Definitized: October 25, 1991

Initial Contract Price		
Target	Ceiling	Qty
\$57.1	N/A	1

Current Contract Price		
Target	Ceiling	Qty
\$76.6	N/A	1

Estimated Price At Completion	
Contractor	Program Manager
\$72.3	\$72.3

Previous Cumulative Variances
Cumulative Variances To Date (01/23/97)
Net Change

Cost Variance	Schedule Variance
\$0.8	\$0.1
\$2.7	\$-0.1
\$1.9	\$-0.2

Explanation of Change:

(U) Net change in the cost variance is due to contractor's recognition of an underrun through application of management reserve for additional work.

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

This action was accomplished in July 95. Since then, cost performance has been positive by approximately \$0.1M per month in various WBS elements.

Price and variance data for this contract are for Block C only and have no negative impact on program.

(U) <u>CSSR Subset AOC #2:</u>			Initial Contract Price	
			<u>Target</u>	<u>Ceiling</u>
GTE Government Syst Corp, Needham Heights MA				<u>Qty</u>
F19628-92-C-0046, CPIF/AF			\$21.1	N/A
Award: January 28, 1992				1
Definitized: July 24, 1992				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$21.4	N/A	1	\$21.8	\$21.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.0	\$0.0
Cumulative Variances To Date (03/31/95)	<u>\$3.0</u>	<u>\$0.0</u>
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) There is no cost or schedule impact to the contract or the program.

As this contract is over 90% complete, this is the final report for the CSSR Subset AOC #2.

(U) <u>Granite Sentry:</u>			Initial Contract Price	
			<u>Target</u>	<u>Ceiling</u>
Lockheed Martin Corp., Colorado Springs CO				<u>Qty</u>
F19628-93-C-0036, CPIF/AF			\$28.6	N/A
Award: April 7, 1993				1
Definitized: March 15, 1993				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$41.4	N/A	1	\$40.5	\$40.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.5	\$-0.2
Cumulative Variances To Date (01/23/97)	<u>\$-0.8</u>	<u>\$-0.1</u>
Net Change	\$0.7	\$0.1

Explanation of Change:

(U) The net change in cost and schedule variances is due to continued efficiencies being achieved on the contract.

There is no overall impact to the contract or the program.

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

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

<u>Appropriation</u>	<u>Prior Years (FY78-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	1394.9	7.4	5.0	-	1407.3
Procurement	339.1	3.2	1.0	-	343.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1734.0	10.6	6.0	-	1750.6

b. Annual Summary -- Cheyenne Mountain Complex

Appropriation: 3600 Research, Development, Test + Eval, AF

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY89 Dollars Nonrec</u>	<u>Flyaway FY89 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1978			4.6	4.6	2.6
1979			3.6	3.6	2.2
1980			3.7	3.7	2.5
1981			3.9	3.9	2.9
1982			11.0	11.0	8.8
1983			26.3	26.3	22.0
1984			63.5	63.5	55.3
1985			61.2	61.2	55.1
1986			100.7	100.7	92.8
1987			95.3	95.3	91.9
1988			111.9	111.9	110.8
1989			114.2	114.2	118.4
1990			97.2	97.2	103.9
1991			95.8	95.8	106.3
1992			104.8	104.8	119.7
1993			131.8	131.8	153.7
1994			111.6	111.6	132.4
1995			105.4	105.4	127.4
1996			45.9	45.9	56.7
1997			23.4	23.4	29.5
1998			5.8	5.8	7.4
1999			3.8	3.8	5.0
2000					
2001					
Subtotal			1325.4	1325.4	1407.3

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

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982			1.0	1.0	0.8
1983			24.2	24.2	20.1
1984			28.0	28.0	24.1
1985			44.1	44.1	39.2
1986			53.7	53.7	49.1
1987			18.6	18.6	17.5
1988			19.4	19.4	18.7
1989			40.2	40.2	40.5
1990			38.9	38.9	40.3
1991			6.5	6.5	7.1
1992			15.1	17.3	19.5
1993			13.8	21.4	24.7
1994			10.6	14.8	17.5
1995				4.7	5.7
1996			1.4	7.3	9.0
1997	1			4.2	5.3
1998				2.5	3.2
1999				0.8	1.0
2000					
2001					
Subtotal	1		315.1	347.2	343.3

(U) Since CMU consists of a complex mix of subsystems for which a conventional unit of measure is not valid, a nominal quantity of one will be used for unit cost reporting. Quantity will always be carried in the current year.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		1640.5	1672.6	1750.6

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date - None.

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1638.7

(U) Percent Total Program Expended: 93.6%

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
Operations Concept - At Full Operational Capability (FOC), Air Force Space Command (AFSPC) will take over complete day-to-day operating responsibility to perform the mission. Each operational center has five crews to support the 24 hour/day mission.

Maintenance Concept - AFSPC will have responsibility for maintenance of application software using both organic manpower and contract support. Commercial Off-the-Shelf (COTS) hardware and COTS system software will have a two-level maintenance concept. AFSPC will have responsibility for organizational level hardware maintenance. Air Force Materiel Command (AFMC) will have responsibility for depot level maintenance of COTS hardware and COTS system software with vendor support for repair of COTS hardware and system software.

The costs in section b were derived from the Cheyenne Mountain Complex Cost per Available Hour Estimate performed by ESC/FMCE in Dec 1994. This estimate was based on actual O&S budgetary figures provided by AFSPC. Current efforts are being made to update this estimate with FY96 figures. Average costs were computed based on O&S costs from FY95-FY99.

Although Canadian forces are on staff/duty within one or more CMU programs, they were not included in the manpower costs as their expenses are paid by the Canadian government. Any specialized training required by Canadian personnel was included.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost For CMU Steady State	Avg. Annual Cost For Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	39.0	0.0
Intermediate Maintenance	2.8	0.0
Depot Maintenance	46.1	0.0
Contractor Support	36.4	0.0
Sustaining Support	1.0	0.0
Indirect Costs	0.0	0.0
Total	125.3	0.0

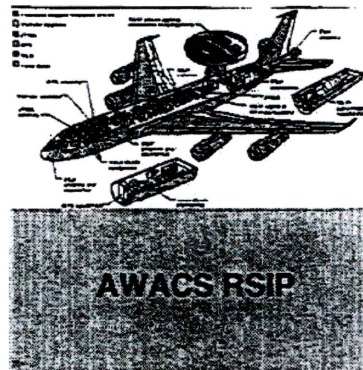
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PROGRAM: E-3 AWACS RSIP

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): E-3 AWACS Radar System Improvement Program (RSIP)
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:
 ESC/AW COL (N) GARY S. CONNOR
 3 EGLIN STREET Assigned: January 13, 1997
 HANSCOM AFB, MA 01731-2115 DSN 478-6899; COMM (617) 377-6899
4. (U) Program Elements/Procurement Line Items:
 RDT&E:
 (U) PE 0207417F (Shared) Project 67411L (Shared)
 PROCUREMENT:
 (U) APPN 3010 ICN 11411L (Air Force)

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)

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PROCUREMENT:
(U) APPN 3010 ICN 11411L (Air Force)

~~Classified by: E-3 SECRETARY/COMBATTION CODES, 24 June 1996~~
~~Downgrade instructions: No subject to automatic downgrade~~
~~Declassify on: Originating Agency Determination Required (OADR)~~

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E-3 AWACS RSIP, December 31, 1996

5. (U) References:

SAR Baseline (Development Estimate):

(U) FY 91 Amended President's Budget, January 29, 1990.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated July 31, 1996.

6. (U) Mission and Description:

(U) The purpose of the RSIP modification is to provide the Air Combat Command (ACC) with new and improved capabilities for the E-3 AWACS radar. The AWACS RSIP will provide improvements in radar sensitivity/electronic counter-countermeasures (ECCM) performance, radar performance monitoring and control, and reliability/ maintainability (R&M) to maintain system effectiveness against the projected operational environment of the 1990's and into the next century.

The RSIP program is made up of three phases: 1) System Definition/Risk Reduction (Pre-Engineering and Manufacturing Development), 2) Engineering and Manufacturing Development (EMD), and 3) Production Modification. This program will result in hardware and software changes to the AWACS.

The modifications are primarily to the AWACS Surveillance Radar Functional Group (SRFG) which:

- (1) Replaces the existing Radar Data Correlator (RDC) and Digital Doppler Processor (DDP) with the Surveillance Radar Computer (SRC).
- (2) Modifies the existing Radar Control Maintenance Panel (RCMP) with dual Cathode Ray Tube (CRT) displays and a new keyboard and cursor control.
- (3) Completes minor redesigns of the receiver, the Stable Local Oscillator (STALO), the Synchronizer, and the antenna phase control electronics, and replaces the analog to digital converter.
- (4) Replaces the existing Surveillance Radar Computer Program (SRCP) with a new SRCP.

7. (U) Executive Summary:

(U) The AFSARC approval to start EMD occurred in Dec 88. EMD contracts were awarded in Sep 89 to Northrop Grumman (formerly Westinghouse) for the radar upgrade, and to Boeing for system integration and testing. Test flights conducted in Feb-Mar 90 successfully demonstrated the RSIP pulse compression waveform concept. Radar algorithm simulations in Jun 90 confirmed the viability of the RSIP two-slant signal processing technique. The 8.6 dB lab radar demo was successfully completed in Sep 92, and the government verified test results showing a 10.34 dB improvement in the laboratory environment. Also in 1992, NATO formally joined the program by way of a Cooperative International R&D Agreement.

In Nov 93, Test System-3 (TS-3) Installation & Check Out (I&CO) was completed, and the first DT&E flight occurred. The qualification phase of the DT&E flight

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E-3 AWACS RSIP, December 31, 1996

7. (U) Executive Summary (Cont'd):

test program began in Nov 94; Flight Qualification, Software Formal Qualification Testing (FQT) and In-Plant Formal Qualification were all completed with satisfactory radar detection performance. Concurrent US/NATO IOT&E testing began in Oct 95. Other key events in 1995 were the signing of the RSIP Operational Requirements Document (ORD) and the US Low Rate Initial Production (LRIP) approval. The initial IOT&E results unexpectedly indicated inconsistent radar tracking and poor long range fighter detection in Europe. Consequently, IOT&E was extended in order to satisfactorily resolve these issues.

In Feb 96, a production contract was awarded to Boeing for 13 US kits (basic [2], plus 3 options [11]), 18 NATO kits and 8 UK kits; this included specific contract language to minimize expenditures pending the resolution of the open IOT&E issues. From Jan-Jul 96, software updates were developed and tested, critical Deficiency Report (DR) fixes were implemented and training/tech order handbook deficiencies were resolved. In Jul 96, a final IOT&E software version was released, following successful integration, regression and flight testing. U.S. and NATO operational flight tests in Aug-Sep 96 confirmed the validity of the software fixes and provided the basis for NATO's full-rate production decision in Nov 96. Also in 1996, were the approval of Acquisition Program Baseline (APB) Amendment #4 and the award of US production option #1 for 2 additional LRIP units. U.S. IOT&E was completed in Oct 1996.

Significant issues continuing into 1997 include: the development of a new radar software version to continue resolution of software deficiencies, the establishment/implementation of a joint US/NATO EMD closeout plan, and preparations for the Milestone III and NATO retrofit readiness decisions in September.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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E-3 AWACS RSIP, December 31, 1996

8c. (U) Threshold Breaches (Cont'd):

c. (U) Explanation of Breach:

There is a reportable breach of 8.48% in Procurement (BY\$) costs, due to two different issues. First, the lower inflation indices used in our December 1995 SAR caused the Procurement (BY\$) costs to rise 4.62% (from \$320.6M to \$335.4M). Second, due to a number of uncertainties in the RSIP Production program (e.g. Diminishing Manufacturing Sources (DMS) costs, unit costs on the yet-to-be-negotiated FY 00-04 contract, etc.), we have experienced an additional 3.86% increase in Procurement (BY\$) costs (from \$335.4M to \$347.8M). We are currently processing an APB change to incorporate these issues and increase the total Procurement (BY\$) costs to the current estimate of \$347.8M.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Milestone II AFSARC	DEC 88	DEC 88	DEC 88	
FSD Contract Award	SEP 89	N/A	SEP 89	
Brassboard Flight Tests	APR 91	APR 91	MAR 91	
System Design Review	FEB 90	FEB 90	FEB 90	
Critical Design Review	JAN 91	SEP 91	SEP 91	
Test System-3 (TS-3) I&CO	SEP 92	NOV 93	NOV 93	
Advance Procurement Authorization	JUN 93	N/A	N/A	
Flight Test DT&E				
Start	N/A	JAN 94	NOV 93	
Complete	SEP 93	JAN 95	MAR 95	
IOT&E				
Start	N/A	AUG 95	OCT 95	
Complete	DEC 93	NOV 96	OCT 96	(Ch-1)
Physical Configuration Audit	DEC 93	DEC 95	JUN 96	(Ch-2)
Low Rate Initial Production Decision	MAR 94	NOV 95	NOV 95	
Trial Installation	SEP 95	OCT 97	OCT 97	
IOC (5 aircraft)	SEP 96	DEC 99	DEC 99	
Required Assets Available	N/A	DEC 99	DEC 99	

b. (U) Current Change Explanations --

(Ch-1) U.S. IOT&E was completed in Oct 96.

(Ch-2) Physical Configuration Audit (PCA) was completed in Jun 96.

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E-3 AWACS RSIP, December 31, 1996

10. (U) Performance Characteristics:

a. Performance --

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Improve System Sensitivity (dB)	10.6	13.0 / 10.6	N/A	10.6

(b)(1)



b. Current Change Explanations -- None.

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

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	349.7	367.9	375.3
Procurement	222.1	320.6	347.8
Flyaway	(175.1)		(249.7)
Other Weapon Systems	(29.4)		(81.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(17.6)		(16.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 89 Base-Year \$	571.8	688.5	723.1
Escalation	118.1	159.2	176.4
Development (RDT&E)	(47.0)	(38.6)	(48.9)
Procurement	(71.1)	(120.6)	(127.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	689.9	847.7	899.5
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>34</u>	<u>34</u>	<u>33</u>
Total	34	34	33

(U) Development: Excludes 6 RDT&E units which are not fully configured end items. This number, previously five, includes the Test System-3 (TS-3), Avionics Integration Lab (AIL), Reliability Verification Testing (RVT), Environmental Qualification (EQ), Performance Qualification Lab (PQL). Now the number is six due to the inclusion of NATO 1 (N1).

Production: LRIP quantities are numbered at four; two in FY96 and two in FY97.

c. (U) Foreign Military Sales --
NATO/UK:

The RSIP Memorandum of Agreement (MOA) between the USAF and the NATO Airborne Early Warning and Control (AEW&C) Program Management Organization (NAPMO), signed on 7 May 92, sets forth the terms for the RSIP Cooperative Development Program. We modified the two U.S. RSIP EMD contracts with Boeing and Westinghouse for the NATO RSIP Phase I effort and added the Boeing Phase II effort on 14 Jan 94 and the Westinghouse Phase II effort on 21 Jan 94. During Phase I Westinghouse is providing one more RSIP Group B radar set modification kit and instrumentation for the NATO E-3A aircraft. Boeing Phase I effort is providing one RSIP Group A Kit and the NATO Airborne Operational Computer Program (AOCP) software. In Phase II, Westinghouse will develop the logistics support for the RSIP hardware and software components and support Boeing during the test program; Boeing will install and integrate the RSIP prototype Group A and B kits into the NATO E-3A test aircraft and conduct the test

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E-3 AWACS RSIP, December 31, 1996

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

program. The AWACS SPO, working with NATO, developed a comprehensive strategy to implement a joint U.S. - NATO development test program for RSIP. Under the joint test concept, NATO participates in testing on the U.S. test aircraft and accomplishes the majority of NATO testing on the same aircraft. Joint test was implemented as part of the Phase II portion of the NATO RSIP effort. On 31 March 1993, the United Kingdom (UK) signed a \$5.6M Letter of Offer and Acceptance (LOA) to conduct a pre-production study for incorporating production US/NATO RSIP kits into the fleet of seven (7) UK E-3D AWACS aircraft. The study consisted of two parts: Phase IA provided technical information sufficient to identify differences in the UK configuration while Phase IB designed any adaptations necessary and prepared the production Request for Proposals (RFPs) and LOA. The Boeing Company was placed on contract (EST 93-UK-04A) 13 July 1993 with the Westinghouse Corporation placed on directed subcontract on 1 September 1993 to support Phase I. Including the \$5.8M Phase IB LOA option, the study lasted for approximately two years. UK requirement is to buy production kits for all 7 UK aircraft and 1 ground laboratory.

The US/NATO/UK have joined together and awarded a contract on 9 Feb 96 to purchase 28 aircraft worth of RSIP kits (2 US, 18 NATO, and 8 UK) under the production program, plus 3 options for 11 additional U.S. kits. In October 1996, the US exercised Option 1 of this contract for 2 kits.

d. (U) Nuclear Costs --
None.

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUL 96 APR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 89 BY\$)	723.1	688.5	
(2) Quantity	33	34	
(3) Unit Cost	21.912	20.250	+8.21
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 89 BY\$)	347.8	320.6	
(2) Quantity	33	34	
(3) Unit Cost	10.539	9.429	+11.77

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E-3 AWACS RSIP, December 31, 1996

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	396.7	293.2	-	689.9
Previous Changes:				
Economic	-4.3	-37.4	-	-41.7
Quantity	-	-10.1	-	-10.1
Schedule	+48.4	+88.2	-	+136.6
Engineering	-76.7	-	-	-76.7
Estimating	+60.2	+70.0	-	+130.2
Other	-	-	-	-
Support	-	+75.2	-	+75.2
Subtotal	+27.6	+185.9	-	+213.5
Current Changes:				
Economic	-	-1.3	-	-1.3
Quantity	-	-	-	-
Schedule	-	-0.4	-	-0.4
Engineering	-	-	-	-
Estimating	-0.1	-2.2	-	-2.3
Other	-	-	-	-
Support	-	+0.1	-	+0.1
Subtotal	-0.1	-3.8	-	-3.9
Total Changes	+27.5	+182.1	-	+209.6
Current Estimate	424.2	475.3	-	899.5

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	349.7	222.1	-	571.8
Previous Changes:				
Quantity	-	-6.3	-	-6.3
Schedule	+32.1	+35.2	-	+67.3
Engineering	-62.0	-	-	-62.0
Estimating	+55.6	+47.1	-	+102.7
Other	-	-	-	-
Support	-	+50.5	-	+50.5
Subtotal	+25.7	+126.5	-	+152.2
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.1	-1.4	-	-1.5
Other	-	-	-	-
Support	-	+0.6	-	+0.6
Subtotal	-0.1	-0.8	-	-0.9
Total Changes	+25.6	+125.7	-	+151.3
Current Estimate	375.3	347.8	-	723.1

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E-3 AWACS RSIP, December 31, 1996

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Budget Reconciliation and Adjustment. (Estimating)	-0.1	-0.1
RDT&E Subtotal	<u>-0.1</u>	<u>-0.1</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-1.8
Economic adjustment for negative program change. (Economic)	N/A	+0.5
Final kit rephased from FY04 to FY03. (Schedule)	0.0	-0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Revised ECO estimating methodology to account for known ECOs incorporated into the production contract. (Estimating)	-1.6	-2.4
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Change in Initial Spares. New requirement for inflight maintenance spares added to production program. (Support)	+2.5	+3.3
Other Weapon System Cost. Changed estimating methodology and rephased the second Avionics Integrated Support Facility (AISF) kit to FY00 from FY04. (Support)	-2.0	-3.3
Procurement Subtotal	<u>-0.8</u>	<u>-3.8</u>

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
20.29	-1.30	+0.30	+4.13	-2.32	+3.88	--	+2.28	+6.97	27.26

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14b. (U) Unit Cost and Other History (Cont'd):

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.62	-1.17	-0.04	+2.66	--	+2.05	--	+2.28	+5.78	14.40

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PDE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	DEC 88	N/A	DEC 88
Milestone III	N/A	N/A	N/A	SEP 97
FUE/IOC	N/A	SEP 96	N/A	DEC 99
Total Cost	N/A	689.9	N/A	899.5
Total Quantity	N/A	34	N/A	33
Prog Acq Unit Cost	N/A	20.29	N/A	27.26

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

a. RDT&E --

(U) AWACS RSIP (Group B Kit):
Northrop Grumman Cor, Baltimore MD
F19628-89-C-0138, FPIF
Award: September 25, 1989
Definitized: September 25, 1989

Initial Contract Price
Target Ceiling Qty
\$223.6 \$251.8 5

Current Contract Price
Target Ceiling Qty
\$300.6 \$334.8 6

Estimated Price At Completion
Contractor Program Manager
\$315.1 \$328.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-49.7	\$-0.2
Cumulative Variances To Date (12/31/95)	<u>\$-49.7</u>	<u>\$-0.2</u>
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) Contract cost/schedule reporting was suspended in Dec 95, when the contract performance value exceeded 95%. Consequently, this data is unchanged from the Dec 95 SAR.

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

(U) AWACS RSIP (Group A Kit):
The Boeing Company, Seattle, WA
F19628-89-C-0139, FPIF
Award: September 25, 1989
Definitized: September 25, 1989

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$59.0	\$65.0	3

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$105.8	\$114.0	4

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$105.8	\$99.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.0	\$-0.3
Cumulative Variances To Date (11/23/95)	<u>\$-1.0</u>	<u>\$-0.3</u>
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) Contract cost/schedule reporting was suspended in Nov 95, when the contract performance value exceeded 95%. Consequently, this data is unchanged from the Dec 95 SAR.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY89-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-05)	<u>Total</u>
RDT&E	424.2	-	-	-	424.2
Procurement	94.8	64.6	61.9	254.0	475.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	519.0	64.6	61.9	254.0	899.5

(U) RSIP Development (RDT&E) is a cooperative program with NATO. The total \$424.2M (TY\$) is the U.S. share of the cooperative development program.

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E-3 AWACS RSIP, December 31, 1996

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

b. Annual Summary -- RSIP MOD

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				42.6	44.2
1990				59.6	63.7
1991				64.7	71.8
1992				102.5	117.1
1993				13.2	15.4
1994				32.7	38.8
1995				34.8	42.1
1996				25.2	31.1
Subtotal				375.3	424.2

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	2	14.0	16.0	38.9	49.4
1997	2		15.3	35.0	45.4
1998	4		27.4	48.8	64.6
1999	5		33.9	45.8	61.9
2000	6		41.3	58.5	80.8
2001	7		49.4	59.4	83.9
2002	6	2.5	37.8	47.8	69.1
2003	1		10.6	12.0	17.8
2004			1.3	1.4	2.1
2005			0.2	0.2	0.3
Subtotal	33	16.5	233.2	347.8	475.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	33	16.5	233.2	723.1	899.5

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E-3 AWACS RSIP, December 31, 1996

17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 415.7

(U) Percent Total Program Expended: 46.2%

(U) Expenditures data are as of 31 Dec 96, and reflect US funds only.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
The operating and support cost estimate for AWACS RSIP was updated in Aug 95. The concept of operation is for a fleet of 32 aircraft, which does not include the TS-3, flying 1000 hours per year each with two-level maintenance. In the updated O&S cost, a comparison was made between the Post-RSIP and the Pre-RSIP configurations. These two estimates were separately prepared to reflect the annual steady-state cost, the phase-out of the predecessor system AN/APY-1/2 radar and the phase-in to the steady-state of the Post-RSIP modification to the AN/APY-1/2 radar. The Pre-RSIP system estimated FY96 as the steady-state year with complete phase out by FY04. The O&S cost of the Pre and Post systems are used to compare the differences in support cost in the steady-state mode. The mission personnel element includes the cost of pay and allowances for officer, enlisted, and civilian personnel required to operate, maintain, and support a discrete electronic system. Unit level consumption includes consumables, condemnations, second destination transportation, and organizational level simulator maintenance. The depot maintenance includes the cost of labor, material, and overhead incurred in performing major overhauls or maintenance on an electronic system, its components, and associated support equipment at centralized repair depots, contractor repair facilities, or on site by depot teams. The contractor support includes the cost of contractor labor, materials, and depreciable assets used in providing all or part of the logistics support to a weapon system, subsystem, or related support equipment. Sustaining support includes the cost of replacement support equipment, modification kits, sustaining engineering, software maintenance support and simulator operations. Indirect support includes the costs of personnel support for specialty training, permanent changes of station, and medical care. Indirect cost also includes the costs of relevant host installation services, such as base operating support and real property maintenance.

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E-3 AWACS RSIP, December 31, 1996

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

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Millions)

Cost Element	Radar System, E-3 Annual Steady-State Radar with RSIP	Annual Steady-State Fleet Predecessor E3 Radar Pre-RSIP
Mission Pay & Allowances	9.9	10.3
Unit Level Consumption	2.5	5.3
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.2	0.0
Contractor Support	0.0	0.5
Sustaining Support	4.1	3.2
Indirect Costs	5.8	5.9
Total	22.5	25.2

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A-15 JSTARS GSM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: Joint STARS GSM

AS OF DATE: December 31, 1996

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JSTARS GSM

1. Designation and Nomenclature (Popular Name): Joint STARS Ground Station Module

2. DoD Component: Army

3. Responsible Office and Telephone Number:

SFAE-IEW-JS

FT. Monmouth, NJ 07703-5304

COL. James E. Young

Assigned: August 23, 1996

DSN 987-5165; COMM 908-427-5165

4. Program Elements/Procurement Line Items:

RDTE:

PE 64770 Project D202

PROCUREMENT:

APPN 2035 ICN BA1080 (Army)

APPN 2035 ICN BS9724 (Army)

5. References:

SAR Baseline (Development Estimate):

ADM dated 8 Mar 89, subject "Joint STARS Ground Station Module (GSM) Acquisition Decision Memorandum".

Approved Program:

Approved Acquisition Program Baseline (APB) dated October 5, 1995.

97C-0539

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Joint STARS GSM, December 31, 1996

6. Mission and Description:

The Joint Surveillance Target Attack Radar System (Joint STARS), is a surveillance, battle management and targeting radar system. It is a Joint Army and Air Force Program with the Air Force as the executive service. The Joint STARS radar is an airborne multimode radar system, incorporating an electronically scanned antenna and combining both Moving Target Indicator (MTI), Fixed Target Indicator (FTI) and Synthetic Aperture Radar (SAR) functions. The radar is carried aboard a modified E-8 Aircraft (AN/TSQ-XXX) and broadcasts processed radar data to the Army Ground Station Modules (GSM) through an omnidirectional data link. GSMs also receive and process intelligence data from Unmanned Aerial Vehicles (UAV), Commander's Tactical Terminal (CTT) and Air Reconnaissance Low (ARL). Joint STARS fills a critical need for an effective capability to detect, delay, disrupt, and destroy first and second echelon mobile targets. Joint STARS is unique because it is a closed loop system for real-time detection, tracking, and attack information of enemy ground targets. The Army requires wide area surveillance to understand enemy force buildups and scheme-of-maneuver, in order to apply effective and timely maneuver of forces, battlefield management, and targeting of artillery, rockets and stand-off missiles. There is no other system planned to provide this data in real-time. Joint STARS provides commanders at Tactical and Operational Echelons a near real-time, wide area surveillance system to monitor enemy force movements into and through the joint battle area. This allows air and ground commanders to take timely actions to shape the battle and decisively engage the enemy with fire and maneuver.

7. Executive Summary:

In May 82, an OSD/USDRE memorandum directed that a Joint Air Force/Army Program Management Office be established, under Air Force lead, to develop a single multi-mode target acquisition and weapon guidance system. The Joint STARS Program resulted from this directive and was organized from the PAVE MOVER and SOTAS Program Offices. The Army Ground Station Module (GSM) Full Scale Engineering Development (FSED) contract was awarded to Motorola corporation in Aug 84. A Downsized Ground Station Module (DGSM) FSED was awarded Mar 86. In Sep 87, the Army directed the acquisition of nine Limited Procurement Urgent (LPU) Ground Station Modules (GSMs). In Dec 1988, the GSM program was restructured to capture all user requirements, synchronize GSM and aircraft fieldings, and to field GSMs in time to support other 'Deep Battle' programs. In order to achieve these objectives, the existing GSM was enhanced in a phased effort (IGSM, LPU, Block I, Block II). Block I improvements entailed downsizing the electronic suite, increasing operational capabilities, and enhancing modularity of LRUs (Line Replaceable Units) for standardization and subsequent export to other Intelligence and Electronic Warfare (IEW) systems. In Dec 89 an EMD contract was awarded to Motorola Corp. to develop the Block I Medium Ground Station Module (MGSM) to implement these OSD directed improvements. In Sep 90, Operational Field Demonstration (OFD-1) successfully demonstrated the JSTARS system (Aircraft/GSM) capabilities to NATO and US Forces in Europe. The JCS ordered the deployment of the Joint STARS system, aircraft and Ground Station Modules (GSMs) to Operation Desert Storm in December 90. The order came at the request of CINCCENT (Commander-in Chief Central Command). In March 91, HQDA approved a revised distribution plan which aligned GSM fieldings with documented operational requirements. Based on this new distribution, quantities increased from 90 to 125. During the FY92 Defense Appropriations review process, the GSM budget request was increased by the Congress in order to accelerate start-up of the Light GSM (LGSM)

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7. Executive Summary (Cont'd):

EMD effort. The LGSM mission equipment is housed in a Standard Integrated Command Post (SICP) type shelter and mounted on a HMMWV. The LGSM EMD program was completed in FY95. An LRIP contract was awarded to Motorola Corporation to produce 8 LGSMs, 12 MGSM LRIP models were also produced by Motorola in FY93-94. A revised Acquisition Program Baseline (APB) was approved by the Under Secretary of Defense for Acquisition (USD(A)) on 11 August 93. In it the (USD(A)) approved the acceleration of the objective Joint STARS Ground Station, the Block II or Common Ground Station (CGS) based on the LGSM design. The CGS will integrate SIGINT and advanced imagery processing through a series of preplanned product improvement (P3I), which will result in an evolutionary program beginning in FY96. The approval of the Acquisition Decision Memorandum (ADM) accelerating the CGS was formally received on 6 November 93. A subsequent 5 Oct 95 ADM authorized the CGS LRIP contract. The Common Ground Station (CGS) LRIP contract was awarded on 14 December 1995 via full and open competition to a team headed by Motorola Corp. This eight year competitive contract (basic year plus seven option year) provides for potential significant unit price reductions based on range quantity pricing. The first two years of the CGS contract were designated as LRIPs in order to allow the delivery and test of the performance based hardware prior to the Milestone III, now scheduled for May 98. The first production configuration CGS successfully completed Acceptance Test Procedures in January 1997 and was formally accepted by the government. Joint STARS is participating in a NATO demonstration and experimentation program to evaluate alternative systems to provide airborne reconnaissance capability in support of NATO operations. In 1995, NATO created an Embryonic Project Office (EPO) to pursue additional cooperative efforts. The JSTARS Enhanced Ground Station Module (EGSM) was sent to the SHAPE Technical Center (STC) to be used as part of a US initiative to demonstrate and study interoperability of Joint STARS in the NATO command and control environment. During FY97 an LRIP CGS will be sent to participate in the NATO program. On 2 December 95 the Chairman, Joint Chiefs of Staff (CJCS) tasked Joint STARS to support Operation JOINT ENDEAVOR. A total of twelve GSMs and two aircraft were deployed. The PM staff participated in a series of briefings to NATO member nations throughout 1996, detailing the JSTARS capability. Cost data for the NATO request for information (RFI) was prepared and provided to the Air Force in May 1996.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
INTERIM GSM			
FSD Award	AUG 84	AUG 84	AUG 84
CDR	FEB 85	FEB 85	FEB 85
Force DT&E	FEB 90	N/A	N/A
Joint SLPA/GD/OA:			
Start	OCT 90	SEP 90	SEP 90
Complete	N/A	SEP 91	N/A
First Unit Equipped	OCT 93	OCT 93	OCT 93
LPU GSM			
Limited Prod Contract Award	SEP 87	SEP 87	SEP 87
ARDS Eval (UK)	N/A	NOV 88	NOV 88
FDT&E			
Start	JUN 89	AUG 89	N/A
First Delivery	N/A	JUL 89	JUL 89
ARDS Eval (France)	N/A	AUG 89	AUG 89
First US Unit Equipped	JUN 90	MAY 90	MAY 90
Type Classification (LPU)	N/A	JUL 92	JUL 92
Block I (Medium) GSM			
FSD Award	AUG 89	SEP 89	SEP 89
CDR	N/A	JUL 90	NOV 90
PDR	MAR 90	N/A	MAR 90
Development Test			
Start	N/A	APR 92	APR 92
Complete	N/A	SEP 92	SEP 92
Milestone III	NOV 92	N/A	N/A

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
LRIP Decision	N/A	JUL 93	JUL 93
LRIP Contract Award	DEC 92	JUL 93	SEP 93
First Production Delivery	N/A	NOV 95	JUL 95
Production Qualification Test (PQT)			
Start	N/A	MAY 95	JUL 95
Complete	N/A	AUG 95	OCT 95
Organic Support Capability (MGSM)	N/A	FEB 96	DEC 95
First Unit Equipped	SEP 94	FEB 96	FEB 96
MOTE			
Start	N/A	JUN 95	NOV 95
Complete	N/A	FEB 96	FEB 96
Block I (Heavy) GSM			
Early Prototype Awd	N/A	JAN 92	JAN 92
Prototype Delivery	N/A	FEB 94	FEB 94
Operational Assessment	N/A	APR 94	APR 94
EMD Award	OCT 92	N/A	N/A
CDR	APR 93	N/A	N/A
FDT&E			N/A
Start	JAN 94	N/A	N/A
Production Award	MAR 95	N/A	N/A
First Unit Equipped	MAR 97	N/A	N/A
Block I (Light) GSM (LGSM)			
EMD Award	N/A	MAY 92	MAY 92
FDT&E			
Start	N/A	AUG 94	SEP 94
Complete	N/A	OCT 94	OCT 94
LRIP Decision	N/A	MAR 95	MAR 95
MOTE			
Start	N/A	JUN 95	NOV 95
Complete	N/A	FEB 96	APR 96
First Low Rate Production Delivery	N/A	NOV 96	MAR 97
First Unit Equipped	N/A	JAN 97	MAY 97
Organic Support Capability (LGSM)	N/A	JAN 97	MAY 97
Block II Common Ground Station (CGS)			
LRIP Award	N/A	NOV 95	DEC 95
Milestone III/IV	N/A	MAY 98	MAY 98
Operational Test			
Start	N/A	NOV 97	NOV 97
Complete	N/A	DEC 97	DEC 97
CDR	N/A	JUN 93	AUG 93
First Delivery	N/A	APR 97	APR 97
First Unit Equipped	N/A	SEP 97	SEP 97
Technical/Operational Assessment I	N/A	MAR 99	N/A
Organic Support Capability (CGS)	N/A	SEP 97	SEP 97

b. Current Change Explanations -- None.

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10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>		<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
INTERIM GSM					
Time Compression/ Integration of Data Display (frames MTI data per second)	5	5	/ Level / suffic- / ient to / demon- / strate / target / movement / on GSM / monitor	5	5
Target Auto Track/ Prediction (track on tgt file)	16	N/A	/ N/A	16	16
Software Assisted Target Tracking/ Prediction (# of target files traced)	N/A	16	/ 16	16	16
Interface JSTARS Radar & AN/UPD-7 Radar (bits per second) (k)	50	50	/ 50	50	50
Workstations	2	2	/ 2	2	2
Reliability					
Mean Time Between Failure (MTBF) (hrs)	150	150	/ 125	155	155
Mean Time Between Op Maint Failure (MTBOMF) (hrs)	71	70	/ 70	77	77
Maintenance					
Mean Time to Repair (MTTR) (min)	30	30	/ 30	13	13
Mean Time to Repair (MTTR) ODS/GS (min)	60	60	/ 60	60	60
Max Time to Repair Unit (min)	60	60	/ 60	30	30
Max Time to Repair (DS/GS (hrs)	3.5	3.5	/ 3.5	3.5	3.5

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
	Rec & Trans to both TACFIRE (19) and ASAS (11)	Rec & Trans to TACFIRE (10) and ASAS (10)	/ Rec & / Trans / to / TACFIRE / (6) and / ASAS / (2) /	Rec & Trans to TACFIRE (19) and ASAS (2)	Rec & Trans to TACFIRE (7) and ASAS (2)
Interoperability					
LPU GSM					
Workstations	2	2	/ 2	2	2
Track Targets	Display time of detec- tion heading, speed & location	Display time of detec- tion heading, speed & location	/ Display / target / file / descrip- tion / heading, speed & location	Display target file descrip- tion heading speed & location	Display target file descrip- tion heading speed & location
Predict Target Locations	Time of arrival	Time of arrival	/ Time of / arrival	Time of arrival	Time of arrival
BLOCK I (MEDIUM) GSM					
Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5	/ Level / suffic- / ient to / demon- / strate / target / movement / on GSM / monitor	5	5
Interface JSTARS Radar (bits per second) (k)	N/A	50	/ 50	50	50
Software Assisted Target Tracking Prediction (# of target files tracked)	N/A	16	/ 16	16	16
Operational Availability (HW&SW)	N/A	.80	/ .75	.86	.90
Workstations	N/A	2	/ 2	2	2
Maintenance (HW&SW)					
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60	/ 180	60	60

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
Interoperability	N/A	Rec & Trans to TACFIRE (10) and ASAS (10)	/ Rec & Trans to TACFIRE (6) and ASAS (2)	Rec & Trans to TACFIRE (19) and ASAS (2)	Rec & Trans to TACFIRE (7) and ASAS (2)
Standard IEW Modules	Std HW & SF	Std HW & SW	/ Std HW & SW	Std HW & SW	Std HW & SW
Payload Weight (lbs)	9500	N/A	/ N/A	N/A	N/A
Imagery Storage (hrs on line per 2 hrs video)	8	N/A	/ N/A	N/A	N/A
Imagery Storage (hrs)					
Mean Time to Repair (MTTR) (min)	N/A	30	/ 60	30	30
Video (analog)	N/A	2	/ 2	2	2
Simultaneous Multisensor Operations	Data from 2 or more sensors	Data from 2 or more sensors	/ Data from 2 or more sensors	Data from 2 sensors	Data from more than 2 sensors
Two Independent Workstations	Display MTI, FTI, and SAR data	Display MTI, FTI, and SAR data	/ Display MTI, FTI, and SAR data	Display MTI, FTI & SAR data	Display MTI, FTI & SAR data
Remote Data Display	Data into existing data process facility	Data into existing data process facility	/ Data into existing data process facility	Data into existing data process facility	Data into existing data process facility
Nuclear Survivability	Hardened against EMP	Hardened against EMP	/ Hardened against EMP	Hardened against EMP	Hardened against EMP
Hard copy data capability	N/A	Color printout/ of IMINT/ graphics/ & text	/ Color printout/ of IMINT/ data	Color printout/ of IMINT/ data	Color printout/ of IMINT/ data
BLOCK I (HEAVY) GSM					N/A

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
Nuclear Survivability	Hardened against EMP and TREE thermal radia- tion and blast	N/A	/ N/A	N/A	N/A
Digital Radar	N/A	8	/ 8	N/A	N/A
Commander's Tactical Terminal (CTT)	CTT data inter- face	N/A	/ N/A	N/A	N/A
BLOCK I (LIGHT) GSM Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5	/ Level / suffic- / ient to / demon- / strate / target / movement / on GSM / monitor	5	5
Software Assisted Target Tracking/ Prediction (# of target files tracked)	N/A	16	/ 16	16	16
Workstations	N/A	2	/ 2	2	2
Operational Availability (HW&SW)	N/A	.80	/ .75	.88	.90
Maintenance (HW&SW) Mean Time to Repair (MTTR) (min)	N/A	30	/ 60	19	30
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60	/ 180	56	60
Interoperability	N/A	Rec & trans to/ TACFIRE / (10) / and / ASAS / (10) /	Rec & trans to TACFIRE (6) and ASAS (2)	Rec & Trans to both TACFIRE (7) and ASAS (2)	Rec & Trans to both TACFIRE (7) and ASAS (2)
Standard IEW Modules	N/A	Std HW & SW /	Std HW & SW	Std HW & HW	Std HW & SW

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Imagery Storage (hrs)				
Digital Radar	N/A	8 / 8	8	8
Video (analog)	N/A	2 / 2	2	2
Simultaneous	N/A	Data / Data	Data	Data
Multisensor		from 2 / from 2	from 2	from 2
Operations		or more / or more	or more	or more
Two Independent	N/A	sensors / sensors	sensors	sensors
Workstations		Display / Display	Display	Display
		MTI, / MTI,	MTI,	MTI,
		FTI, and/ FTI, and	FTI, and	FTI, and
		SAR / SAR	and SAR	SAR
		data / data	data	data
Remote Data Display	N/A	Data / Data	Data	Data
		into / into	into	into
		existing/ existing	existing	existing
		data / data	data	data
		process / process	process	process
		facility/ facility	facility	facility
Nuclear	N/A	Hardened/ Hardened	Hardened	Hardened
Survivability		against / against	against	against
		EMP / EMP	EMP	EMP
Hard copy data	N/A	Color / Color	Color	Color
capability		printout/ printout	printout	printout
		of / of IMINT	of IMINT	of IMINT
		IMINT, / data	data	data
		graphics/		
		& text /		
Transportability	N/A	C-130 / C-130	C-130	C-130
		drive / drive	drive	drive
		on, / on,	on,	on,
		drive / drive	drive	drive
		off / off	off	off
Set up/Tear down	N/A	10 / 15	15	15
(w/3 man crew)				
(min)				
Commander's Tactical	N/A	CTT data/ CTT data	CTT data	CTT data
Terminal (CTT)		inter- / inter-	inter-	inter-
		face / face	face	face
Remote Data Display	N/A	Up to / Up to	Up to	Up to
(m)		1000M / 100M	300M	1000
		into an / into an	into an	into an
		existing/ existing	existing	existing
		data / data	data	data
		process-/ process-	process	process-
		ing fac-/ ing	facility	ing
		ility / facility		facility

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Payload weight (each vehicle) (lbs)	N/A	4250 / 4400	4250	4250
Platforms	N/A	Develop / Develop and / and deploy / deploy in Lt, / in Lt Med, & / config Hvy / configs /	HMMWV mounted, light configur ation	Develop and deploy in Lt, config
Secondary Data Dissemination	N/A	Provide / Provide second- / second- ary data/ ary data communi- / communi- cation / ication via / via SATCOM / SATCOM or wide / or wide area / area Coms to / Coms to distrib- / distrib- ute / ute JSTARS / JSTARS and / data other / beyond correla- / line of ted IEW / sight common / capabil- data / ity beyond / line of / sight /	TBD	Provide second- ary data communi- cation via SATCOM and wide area Coms (eg MSE) to distrib- ute JSTARS and other correla- ted IEW common data beyond line of sight
BLOCK II (CGS)				
Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5 / Level / suffic- / ient to / demon- / strate / target / movement / on GSM / monitor	5	5
Software Assisted Target Tracking/ Prediction (# of target files tracked)	N/A	16 / 16	16	16

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
Workstations	N/A	2	/ 2	2	2
Operational Availability (HW&SW)	N/A	.80	/ .75	TBD	.85
NBC Survivability	NBC pro- tected	N/A	/ N/A	N/A	N/A
Maintenance (HW&SW)					
Mean Time to Repair (MTTR) (min)	N/A	30	/ 60	TBD	30
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60	/ 180	TBD	60
Interoperability	N/A	Rec & transmit/ messages/ to TAC- FIRE/ AFATDS (to facili- tate target- ing) and/ ASAS (to/ facili- tate intelli- gence report- ing and battle- field mgmt)	/ Rec & transmit messages/ to TAC- FIRE/ AFATDS (to facili- tate target- ing) and ASAS (to/ facili- tate intelli- gence report- ing and battle- field mgmt)	Rec & transmit messages/ to TAC- FIRE/ AFATDS (to facilita te targetin g) and ASAS (to facilita te intellig ence reportin g and battlefi eld mgmt)	Rec & transmit messages/ to TAC- FIRE/ AFATDS (to facili- tate intellig ence report- ing and battle- field mgmt)
Standard IEW Modules	N/A	Std HW & SW	/ Std HW & SW	Std HW & SW	Std HW & SW
Imagery Storage (hrs)					
Digital Radar	N/A	8	/ 8	8	8
Video (analog)	N/A	2	/ 2	2	2
Simultaneous Multi- sensor Operations	N/A	Data from 2 or more sensors	/ Data from 2 or more sensors	TBD	Data from 3 or more sensors

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Two Independent Workstations	N/A	Display / Display MTI, / MTI, FTI, and/ FTI, and SAR / SAR data / data	Display MTI, FTI and SAR data	Display MTI, FTI, and SAR data
Remote Data Display	N/A	Data / Data into / into existing/ existing data / data process / process facility/ facility	Data into existing data process facility	Data into existing data process facility
Hard Copy Data Capability	N/A	Color / Color printout/ printout of / of IMINT IMINT, / data graphics/ & text /	Color printout of IMINT data	Color printout of IMINT IMINT, graphics & text
Nuclear Survivability	N/A	Hardened/ Hardened against / against EMP / EMP	TBD	Hardened against EMP
Commander's Tactical Terminal (CTT)	N/A	CTT data/ CTT data inter- / inter- face / face	CTT data intrfce	CTT data inter- face
Transportability (Light)	N/A	C-130 / C-130 drive / drive on, / on, drive / drive off / off	C-130 drive on, drive off	C-130 drive on, drive off
Set up/Tear down (w/3 man crew) (min) (Light)	N/A	10 / 15	TBD	10
Payload Weight (lbs)				
Light	N/A	4250 / 4400	4250	4250
Heavy	N/A	7100 / 8500	N/A	N/A
Data Dissemination	N/A	Maintain/ Maintain and / and automat- / automat- ically / ically dissem- / dissem- inate / inate current / current enemy / enemy situa- / situa- tion / tion graphics/ graphics	TBD	Maintain(Ch-1) and automati cally dissemin ate current cnemy situatio n graphics

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
National Imagery Data	N/A	Provide / Provide imagery / imagery graphs & / data text / through through / GSM comm GSM comm/ links links /	TBD	Provide imagery graphs & text through GSM comm links

The bracketed numbers contained in the interoperability characteristic description for TACFIRE and ASAS refer to number of preformatted message sets that can be received.

b. Current Change Explanations --

(Ch-1) Changed to correct error in previous SAR (DEC 95) submission.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	452.4	554.7	579.6
Procurement	680.6	651.9	671.7
Recurring Costs	(563.8)		(494.4)
Nonrecurring Costs	(55.6)		(67.7)
Total Flyaway	(619.4)		(562.1)
Other Weapon Systems	(16.2)		(78.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(45.0)		(31.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 89 Base-Year \$	1133.0	1206.6	1251.3
Escalation	158.6	271.0	232.1
Development (RDT&E)	(-4.0)	(27.7)	(34.0)
Procurement	(162.6)	(243.3)	(198.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1291.6	1477.6	1483.4
b. Quantity --			
Development (RDT&E)	15	21	18
Procurement	97	104	143
Total	112	125	161

The procurement quantities noted above include a total of up to 60 LRIP units (12 Medium GSMs, 10 Light GSMs (8 on contract) and up to 38 CGSSs). It should be noted that the LRIP quantity exceeds the statutory guideline of 10% for LRIP as a percentage of total production, however approval was granted based on the

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

economic advantages and the documented low risk of the program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 89 BY\$)	1251.3	1206.6	
(2) Quantity	161	125	
(3) Unit Cost	7.772	9.653	-19.49
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 89 BY\$)	671.7	651.9	
(2) Quantity	143	104	
(3) Unit Cost	4.697	6.268	-25.06

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	448.4	843.2	-	1291.6
Previous Changes:				
Economic	+1.7	+25.8	-	+27.5
Quantity	+15.1	+181.8	-	+196.9
Schedule	-	-19.1	-	-19.1
Engineering	+69.4	-8.7	-	+60.7
Estimating	+55.3	-319.7	-	-264.4
Other	-	-	-	-
Support	-	+93.9	-	+93.9
Subtotal	+141.5	-46.0	-	+95.5
Current Changes:				
Economic	-0.1	-3.6	-	-3.7
Quantity	-	+108.1	-	+108.1
Schedule	-	+1.8	-	+1.8
Engineering	+23.8	+81.2	-	+105.0
Estimating	-	-114.9	-	-114.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+23.7	+72.6	-	+96.3
Total Changes	+165.2	+26.6	-	+191.8
Current Estimate	613.6	869.8	-	1483.4

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	452.4	680.6	-	1133.0
Previous Changes:				
Quantity	+12.1	+146.4	-	+158.5
Schedule	-	+2.7	-	+2.7
Engineering	+57.7	-5.8	-	+51.9
Estimating	+41.9	-255.4	-	-213.5
Other	-	-	-	-
Support	-	+48.4	-	+48.4
Subtotal	+111.7	-63.7	-	+48.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	+77.7	-	+77.7
Schedule	-	-	-	-
Engineering	+15.5	+58.4	-	+73.9
Estimating	-	-81.3	-	-81.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+15.5	+54.8	-	+70.3
Total Changes	+127.2	-8.9	-	+118.3
Current Estimate	579.6	671.7	-	1251.3

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment to allow for future integration of additional sensors. (Engineering)	+23.2	+33.3
Adjustment to account for transfer of NATO effort outside program. (Engineering)	-7.7	-9.5
RDT&E Subtotal	+15.5	+23.7
(2) <u>Procurement</u>		
To correct error in previous SAR. (Quantity)	+77.7	+108.1
To correct error in previous SAR. (Estimating)	-77.7	-108.1
Revised escalation indices. (Economic)	N/A	-3.6
To account for adjustment of annual procurement buy profile. (Schedule)	0.0	+1.8
To allow for upgrade of MGSM fleet to CGS configuration. (Engineering)	+22.5	+29.4
To accommodate additional P3I upgrades. (Engineering)	+35.9	+51.8
Adjustment for current and prior inflation. (Estimating)	+0.4	+0.6

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
Adjustments to the internal CGS program costs. (Estimating)		-4.0	-7.4
Procurement Subtotal		+54.8	+72.6

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
11.53	+0.15	-1.61	-0.11	+1.03	-2.36	--	+0.58	-2.32	9.21

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.69	+0.16	-0.78	-0.12	+0.51	-3.04	--	+0.66	-2.61	6.08

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	DEC 88	N/A	DEC 88
Milestone III	N/A	N/A	N/A	MAY 98
FUE/IOC	N/A	JUN 90	N/A	JUN 90
Total Cost	N/A	1291.6	N/A	1483.4
Total Quantity	N/A	112	N/A	161
Prog Acq Unit Cost	N/A	11.53	N/A	9.21

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

These contracts are for the LRIP procurement of 8 LGSM and 18 CGS units.

a. Procurement --		Initial Contract Price		
<u>LGSM LRIP:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Motorola, Scottsdale, AZ				
DAABO7-95-A-CC, FFP		\$42.9	N/A	8
Award: July 31, 1995				
Definitized: July 31, 1995				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$42.9	N/A	\$42.9	\$42.9	

Explanation of Change:

None.

CGS LRIP:		Initial Contract Price		
Motorola, Scottsdale, AZ		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAABO7-96-C-S204, FFP				
Award: December 14, 1995		\$70.6	N/A	18
Definitized: December 14, 1995				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$70.6	N/A	\$70.6	\$70.6	

Explanation of Change:

None.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY82-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-03)	<u>Total</u>
RDT&E	545.0	6.9	5.7	56.0	613.6
Procurement	376.2	125.2	95.6	272.8	869.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	921.2	132.1	101.3	328.8	1483.4

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

b. Annual Summary -- GROUND STATION MODULE

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				5.1	4.1
1983				43.4	36.5
1984				75.0	65.3
1985				30.8	27.7
1986				43.9	40.6
1987				27.2	25.9
1988				18.9	18.7
1989				22.2	22.9
1990				35.3	37.8
1991				38.8	43.1
1992				59.6	67.8
1993				53.7	62.5
1994				24.8	29.4
1995				31.2	37.8
1996				12.4	15.3
1997				7.6	9.6
1998				5.4	6.9
1999				4.3	5.7
2000				3.1	4.1
2001				9.8	13.5
2002				13.7	19.2
2003				13.4	19.2
Subtotal	18			579.6	613.6

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987	3	2.1	9.8	14.9	14.7
1988	6		16.9	21.3	21.9
1989				2.2	2.4
1990					
1991					
1992					
1993	5	1.0	22.5	29.3	34.9
1994	7	0.2	33.8	52.9	64.0
1995	8	1.7	39.6	47.0	58.3
1996	16	5.3	52.2	68.4	85.9
1997	16	2.1	52.2	73.2	94.1
1998	20	1.9	87.7	95.6	125.2
1999	20		65.2	71.5	95.6
2000	20		65.2	71.5	97.7
2001	18		58.7	77.9	108.8

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

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	4		29.4	30.4	43.5
2003			14.6	15.6	22.8
Subtotal	143	14.3	547.8	671.7	869.8

Recurring flyaway in FY98 includes \$22.5M required to upgrade 16 MGSM units to the CGS configuration. Recurring costs in FY02 and FY03 are P3I costs which will be required to upgrade the entire fleet to the final and standard CGS HW/SW configuration.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	161	14.3	547.8	1251.3	1483.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	18	18
Procurement	21	21

Percent Total Program Quantities Delivered: 24.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 691.7

Percent Total Program Expended: 46.6%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

O&S costs were based on LPU & IGSM models being fielded for 5 years. All other GSM models are presumed to have a 20 year life. Sustainment is based on cumulative quantity of fielded systems and appropriate personnel necessary to maintain the system. The source of the O&S data is the January 1995 Joint STARS (Army) Baseline Cost Estimate. There are no antecedent systems.

b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	JSTARS GSM Avg Annual Cost GSM	N/A
Mission Pay & Allowances	269.0	0.0
Unit Level Consumption	103.0	0.0
Intermediate Maintenance	14.0	0.0

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

b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	JSTARS GSM Avg Annual Cost GSM	N/A
Depot Maintenance	1.0	0.0
Contractor Support	N/A	N/A
Sustaining Support	7.0	N/A
Indirect Costs	N/A	N/A
oport Costs	N/A	N/A
oport Costs	N/A	N/A
Total	394.0	0.0

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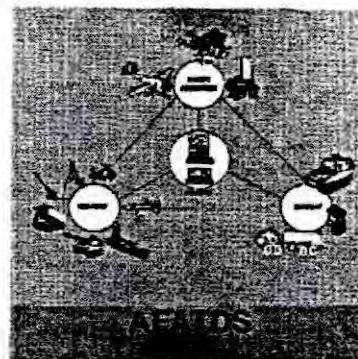
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: AFATDS

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Advanced Field Artillery Tactical Data System (AFATDS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

SFAE-C3S-FS

Ft Monmouth, NJ 07703-5404

COL Steven W. Boutelle

Assigned: August 13, 1992

DSN 987-3090; COMM 908-427-3090

Boutelle@DOIM6.ARMY.MIL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 23726 Project D2ET, D322

PROCUREMENT:

APPN 2035 ICN B28600 (Army)

APPN 2035 ICN B78100 (Army)

APPN 2035 ICN B78400 (Army) (Shared) LFED Funding

APPN 2035 ICN BA9708 (Army)

APPN 2035 ICN BA9726 (Army) (Shared)

APPN 2035 ICN BS9708 (Army)

APPN 2035 ICN MA9708 (Army)

APPN 0350 ICN MIPR (NGRE)

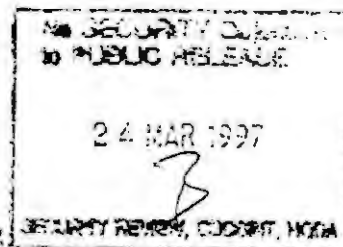
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5. References:

SAR Baseline (Production Estimate):

AAE Approved Acquisition Program Baseline dated 5 Feb 1996.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated August 8, 1996.

6. Mission and Description:

The Advanced Field Artillery Tactical Data System (AFATDS) is a digital, integrated battlefield management and decision support system. It will function at Battery through Corps and above level as one of the five battlefield automation systems of the Army Battlefield Command System (ABCS) utilizing the Common Operating Environment (COE) architecture. AFATDS utilizes evolving commercial computer technology through procurement of the ABCS Common Hardware/Software (CHS).

Based on the organizational structure to be supported, AFATDS hardware items will include the following: Fire Support Control Terminals (FSCT), Lightweight Computer Units (LCU), Power Converter Group, Tactical Communications Interface Module, Printer, Tactical Display Device, Local Area Network and installation kits tailored to the Force Structure and available vehicles. This will all be ABCS Common Hardware.

AFATDS is designed to overcome the vulnerability, limited functionality, central processing and training limitations of present artillery battalion, brigade, division and corps fire direction systems. AFATDS will take advantage of advancing software technology, graphics, decision aids, and embedded training to expand the Fire Support functions. AFATDS is the Fire Support node of the ABCS providing advanced software automation assistance to the Fire Support elements and interfacing with all systems subordinate to AFATDS and other nodes of ABCS via the standard communications media available to the force. AFATDS will provide 27 Fire Support functions, grouped in five Fire Support operational needs (Fire Support Execution, Fire Support Planning, Movement Control, Field Artillery Mission Support and Field Artillery Fire Direction Operations).

Responsiveness, survivability, and continuity of Fire Support Operations will be enhanced via dispersed processing centers, intelligent remote (work stations) terminals, a distributed data base management system and distributed operations for Fire Support Officers at the Infantry and Armor battalion/brigade levels. AFATDS will interface/interoperate via standard communications media with all functional control elements of existing and future Army Fire Support Systems, other ABCS Battlefield Functional Area (BFA) Systems, other services employing Fire Support Joint Interoperability Tactical Command and Control Systems message standards and Allied Forces using NATO Fire Support Standards.

Fire Support Ada Conversion (FSAC) and Initial Fire Support Automated System (IFSAS) are associated programs that are included in the AFATDS Acquisition Program Baseline (APB).

FSAC provided an accelerated fielding of ABCS Common Hardware (CHS) until the AFATDS software becomes available. FSAC converted the existing Battery Computer

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6. Mission and Description (Cont'd):

System (BCS) technical fire control software to Ada and replaced the existing BCS hardware with the LCU. These LCUs will ultimately be utilized as a host for the AFATDS software.

IFSAS replaced the Variable Format Message Entry Device (VFMED) and Battalion TACFIRE and provided the National Guard with an initial automated capability. IFSAS replaced the TACFIRE equipment with the LCU based AN/GYK-37(V)1 hardware hosting Lightweight TACFIRE (LTACFIRE) software. Like FSAC, IFSAS was an accelerated fielding of the ABCS CHS until AFATDS software becomes available. IFSAS is being fielded by the Marine Corps under a separate program.

7. Executive Summary:

In 1996 the AFATDS program concentrated on the Material Release of Version 1 (AFATDS 96), fielding preparations, continued development of AFATDS 97 and 98, Task Force XXI (TFXXI) and other Army Warfighter Exercises (AWE), and joint efforts.

In Feb 96, the AFATDS Acquisition Program Baseline (APB) and Modified Integrated Program Summary (MIPS) were signed by the Army Acquisition Executive. Subsequently, DCSOPS directed additional program requirements to include prepositioned assets, Joint and National Training Center assets, and Battlefield Coordination Detachments. The revised requirements made it necessary for AFATDS to request a Baseline Change. A revised APB reflecting these changes was signed in Aug 96.

In preparation for Materiel Release, AFATDS started a series of tests. The Limited User Test (LUT) on the LCU was conducted at Ft Sill in Apr 96. A second LCU LUT was conducted in Jul 96 which identified further software shortcomings. All critical shortcomings were corrected prior to the LCU Materiel Release Verification Test conducted in Sep 96. In Oct 96, AFATDS 96 as a system underwent System Level Test and Materiel Release Verification Test to demonstrate the fixes and fire planning doctrine refinements made to the software since Initial Operational Test and Evaluation in Sep 95. The final test on AFATDS 96 was successful and the official Materiel Release of AFATDS 96 was signed on 13 Dec 96.

Continued development of subsequent software releases is proceeding. The prime contractor, Hughes Defense Communications (HDC), formerly Magnavox Electronic Systems Corporation (MESOC), is completing final changes to the AFATDS 97 release prior to delivery to the Government for formal Government Technical Test in Feb 97. AFATDS 98 is also in progress, with System Design Reviews held in Jul 96 and Oct 96 to refine AFATDS 98 functionality requirements.

AFATDS is participating in TFXXI and other AWES. PM FATDS, HDC, and Ft Sill Software Engineering Division (FSSD) continue to support the TFXXI efforts at Ft Hood. They have provided intensive training on TFXXI unique software versions to Ft Hood units. They have supported a number of Field Training exercises preparing for the NTC rotation scheduled for Mar 97. In addition, AFATDS participated in the Prairie Warrior exercise in May 96 at Ft Leavenworth, Roving Sands in Aug 96 and United Endeavor with the Air Force in Oct 96. The PM is currently assessing the impact of Division XXI on AFATDS.

Joint exercises include multiple demonstrations of the Tactical Air Support Module

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7. Executive Summary (Cont'd):

(TASM) and interface with the Air Force Contingency Theater Automated Planning System (CTAPS). The Joint Warrior Interoperability Demonstration, held in Aug 96, demonstrated the AFATDS/CTAPS interface and the ability to send Air Support Requests for the Army Forces to the Air Force Air Operations Center. It also demonstrated the ability to transfer information between AFATDS, Maneuver Control System, Commanders Real Time Display, All Source Analysis System and Army Global Command and Control System. Exercises with the Navy included the Combined Joint Task Force Exercise (CJTEX 96) in May 96. The CJTEX 96 was one of the largest Naval Exercises in history and demonstrated the ability of AFATDS to act as the Navy's Fire Support Command and Control system. In Oct 96, the Secretaries of the Army, Navy and Air Force visited the USS Mt Whitney for briefings on the current evolving capabilities in support of Naval Surface Fire Support (NSFS). In Dec 96, the JMCIS interface with AFATDS was demonstrated at the Naval Surface Warfare Center in Dahlgren Va. The demo illustrated the ability of AFATDS to meet the Naval requirement for fire control systems and stressed the interoperability of AFATDS and existing Navy systems. Continued discussions center on efforts to make AFATDS a joint program between the Army, Navy and USMC.

On an international level, AFATDS participated in ASCA meetings between France, Germany, the UK and the USA in Dec 96. Efforts centered on the review of the FY96 automated interface technical testing results, the upcoming FY97 live fire demonstration and the extent of AFATDS involvement with the ASCA program beyond FY97.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

The Schedule Breach reflects the administrative change to the program test strategy through deletion of the Multi-User Operational Test and replacement by the Limited User Test. This is an administrative change in that the software release continues to be tested, although the test magnitude has changed.

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9. Schedule:

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>	
Concept Evaluation (CE) Contract Award	MAY 84	MAY 84	MAY 84	
Milestone II (ASARC)	JUL 89	JUL 89	JUL 89	
Milestone II (DAB)	SEP 89	SEP 89	SEP 89	
First Unit Equipped (FUE) V1	AUG 95	AUG 95	AUG 95	
Milestone III (ASARC)	DEC 95	DEC 95	DEC 95	
Initial Operational Capability (V1)	JAN 97	JAN 97	JAN 97	(Ch-1)
Limited User Test (LUT)	N/A	N/A	SEP 97	(Ch-2)
Multi-Service OT	JAN 98	JAN 98	N/A	(Ch-2)
Software Release AFATDS '97	AUG 97	AUG 97	JAN 98	(Ch-3)
Software Release AFATDS '98	AUG 98	AUG 98	JAN 99	(Ch-3)
Software Release AFATDS '99	AUG 99	AUG 99	JAN 00	(Ch-3)
Software Release AFATDS '00	SEP 00	SEP 00	JAN 01	(Ch-3)
Fielding Total Force - Start (V1)	JAN 97	JAN 97	JAN 97	(Ch-1)
Complete Active Force	MAY 01	JUL 01	JUL 01	
Complete Total Force	JAN 07	APR 07	APR 07	

b. Current Change Explanations --

(Ch-1) Initial Operational Capability and Fielding Total Force-Start moved from Aug 96 to Jan 97 due to a delay in obtaining Materiel Release for the system.

(Ch-2) The AFATDS '97 test concept has been changed. The requirement for a full blown Operational Test was deleted and a Multi Service OT will no longer be conducted. In its place, a Limited User Test will be conducted, which is currently scheduled for Sep 97.

(Ch-3) Software Releases for AFATDS 97, 98, 99 and 00 have been delayed due to the impact of Task Force XXI and DII/COE. These efforts utilized more effort than originally expected, and pulled available manpower from the scheduled tasks, delaying completion of each subsequent release. Software Release AFATDS 97 was delayed from Aug 97 to Jan 98; AFATDS 98 from Aug 98 to Jan 99; AFATDS 99 from Aug 99 to Jan 00; AFATDS 00 from Sep 00 to Jan 01.

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
System Ao					
Version 1	0.90	0.90 / 0.90	.95	.95	(Ch-1)
Objective	0.90	0.90 / 0.88	TBD	.90	
Fire Mission Proces- sing Peak Load (Fire Missions/hr)					
Version 1	247	247 / 247	338	338	(Ch-1)
Objective	780	780 / 720	TBD	780	

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10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>		<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
	5	5	/ 5	10	10	(Ch-1)
Sustainment of Oper- ation During Power Loss (min)						
Set-up/Tear-down (min)	10	10	/ 10	10	10	
Operating Temperature (deg F)	0-120	0-120	/ 0-120	0-120	0-120	
Process Combat Information Message (per hour)						
Version 1	323	323	/ 157	226	226	(Ch-1)
Objective	970	970	/ 895	TBD	970	
Develop Orders to Fire (per hour)						
Version 1	359	359	/ 168	386	386	(Ch-1)
Objective	1078	1078	/ 995	TBD	1078	
Establish and Update Battlefield Geometry (min)						
Version 1	1	1	/ 2	1	1	
Objective	1	1	/ 2	TBD	1	
Change Attack Guidance (min)						
Version 1	2	2	/ 3	1	1	(Ch-1)
Objective	2	2	/ 3	TBD	2	
Coordinate Movement Request with Maneuver (min)						
Version 1	4.6	4.6	/ 5	1	1	(Ch-1)
Objective	3	3	/ 4	TBD	3	
Prepare Quick Fire Plan (min)						
Version 1	10	10	/ 15	5	5	(Ch-1)
Objective	10	10	/ 15	TBD	10	
Process Field Artillery Sensor Tasking Order (min)						
Version 1	4	4	/ 6	1	1	(Ch-1)
Objective	1.5	1.3	/ 1.5	TBD	1.3	
Process Fire Support Coordination Measure (FSCM) (min)						
Version 1	2	2	/ 3	1	1	(Ch-1)
Objective	2	2	/ 3	TBD	2	

Objective parameters reflect the objective system to be fielded FY01. As such, demonstrated performance parameters are not yet available.

b. Current Change Explanations --

(Ch-1) AFATDS Version 1, (AFATDS '96) has received Materiel Release and is

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10b. Performance Characteristics (Cont'd):

being fielded with demonstrated performance parameters. Therefore, all Current Estimate for Version 1 have been changed to reflect the demonstrated value. Changed parameters include: System Ao from .90 to .95; Fire Mission Processing Peak Load from 247 to 338; Process Combat Information Message from 323 to 226; Develop Orders to Fire from 359 to 386; Change Attack Guidance from 2 to 1; Coordinate Movement Request with Maneuver from 4.6 to 1; Prepare Quick Fire Plan from 10 to 5; Process Field Artillery Sensor Tasking Order from 4 to 1; and Process Fire Support Coordination Measure from 2 to 1.

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

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	560.0	560.0	565.2
Procurement	535.9	544.0	560.0
Flyaway	(408.4)		(422.7)
Other Weapon System	(100.2)		(108.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(27.3)		(28.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	1095.9	1104.0	1125.2
Escalation	45.7	27.9	30.8
Development (RDT&E)	(-33.8)	(-33.8)	(-33.3)
Procurement	(79.5)	(61.7)	(64.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1141.6	1131.9	1156.0
b. Quantity --			
Development (RDT&E)	63	63	63
Procurement	5191	5266	5236
Total	5254	5329	5299

The AFATDS Unit of Measure is computer terminals, which includes both the Fire Support Control Terminals (FSCT) and Lightweight Computer Terminals (LCU). AAO quantities reflect 1634 Fire Support Control Terminals and 3665 Lightweight Computer Units. Quantities do not reflect peripheral equipment associated with the AFATDS system.

There are no LRIP quantities associated with this program.

c. Foreign Military Sales --

Under separate FMS agreements with the FSAC program, the Fire Direction System (FDS) of the Multiple Launch Rocket System (MLRS) was procured by Turkey, Israel and Greece. The agreements provided for modification of the software, procurement of LCUs and interface kits, and associated fielding and training support. An additional FDS agreement is currently under discussion with Norway.

A request has been received from the Canadian Army to discuss interoperability

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

with AFATDS and the possible acquisition of AFATDS by Canada. Additional Fire Support Systems buys have been made to Turkey, Israel, Greece, Bahrain and Norway. Discussion are underway for further buys of fire support systems with Bahrain and Saudi Arabia. AFATDS buy under discussion with Thailand, Kuwait and United Arab Emirate.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (AUG 96 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	1125.2	1104.0	
(2) Quantity	5299	5329	
(3) Unit Cost	0.212	0.207	+2.42
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	560.0	544.0	
(2) Quantity	5236	5266	
(3) Unit Cost	0.107	0.103	+3.88

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	526.2	615.4	-	1141.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+9.6	+1.9	-	+11.5
Other	-	-	-	-
Support	-	+8.5	-	+8.5
Subtotal	+9.6	+10.4	-	+20.0
Current Changes:				
Economic	-0.6	-1.1	-	-1.7
Quantity	-	-4.1	-	-4.1
Schedule	-7.5	-2.1	-	-9.6
Engineering	-	-	-	-
Estimating	+4.2	+16.8	-	+21.0
Other	-	-	-	-
Support	-	-11.2	-	-11.2
Subtotal	-3.9	-1.7	-	-5.6
Total Changes	+5.7	+8.7	-	+14.4
Current Estimate	531.9	624.1	-	1156.0

Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	560.0	535.9	-	1095.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.5	+4.2	-	+5.7
Other	-	-	-	-
Support	-	+18.9	-	+18.9
Subtotal	+1.5	+23.1	-	+24.6
Current Changes:				
Economic	-	-	-	-
Quantity	-	-3.0	-	-3.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3.7	+13.1	-	+16.8
Other	-	-	-	-
Support	-	-9.1	-	-9.1
Subtotal	+3.7	+1.0	-	+4.7
Total Changes	+5.2	+24.1	-	+29.3
Current Estimate	565.2	560.0	-	1125.2

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

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.5
	Economic adjustment for negative program change. (Economic)	N/A	-0.1
	Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
	Acceleration of RDTE funding profile. (Schedule)	0.0	-7.5
	Addition of outyear management cost in FY02 and FY03 (Estimating)	+3.6	+4.1
	RDT&E Subtotal	<u>+3.7</u>	<u>-3.9</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-1.2
	Economic adjustment for negative program change. (Economic)	N/A	+0.1
	Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
	Variance associated with quantity decrease of 30 units from 5266 to 5236 due to changes in employment concept. (Quantity)	-3.0	-4.1
	Acceleration of annual procurement buy profile. (Schedule)	0.0	-2.1
	Changes in flyaway cost due to changes in cost estimating methodology (Estimating)	+12.9	+16.6
	Change in support costs due to change in cost estimating methodology (Support)	-9.1	-11.2
	Procurement Subtotal	<u>+1.0</u>	<u>-1.7</u>

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.22	--	-0.01	--	--	+0.01	--	--	--	0.22

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.12	--	--	--	--	--	--	--	--	0.12

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	MAY 84	MAY 84	MAY 84
Milestone II	N/A	JUL 89	JUL 89	JUL 89
Milestone III	N/A	APR 94	DEC 95	DEC 95
FUE/IOC	N/A	SEP 93	AUG 95	AUG 95
Total Cost	N/A	1052.1	1141.6	1156.1
Total Quantity	N/A	3321	5254	5276
Prog Acq Unit Cost	N/A	0.32	0.22	0.22

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

a. RDT&E --

AFATDS V2:

Hughes Defense Com., Ft Wayne, IN

DAABO7-90-C-E708, CPAF/FFP

Award: October 28, 1992

Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$47.4	\$0.0	1

Current Contract Price		
Target	Ceiling	Qty
\$55.1	\$0.0	1

Estimated Price At Completion	
Contractor	Program Manager
\$61.4	\$61.4

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-9.5	\$-9.7
Cumulative Variances To Date (12/13/96)	\$-0.7	\$-1.5
Net Change	\$8.8	\$8.2

Explanation of Change:

On 1 Aug 96, Magnavox Electronics Systems Corporation officially changed its name to Hughes Defense Company.

The AFATDS Version 2 contract currently consists of three products: Task Force XXI (TFXXI), AFATDS 97 and AFATDS 98. At this time, the contractor has completed and delivered TFXXI, is nearing completion of AFATDS 97 and preparing for delivery of AFATDS 97 to the Government for technical test, and is progressing on AFATDS 98.

Increases in the Version 2 Target Price reflect increased requirements under the Firm Fixed Price portion of the contract, as well as additional functionality added to the baseline. The Firm Fix Price increases reflect additional processing hardware and peripherals and commercial software licences needed to support the programming support environment (PSE). Additional functionality reflects the growing requirements for joint-interoperability functions, unplanned functionality for TFXXI and other performance requirements requested by the user.

Cost and schedule variances have improved due to a replanning effort which occurred in Spring 96, which set schedule equal to performance to nullify existing variances, and reset the baseline schedule against which contractor performance is measured. The revised baseline reflects the impact of TFXXI and the revised functionality requirements of AFATDS 97 and AFATDS 98.

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

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

<u>Appropriation</u>	<u>Prior Years (FY81-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	425.1	39.0	34.9	32.9	531.9
Procurement	216.7	38.5	40.0	328.9	624.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	641.8	77.5	74.9	361.8	1156.0

b. Annual Summary -- AFATDS

Appropriation: 2040 Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY96 Dollars Nonrec</u>	<u>Flyaway FY96 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1981				2.2	1.4
1982				2.6	1.7
1983				4.8	3.3
1984				21.3	15.3
1985				31.9	23.6
1986				21.7	16.5
1987				9.2	7.2
1988				13.6	11.1
1989				20.1	17.1
1990				32.5	28.7
1991				43.8	40.1
1992				52.4	49.1
1993				42.0	40.3
1994				44.2	43.2
1995				51.1	51.0
1996				36.3	37.0
1997				37.0	38.5
1998				36.8	39.0
1999				32.2	34.9
2000				23.1	25.5
2001				2.9	3.3
2002				3.0	3.5
2003				0.5	0.6
2004					
Subtotal				565.2	531.9

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

Appropriation: 0350 National Guard & Reserve Equipm, Defense

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992	498	3.6	14.9	21.5	20.6
1993	353	2.0	10.4	13.0	12.7
1994		1.5		5.0	5.0
Subtotal	851	7.1	25.3	39.5	38.3

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988		10.4		10.4	8.8
1989					
1990					
1991					
1992	276	4.6	12.2	17.7	17.0
1993	131	3.0	6.9	12.4	12.2
1994	866	9.6	32.3	51.6	51.4
1995	180	2.3	16.2	21.9	22.4
1996	226	0.1	20.5	30.8	31.9
1997	196	0.1	21.5	32.8	34.7
1998	253	0.4	25.3	35.7	38.5
1999	191	1.7	25.4	36.3	40.0
2000	264	0.7	26.3	37.1	41.7
2001	251	0.5	26.6	37.9	43.6
2002	231	2.2	26.6	39.4	46.4
2003	250	1.8	25.9	37.0	44.7
2004	377		26.3	35.6	44.1
2005	345	1.6	27.3	38.5	48.9
2006	348	1.0	25.0	35.0	45.6
2007			6.0	10.4	13.9
Subtotal	4385	40.0	350.3	520.5	585.8

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	4385	40.0	350.3	1085.7	1117.7
OSD	851	7.1	25.3	39.5	38.3
Grand Total	5236	47.1	375.6	1125.2	1156.0

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17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	63	63
Procurement	2507	2507

Percent Total Program Quantities Delivered: 48.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 568.8

Percent Total Program Expended: 49.2%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The O&S costs are to operate and maintain the AFATDS system, based on a peacetime operating tempo of 1800 hrs/yr. The costs are based on an operating life of 20 years, with a reprourement of the CHS hardware after 10 years. The CHS will be contractor maintained above the unit level. Costs are from the AFATDS Army Cost Position, Nov 95. Military personnel costs are based on the AFATDS Manpower Estimate Report (MER), May 95. Costs are shown per division.

The AFATDS will replace the TACFIRE/LTACFIRE systems and associated Fire Support hardware. The costs shown were provided by the Field Artillery School (USAFAS), Ft Sill, and reflect TACFIRE support costs only.

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per DIVISION	Avg Annual Cost Per TACFIRE SYSTEM
Mission Pay & Allowances	14.4	18.2
Unit Level Consumption	5.0	17.8
Intermediate Maintenance	0.0	0.0
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	19.4	36.0

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N-5 AV-8B REMAN

SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: AV-8B Remanufacture

INDEX

AS OF DATE: December 31, 1996

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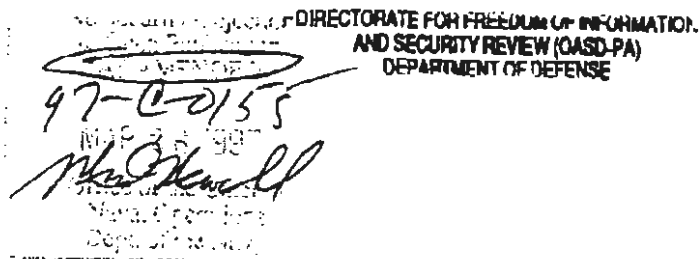


1. (U) Designation and Nomenclature (Popular Name): AV-8B/Attack, V/STOL, Close Air Support (Harrier II+ Remanufacture)
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
1411 Jefferson Davis Highway COL Judson Mason
Arlington, VA 22243-5120 Assigned: February 15, 1995
DSN 664-2238 X7134
COMM (703) 604-2238 X7134
4. (U) Program Elements/Procurement Line Items:
PROCUREMENT:
(U) APPN 1506 ICN 0124 (Navy)

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AS AMENDED

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5. (U) References:

SAR Baseline (Production Estimate):

(U) NAE Approved Acquisition Program Baseline dated June 30, 1994.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated May 16, 1996.

6. (U) Mission and Description:

(U) The AV-8B (Harrier II+) is a second generation, Vertical/Short Take-off and Landing (V/STOL) light-attack jet aircraft utilized by the Marine Corps. The primary mission of the AV-8B is to provide responsive close air support for the ground forces. This single-piloted, advanced V/STOL aircraft can operate from short fields, forward sites, roads and surface ships providing minimum response time to target.

(U) The AV-8B Remanufacture program converts older AV-8B aircraft to the most recent production configuration. The process requires disassembly of the aircraft; modification of selected subsystems and components; and reassembly of selected original, modified, and new production subsystem and parts. Production processes and tooling are used to fabricate new subsystems, parts and components as well as to assemble the aircraft.

(U) AV-8B Remanufacture is an Acquisition Category IC program managed by the A/V Weapon Systems Program Manager, FMA-257. Because the remanufactured aircraft reflect the present production aircraft configuration, they satisfy existing Operational Requirements (OR) 025-05-85 of 19 September 1984 (Night Attack) and OR 224-05-89 of 08 August 1988 (Radar). Remanufacture provides the Marine Corps with increased quantities of aircraft capable of effective night fighting operations at a reduced cost by reusing major components of the day attack fleet aircraft.

7. (U) Executive Summary:

(U) On April 22, 1996, the AV-8B FY96 airframe production contract was definitized with McDonnell Douglas Aerospace (MDA). Eight (8) AV-8B Remanufacture aircraft were procured for a target price of \$143.3M.

(U) The initial four (4) AV-8B Remanufacture aircraft which were procured in FY94 were delivered on schedule in 1996. From June to Sept 1996, the International Association of Machinists and Aircraft Workers (IAMAW) union was on strike against MDA. The Program Manager was informed by MDA that the delivery of the first three (3) of the four (4) aircraft procured in FY95 and scheduled for delivery in FY97 would be delayed by three, two, and one months respectively. The contractor has implemented a recovery plan which projects the fourth FY95 aircraft (Reman 8) being delivered on schedule.

(U) On Sept 30, 1996, MDA was awarded the FY97 Advanced Acquisition Contract (AAC) for ten (10) aircraft with an option for two (2) additional aircraft. The initial funding awarded for termination liability was \$10M. In Oct 1996,

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7. (U) Executive Summary (Cont'd):

Congress authorized \$62.7M for two (2) additional aircraft for the previous FY97 AV-8B remanufacture buy on ten (10) aircraft. On 19 Dec 1996, MDA was awarded the FY97 production airframe contract for twelve (12) aircraft for an additional \$188.5M.

(U) The current budget underfunded the total logistics support program throughout the FYDP. These shortfalls will be briefed as the Program Manager's #1 priority during PR-99.

(U) OT-IIIB testing began on schedule at NAWC-WD, China Lake, but was interrupted to explore uncharacteristic reliability and maintainability data. Concomitantly, the test aircraft crashed at China Lake. Due to the uncertainty of the availability of a replacement aircraft for test completion, the Mar 1997 threshold date has been revised to May 1997. The Program Manager forwarded a Program Deviation Report and revised Acquisition Program Baseline document on Jan 29, 1997 which reported the schedule milestone breach.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

The Program Manager is reporting a schedule milestone threshold breach for OT-IIIB completion and IOC (Completion of FOT&E Report). On Jan 29, 1997, the PM signed a Program Deviation Report (PDR) and an APB change proposal to resolve the breach.

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9. (U) Schedule:

a. Milestones --

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
Milestone IV/III Review	JAN 94	JAN 94	MAR 94
Contract Award	FEB 94	FEB 94	MAY 94
First A/C delivery	FEB 96	FEB 96	FEB 96 (Ch-1)
DT-III			
Start	FEB 96	FEB 96	FEB 96
Complete	AUG 96	AUG 96	AUG 96
OT-IIIIB FOT&E			
Start	FEB 96	FEB 96	FEB 96
Complete	SEP 96	SEP 96	MAY 97 (Ch-2)
IOC (Completion of FOT&E Report)	DEC 96	DEC 96	JUN 97 (Ch-3)
FOC (Delivery of the 20th REMAN acft)	MAR 99	MAR 99	JAN 99 (Ch-4)
Material Support Date 1/	MAR 99	MAR 99	APR 95 (Ch-5)
Navy Support Date 2/	MAR 99	MAR 99	MAR 99

(U) 1/ (Milestone IV APB - 06/30/94) Material Support Date for Night Attack/Radar program is planned for April 1995.

2/ (Milestone IV APB - 06/30/94) Navy Support Date for Night Attack/Radar program is planned for April 1996.

b. (U) Current Change Explanations --

(Ch-1) First aircraft delivery has been revised to reflect the actual date of the delivery of the first AV-8B (remanufacture) aircraft.

(Ch-2) OT-IIIIB (FOT&E) Completion date has been delayed by eight months. ASN(RDA) signed the APB change proposal on MAR 24, 1997.

(Ch-3) IOC (completion of FOT&E report) results from delay in completion of OT-IIIIB testing.

(Ch-4) FOC (delivery of the 20th remanufactured aircraft) has been accelerated by two (2) months to reflect the negotiated contract delivery schedule.

(Ch-5) Material Support Date for the AV-8B Remanufacture (and for the Night Attack/Radar) program was accomplished in April 1995.

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10. (U) Performance Characteristics:

a. Performance --

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Dimensions				
Length	N/A	47.97 / 19,200	TBD	47.97
Height	N/A	11.65 / 30.33	TBD	11.65
Span	N/A	30.33 / 47.97	TBD	30.33
Weight Empty (lbs)	N/A	14,730 / 29,750	TBD	14,700
Max VTOGW Wt (lbs) (Vertical Take-off Gross Weight)	N/A	19,200 / 8	TBD	19,200
Max STOGW Wt (lbs)	N/A	29,750 / .83	TBD	29,750
Speed Max. (Mach)	N/A	.83 / 142	TBD	.83
Mission Radius (nm)				
CAS	N/A	95 / 486	TBD	142
Interdiction	N/A	440 / 12.6	TBD	486
Reliability (hrs)				
MFHBMCF(HW) - Oper	N/A	12.6 / 3.2	TBD	12.6
Maintainability (hrs)				
MMH/FH(HW) Oper	N/A	3.2 / 6.7	TBD	3.2
MTTR (Critical)	N/A	6.7 / 80	TBD	6.7

(b)(1)

b. Current Change Explanations -- None.

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

	Production <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	1843.0	2044.3	1959.5
Airframe	(1163.2)		(1243.6)
Engine	(310.6)		(299.9)
Avionics	(37.2)		(43.7)
Other GFE	(1.1)		(1.1)
Total Flyaway	(1512.1)		(1588.3)
Other Wpn Sys Cost	(0.0)		(0.0)
Peculiar Support	(248.3)		(292.0)
Initial Spares	(82.6)		(79.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 94 Base-Year \$	1843.0	2044.3	1959.5
Escalation	315.4	277.7	237.9
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(315.4)	(277.7)	(237.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	2158.4	2322.0	2197.4
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>73</u>	<u>73</u>	<u>72</u>
Total	73	73	72
c. Foreign Military Sales --	None.		
d. Nuclear Costs --	None.		

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (May 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	1959.5	2044.3	
(2) Quantity	72	73	
(3) Unit Cost	27.215	28.004	-2.82
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	1959.5	2044.3	
(2) Quantity	72	73	
(3) Unit Cost	27.215	28.004	-2.82

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	2158.4	-	2158.4
Previous Changes:				
Economic	-	-92.7	-	-92.7
Quantity	-	-20.9	-	-20.9
Schedule	-	+47.1	-	+47.1
Engineering	-	+69.3	-	+69.3
Estimating	-	-25.3	-	-25.3
Other	-	-	-	-
Support	-	+182.4	-	+182.4
Subtotal	-	+159.9	-	+159.9
Current Changes:				
Economic	-	-21.2	-	-21.2
Quantity	-	-	-	-
Schedule	-	-6.5	-	-6.5
Engineering	-	-	-	-
Estimating	-	+33.6	-	+33.6
Other	-	-	-	-
Support	-	-126.8	-	-126.8
Subtotal	-	-120.9	-	-120.9
Total Changes	-	+39.0	-	+39.0
Current Estimate	-	2197.4	-	2197.4

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

(U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	1843.0	-	1843.0
Previous Changes:				
Quantity	-	-16.6	-	-16.6
Schedule	-	+29.0	-	+29.0
Engineering	-	+60.3	-	+60.3
Estimating	-	-17.9	-	-17.9
Other	-	-	-	-
Support	-	+143.2	-	+143.2
Subtotal	-	+198.0	-	+198.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-6.0	-	-6.0
Engineering	-	-	-	-
Estimating	-	+27.4	-	+27.4
Other	-	-	-	-
Support	-	-102.9	-	-102.9
Subtotal	-	-81.5	-	-81.5
Total Changes	-	+116.5	-	+116.5
Current Estimate	-	1959.5	-	1959.5

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) Procurement

Correction to Prior SAR, revised pricing due to schedule change. (Estimating)	+6.0	+10.5
Correction to Prior SAR, revised pricing due to schedule change. (Schedule)	-6.0	-10.5
Revised escalation indices. (Economic)	N/A	-29.1
Economic adjustment for negative program change. (Economic)	N/A	+7.9
Stretchout of annual procurement buy profile. (Schedule)	0.0	+4.0
Adjustment for Current and Prior Inflation, results from increase of 2 additional AV-8B aircraft (FY-97) and prior year actuals. (Estimating)	+7.1	+7.8
Increase due to pricing methodology and Forward Pricing Rate Agreement (FPRA) rates. (Estimating)	+14.3	+15.3
Adjustment for Current and Prior Inflation, associated with FY97 Congressional plus up, and prior year actuals. (Support)	+1.5	+1.6
Revised estimate for in Initial Spares. (Support)	-31.0	-38.3

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

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year
-73.4 -90.1

(Peculiar Support) reduction in funding
available for ILS and support equipment
requirements. (Support)

Procurement Subtotal

-81.5 -120.9

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
29.57	-1.58	+0.12	+0.56	+0.96	+0.12	--	+0.77	+0.95	30.52

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
29.57	-1.58	+0.12	+0.56	+0.96	+0.12	--	+0.77	+0.95	30.52

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	JAN 94	MAR 94
FUE/IOC	N/A	N/A	DEC 96	JUN 97
Total Cost	N/A	N/A	2158.4	2197.4
Total Quantity	N/A	N/A	73	72
Prog Acq Unit Cost	N/A	N/A	29.57	30.52

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AV-8B Remanufacture, December 31, 1996

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

a. Procurement --

(U) FY94/FY95 AIRFRAME:

McDonnell Douglas Corp., St. Louis MO
N00019-93-C-0214, FFP
Award: May 6, 1994
Definitized: May 6, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$102.6	\$0.0	4

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$180.3	\$0.0	8	\$180.3	\$180.3

Explanation of Change:

(U) Target Price reflects award of eight (8) AV-8B (remanufacture) aircraft, logistics and engineering procurements awarded to date.

(U) Contract Comments:

Cost and schedule variance reporting is not required for this FFP contract.

(U) FY96 AIRFRAME:

McDonnell Douglas Corp., St. Louis MO
N00019-95-C-0094, FFP
Award: April 22, 1996
Definitized: April 22, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$10.5	\$	4

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$143.3	\$	8	\$143.3	\$143.3

Explanation of Change:

(U) Initial Target Price reflects initial funding for Advanced Acquisition Contract (AAC).

Target Price has been revised to reflect the April 1996 definitization price for eight (8) AV-8B (remanufacture) aircraft logistics and engineering procurements awarded to date.

(U) Contract Comments:

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

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AV-8B Remanufacture, December 31, 1996

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

(U) FY97 AIRFRAME:
 McDonnell Douglas Corp., St. Louis MO
 N00019-96-C-0025, FFP
 Award: September 30, 1996
 Definitized: September 30, 1996

Initial Contract Price
Target Ceiling Qty
 \$10.0 \$ 12

Current Contract Price Estimated Price At Completion
Target Ceiling Qty Contractor Program Manager
 \$198.5 \$ 12 \$198.5 \$198.5

Explanation of Change:

(U) Initial Target Price reflects initial funding awarded for Advanced Acquisition Contract (AAC).

Target Price reflects award of twelve (12) AV-8B (remanufacture) aircraft, logistics and engineering procurements to date.

(U) Contract Comments:

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

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY94-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-03)	<u>Total</u>
RD&E	-	-	-	-	-
Procurement	892.0	320.5	359.5	625.4	2197.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	892.0	320.5	359.5	625.4	2197.4

b. Annual Summary -- AV-8B Remanufacture

Appropriation: 1506 Aircraft Procurement, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY94 Dollars Nonrec</u>	<u>Flyaway FY94 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994	4	6.7	109.7	137.0	141.6
1995	4	2.9	97.6	123.0	129.6
1996	8	9.4	172.1	238.0	256.0
1997	12	20.7	243.5	332.2	364.8
1998	11	11.2	230.5	285.9	320.5
1999	12	0.9	247.4	314.0	359.5

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

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	12	0.8	244.9	283.1	331.0
2001	9	0.8	189.2	243.7	291.2
2002				1.2	1.5
2003				1.4	1.7
Subtotal	72	53.4	1534.9	1959.5	2197.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	72	53.4	1534.9	1959.5	2197.4

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date

	Plan	Actual
RD&E		
Procurement	4	4

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 209.1

(U) Percent Total Program Expended: 9.5%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
There is no antecedent to the AV-8B.

Flight hours per aircraft per month 23.7
 Number of aircraft/squadron 20
 (14 aircraft per squadron with a six aircraft detachment)
 Consumption rate gal/hr 758.4
 POL cost, JP-5, per barrel, FY 92 29.8

Date of estimate: 20 October 1993
 Source: AIR-4.2 FY92 Operating and Support Cost Update Report

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AV-8B Remanufacture, December 31, 1996

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

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per squadron/year	Avg Annual Cost Per squadron/year
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	8.8	0.0
Intermediate Maintenance	14.9	0.0
Depot Maintenance	5.1	0.0
Contractor Support	2.7	0.0
Sustaining Support	0.6	0.0
Indirect Costs	N/A	N/A
Total	32.1	0.0

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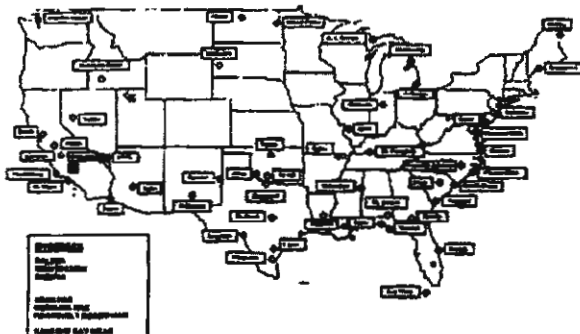
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: NAS

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name):
National Airspace System (NAS)

SAP/HAS

2. DoD Component: USAF

97-0009

Joint Participants:

CONGRESSIONAL

Army, Navy

3. Responsible Office and Telephone Number:

ESC/TGN

GM-15 Edward Panzarella

11 Eglin Street

Assigned: June 23, 1996

Hanscom AFB

DSN 478-4947; COMM (617) 377-4947

Bedford, MA 01731-2120

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0204696N

PE 0305137F

PE 0604633A

PROCUREMENT:

APPN 3080 ICN 24696N (Navy)

APPN 3080 ICN 35137F (Air Force)

APPN 2031 ICN 64633A (Army)

MILCON:

PE 0305137F

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DIRECTORATE FOR THE DEPT. OF DEFENSE
 AND SECURITY REVIEW (OASD-PA)
 DEPARTMENT OF DEFENSE

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5. References:

SAR Baseline (Development Estimate):

AFAE Approved Acquisition Decision Memorandum dated July 24, 1995.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated July 20, 1995.

6. Mission and Description:

The DoD National Airspace System (NAS) program will modernize the DoD radar approach control facilities in parallel with the Federal Aviation Administration (FAA). The DoD NAS program provides systems and facilities compatible/interoperable with the FAA modernization, prevents DoD flight delays and cancellations, continues DoD's access into Special Use Airspace, provides transparent services to military and civil aircraft, replaces aging DoD Air Traffic Control (ATC) systems, and increases flight safety. DoD will upgrade voice, data, and sensor systems as well as facility configurations and operations concepts to provide continued quantity and quality of ATC services to the aviation community. The NAS program also includes the Military Airspace Management System (MAMS) which will schedule and manage special use airspace. MAMS is an automated Special Use Airspace (SUA) scheduling and utilization reporting tool which will enable DoD to more efficiently manage SUA. DoD military ATC and fighting/flying readiness will be maintained.

7. Executive Summary:

During 1993, the following activities occurred: the demonstration of the Military Airspace Management System (MAMS) prototype software at Edwards AFB, CA; the demonstration of a repackaged Federal Aviation Administration (FAA) Common Console into the DoD configuration; release of the MAMS Request for Proposal (RFP); and formal approval of executive interagency agreements for test, procurement and support of FAA Automation Systems.

In 1994, the Chief of Staff of the Air Force (CSAF) approved the updated National Airspace System (NAS) and MAMS Operational Requirements Documents (ORDs); DAC approval of MAMS Milestone II review; award of the MAMS Engineering Management Development (EMD) contract to Computer Based Systems, Inc. (CBSI); OSD approval of the NAS Test and Evaluation Master Plan (TEMP); and the FAA release of the Enhanced Terminal Voice Switch (ETVS) RFP. In Aug 94, the DoD assumed from the FAA, the lead role for the Digital Airport Surveillance Radar (DASR) acquisition.

Then during 1995, the NAS paper AFSARC Milestone II review took place; the Military Airspace Management System (MAMS) contract was terminated with Computer Based Systems, Inc. (CBSI) because of continuous cost and schedule problems; the successful program office negotiations with SM-ALC to utilize their existing Advanced Technology Support Program (ATSP) contract for completion of the MAMS development effort; and the Federal Aviation Administration (FAA) Enhanced Terminal Voice Switch (ETVS) contract award to Denro, Inc.

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7. Executive Summary (Cont'd):

The Federal Aviation Administration (FAA) RFP for the Standard Terminal Automation Replacement System (STARS) was released on 1 Mar 96. The STARS RFP reflects a Non-Development Item (NDI) approach to the automation replacement system which will meet all DoD needs. The FAA awarded the contract to Raytheon Corporation on 16 Sep 96 and since then has conducted a System Requirements Review (SRR) and a System Design Review (SDR). STARS terminals were delivered to the FAA Technical Center in Nov 96 where combined FAA/DoD prototype software testing will begin.

A Program Deviation Report (PDR) was submitted to SAF/AQ on 8 Apr 96 providing notification of the Digital Airport Surveillance Radar (DASR) contract award slip. The DASR contract was awarded to Raytheon Corporation 9 Aug 96, but had been on hold until the 27 Nov 96 GAO decision was reached on contract award protests. The GAO ruled in favor of the Air Force, although the delays caused by the protests may impact the NAS Milestone III schedule. The program office is evaluating the full impact of these delays on the overall program. We notified SAF/AQ that a revised Acquisition Program Baseline (APB) is being developed to incorporate any required changes and would be submitted for SAF/AQ approval upon ESC/CC approval.

The Military Airspace Management System (MAMS) program's internal milestones have been changed to reflect an incremental development of the system. Delivery of partial functionality to selected sites is scheduled for Jul 97. The major milestones have not been changed. The MAMS program is on track for an Aug 98 IOC.

DoD will acquire, to the maximum extent practical, systems on contract or systems to be on contract with the FAA to reduce development costs and prevent duplication. If the DoD does not modernize the DoD Air Traffic Control system, the resulting reduced interoperability between current DoD and FAA facilities will negatively impact DoD flight operations.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

A Program Deviation Report (PDR) was submitted to SAF/AQ on 8 Apr 96 providing notification of the Digital Airport Surveillance Radar (DASR) contract award slip from Dec 95 to Aug 96 caused by the restructure of the RFP. The DASR contract was awarded to Raytheon Corporation 9 Aug 96, but has been on hold until the 27 Nov 96 GAO decision was reached on contract award protests. Although the GAO ruled in favor of the Air Force, the delays caused by the protests may impact the NAS Milestone III schedule. The program office is evaluating the full impact of these delays on the overall program. We notified SAF/AQ that a revised Acquisition Program Baseline (APB) is being developed to incorporate any required changes and would be submitted for SAF/AQ approval upon ESC/CC approval.

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
DoD ATCALS in the NAS			
Milestone 0	NOV 90	NOV 90	NOV 90
Milestone I	JUL 92	JUL 92	JUL 92
Milestone II	JUL 95	JUL 95	JUL 95
Milestone III	JUN 98	JUN 98	JUN 98
IOC (First DoD Site Activation)	APR 00	APR 00	APR 00
RADAR (DASR)			
Contract Award	DEC 95	DEC 95	AUG 96 (Ch-1)
DT&E			
Start	AUG 96	AUG 96	DEC 96 (Ch-2)
Complete	JAN 98	JAN 98	DEC 97 (Ch-2)
LRIP Contract	MAR 98	MAR 98	JAN 98 (Ch-2)

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
LRIP First Delivery	JUN 99	JUN 99	DEC 99 (Ch-2)
IOT&E			
Start	JUN 97	JUN 97	DEC 97 (Ch-2)
Complete	MAR 98	MAR 98	APR 98 (Ch-2)
Full Rate Production Contract Award	MAR 99	MAR 99	JUN 98 (Ch-2)
AUTOMATION (DAAS)			
Production Award Exercise	JUL 98	JUL 98	JUL 98
VOICE (VCSS)			
Program Review	MAY 97	MAY 97	JUN 97 (Ch-2)
MAMS			
Development Contract	JUL 95	JUL 95	NOV 95
DT&E			
Start	OCT 97	OCT 97	OCT 97
Complete	MAR 98	MAR 98	MAR 98
IOT&E			
Start	MAY 98	MAY 98	MAY 98
Complete	AUG 98	AUG 98	AUG 98
Milestone III Review	NOV 98	NOV 98	NOV 98
Full Rate Production Contract Award	NOV 98	NOV 98	NOV 98
IOC (First Delivery)	AUG 98	AUG 98	AUG 98

ATCALS = Air Traffic Control and Landing Systems

DASR = Digital Airport Surveillance Radar

DAAS = DoD Advanced Automation System

VCSS = Voice Communications Switching System

MAMS = Military Airspace Management System

Please note that the Current Estimate of schedule milestones is currently under revision, and a proposed Change 1 to the NAS APB is being developed to incorporate required schedule adjustments caused by the delay from the radar contract award protests. The full impact of these delays to the NAS Milestone III and the overall program schedule will be incorporated into our proposed Change 1 to the NAS APB and forwarded to SAF/AQ for approval upon ESC/CC approval.

b. Current Change Explanations --

(Ch-1) The Radar (DASR) Contract Award date was changed from May 96 to August 96 to reflect the actual award date.

(Ch-2) These dates have been changed to reflect the schedule reported in the December 96 DAES although a proposed Change 1 to the NAS APB is in development and will be presented to SAF/AQ for approval upon ESC/CC approval.

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10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
DOD ATCALS IN THE NAS				
Inter/Intrafacility Data Transfer				
Auto Transfer of Position Track Data	IAW ICD	IAW ICD / IAW ICD	TBD	IAW ICD
Electronic Inter- facility Transfer of Flight Plans	IAW ICD	IAW ICD / IAW ICD	TBD	IAW ICD
Aircraft Tracked Medium (LCF)	900	900 / 250	TBD	900
Radar Subclutter Visibility (dB)	55	55 / 42	TBD	43
Voice Compatibility/ Interoperability	Digital Voice Systems	Digital / Inter- Voice / face to Systems / existing / FAA / Systems	TBD	Digital Voice Systems
MAMS				
Conflict Identification	100% of con- flicts identi- fied; 85% of con- flicts identi- fied <or= 10 (sec)	100% of / 98% of con- / con- flicts / flicts identi- / identi- fied; / fied; 85% of / 85% of con- / con- flicts / flicts identi- / identi- fied / fied <or= 10 / <or= 30 (sec) / (sec)	TBD	100% of con- flicts identi- fied; 85% of con- flicts identi- fied <or= 10 (sec)
Interface with FAA	Trans- mittal Time for 85% of messages between Schedul- er and FAA <or= 5 (min)	Trans- mittal / Trans- mittal / mittal Time / Time for 85% / for 85% of / of messages/ messages between / between Schedul- / Schedul- er and / er and FAA <or= / FAA <or= 5 (min) / 10 / (min)	TBD	Trans- mittal Time for 85% of messages between schedul- er and FAA <or= 5 (min)

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10a. Performance Characteristics (Cont'd):

Reporting	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
	Process- ing Time of Util- ization Data Requests <or= 1 (min); Total Manual and Automat- ic Report Genera- tion <or= 10 (min)	Process-/ Process- ing Time/ ing Time of Util-/ of Util- ization / ization Data / Data Requests/ Requests <or= 1 / <or= 10 (min); / (min); Total / Total Manual / Manual and / and Automat-/ Automat- ic / ic Report / Report Genera- / Genera- tion / tion <or= 10 / <or= 30 (min) / (min)	TBD	Process- ing Time of Util- ization Data Requests <or= 1 (min); Total Manual and Automat- ic Report Genera- tion <or= 10 (min)

ICD - Interface Control Document

b. Current Change Explanations -- None.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	96.6	96.6	100.0
Procurement	473.7	473.7	490.0
Flyaway	(302.8)		(295.5)
Other Wpn Systems Cost	(144.7)		(164.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.2)		(29.9)
Construction (MILCON)	3.0	3.0	1.6
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	573.3	573.3	591.6
Escalation	217.8	217.8	190.9
Development (RDT&E)	(16.4)	(16.4)	(15.1)
Procurement	(200.0)	(200.0)	(175.3)
Construction (MILCON)	(1.4)	(1.4)	(0.5)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	791.1	791.1	782.5
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	53	53	53
Total	53	53	53

The unit of measure of this program represents National Airspace System (NAS) operational sites.

SAF/AQ approved LRIP of up to 8 Digital Airport Surveillance Radars (DASR), for the radar portion of NAS only.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUL 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	591.6	573.3	
(2) Quantity	53	53	
(3) Unit Cost	11.162	10.817	+3.19
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	490.0	473.7	
(2) Quantity	53	53	
(3) Unit Cost	9.245	8.938	+3.43

Please note that because of significant variations of the many complex and varied configurations at each NAS site, Average Unit Procurement Cost (AUPC) information does not provide a useful measure of unit cost. AUPC provides only notional data.

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	113.0	673.7	4.4	791.1
Previous Changes:				
Economic	-6.0	-43.9	-0.3	-50.2
Quantity	-	-	-	-
Schedule	-	+19.8	-	+19.8
Engineering	-	-	-	-
Estimating	+10.6	+8.9	+0.7	+20.2
Other	-	-	-	-
Support	-	+11.3	-	+11.3
Subtotal	+4.6	-3.9	+0.4	+1.1
Current Changes:				
Economic	+0.2	-2.6	+0.2	-2.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+4.7	-	+4.7
Estimating	-2.7	-26.1	-2.9	-31.7
Other	-	-	-	-
Support	-	+19.5	-	+19.5
Subtotal	-2.5	-4.5	-2.7	-9.7
Total Changes	+2.1	-8.4	-2.3	-8.6
Current Estimate	115.1	665.3	2.1	782.5

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

Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	96.6	473.7	3.0	573.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+12.4	-	+12.4
Engineering	-	-	-	-
Estimating	+5.6	-0.1	+0.7	+6.2
Other	-	-	-	-
Support	-	+8.9	-	+8.9
Subtotal	+5.6	+21.2	+0.7	+27.5
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+2.9	-	+2.9
Estimating	-2.2	-22.5	-2.1	-26.8
Other	-	-	-	-
Support	-	+14.7	-	+14.7
Subtotal	-2.2	-4.9	-2.1	-9.2
Total Changes	+3.4	+16.3	-1.4	+18.3
Current Estimate	100.0	490.0	1.6	591.6

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Economic adjustment for negative program change. (Economic)	N/A	+0.2
	Funding reductions resulting from the following reprogramming actions: FFRDC, non-FFRDC, SBIR and general actions. (Estimating)	-2.2	-2.7
	RDT&E Subtotal	-2.2	-2.5
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-2.8
	Economic adjustment for negative program change. (Economic)	N/A	+0.2
	Revised estimate to reflect change in automation equipment configuration (Engineering)	+2.9	+4.7
	Reclassification of site preparation costs from flyaway to other weapon system costs. (Estimating)	-21.5	-28.7

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reclassification of site preparation costs from flyaway to other weapon system costs. (Support)	+21.5	+28.7
Refinement of estimate to include realignment of radar procurement to match proposed contract terms and conditions (Estimating)	-1.0	+2.6
Refinement of DoD initial spares requirements. (Support)	+0.1	+0.5
Refined estimate to reflect current maintenance concepts. (Support)	-6.9	-9.7
Procurement Subtotal	<u>-4.9</u>	<u>-4.5</u>
(3) <u>MILCON</u>		
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Reprogramming action that removed 1998 funding of 3.2M and increased 2001 funding by .5M. (Estimating)	-2.1	-2.9
MILCON Subtotal	<u>-2.1</u>	<u>-2.7</u>

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
14.93	-0.99	--	+0.37	+0.09	-0.22	--	+0.58	-0.17	14.76

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
12.71	-0.88	--	+0.37	+0.09	-0.32	--	+0.58	-0.16	12.55

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14c. Unit Cost and Other History (Cont'd):

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JUL 92	JUL 92	N/A	JUL 92
Milestone II	JAN 94	JUL 95	N/A	JUL 95
Milestone III	MAR 97	JUN 98	N/A	JUN 98
FUE/IOC	OCT 99	APR 00	N/A	APR 00
Total Cost	122.6	791.1	N/A	782.5
Total Quantity	N/A	53	N/A	53
Prog Acq Unit Cost	N/A	14.93	N/A	14.76

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

The NAS program currently has no large active contracts.

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

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

<u>Appropriation</u>	<u>Prior Years (FY90-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-06)</u>	<u>Total</u>
RDT&E	99.5	12.8	1.9	0.9	115.1
Procurement	1.7	24.1	95.1	544.4	665.3
MILCON	-	-	-	2.1	2.1
O&M	-	-	-	-	-
Total	101.2	36.9	97.0	547.4	782.5

b. Annual Summary -- NAS

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY90 Dollars Nonrec</u>	<u>Flyaway FY90 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1990				3.9	4.0
Subtotal				3.9	4.0

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

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				2.9	3.0
Subtotal				2.9	3.0

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				3.9	4.0
1991				9.3	9.9
1992				3.8	4.2
1993				6.0	6.7
1994				12.4	14.2
1995				25.4	29.5
1996				10.2	12.1
1997				9.8	11.9
1998				10.3	12.8
1999				1.5	1.9
2000				0.2	0.3
2001				0.2	0.2
2002				0.1	0.2
2003				0.1	0.2
Subtotal				93.2	108.1

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	3		1.7	1.7	2.2
1999	6		15.4	22.4	28.9
2000	3		18.1	28.6	37.7
2001	4		19.0	28.6	38.5
2002	1		32.4	45.1	62.2
2003			10.4	28.4	40.1
2004			9.4	11.0	16.0
Subtotal	17		106.4	165.8	225.6

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

Appropriation: 2031 Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				1.4	1.7
1998	3		1.3	4.2	5.3
1999	1		1.2	9.0	11.6
2000			2.7	11.9	15.7
2001	3		3.8	13.1	17.6
2002	5		5.5	15.9	22.0
2003			5.5	7.1	10.0
2004			0.4	1.0	1.4
Subtotal	12		20.4	63.6	85.3

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	3		11.1	13.1	16.6
1999	6		24.8	42.3	54.6
2000	3		27.0	42.7	56.3
2001	3		28.2	43.7	58.9
2002	3		32.1	48.3	66.6
2003	3		23.6	36.4	51.5
2004	2		19.1	27.3	39.6
2005	1		2.8	5.0	7.5
2006				1.8	2.8
Subtotal	24		168.7	260.6	354.4

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998					
1999					
2000					
2001				1.6	2.1
Subtotal				1.6	2.1

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	17		106.4	169.7	229.6
Army	12		20.4	66.5	88.3

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
USAF	24		168.7	355.4	464.6
Grand Total	53		295.5	591.6	782.5

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 69

Percent Total Program Expended: 8.8%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The Operating and Support (O&S) cost estimate is based on analysis performed in preparation for the July 1995 MS II decision. The estimate assumes a 20 year life from year FY00 to FY19.

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per NAS Site	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	1.4	0.0
Unit Level Consumption	0.6	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	0.3	0.0
Sustaining Support	0.1	0.0
Indirect Costs	0.4	0.0
Total	2.8	0.0

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

PROGRAM: LONGBOW HELLFIRE

AS OF DATE: December 31, 1996

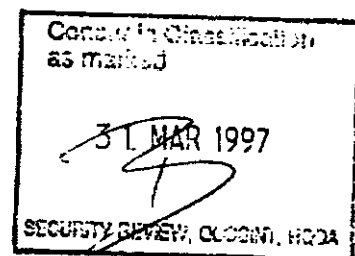
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LONGBOW
HELLFIRE

1. (U) Designation and Nomenclature (Popular Name): LONGBOW HELLFIRE - subsystem of the AH-64 APACHE Weapon System
2. (U) DoD Component: Army
3. (U) Responsible Office and Telephone Number:
 PROJECT MANAGER COL RICHARD T. SAVAGE
 AIR-TO-GROUND MISSILE SYSTEMS Assigned: July 3, 1996
 ATTN: SFAE-MSL-HD DSN 746-8408; COMM (205) 876-8408
 RSA, AL 35898-5610
4. (U) Program Elements/Procurement Line Items:
 RDT&E:
 (U) PE 23802 (Shared) Project D785
 (U) PE 64816 (Shared) Project DC13
 PROCUREMENT:
 (U) APPN 2032 ICN C70300 (Army)



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~~Downgrade Instructions: [redacted] Security Classification Guide, 20 Dec 95~~
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5. (U) References:

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated March 8, 1991.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated November 27, 1995.

6. (U) Mission and Description:

(U) HELLFIRE is an air-to-ground missile system designed to defeat individual hardpoint targets and minimize exposure of the delivery vehicle to enemy fire. The missile configuration has the capability for modular guidance section replacements. A version of the missile utilizing laser guidance, Laser HELLFIRE, is presently in production and is a separate program. Longbow HELLFIRE (a version utilizing a radio frequency guidance section) is in low-rate initial production. Longbow HELLFIRE and Laser HELLFIRE are complementary and neither missile replaces another missile system in the air-to-ground role.

Longbow HELLFIRE and Laser HELLFIRE will be employed on the AH-64D Longbow Apache helicopter. Longbow HELLFIRE will provide the capability to conduct battle both day and night in adverse weather and with battlefield obscurants present. Longbow also offers a fire and forget capability which complements the semi-active Laser HELLFIRE missile. The Longbow HELLFIRE Missile contains a radio frequency guidance section which will provide a lock-on before launch (LOBL) or lock-on after launch (LOAL) capability, depending on target range and movement parameters. Longbow will not change the AH-64 mission or role, but will provide for increased mission effectiveness by enhancing lethality and survivability. It is envisioned that Longbow HELLFIRE will also be used on the Comanche as a pre-planned product improvement item.

7. (U) Executive Summary:

(U) In 1981, the U.S. Army Aviation Applied Technology Directorate, Fort Eustis, Virginia, conducted competition and awarded parallel competitive technology demonstration contracts to Martin Marietta Corporation (MMC) and Westinghouse Electric Corporation (WEC) for a fire control radar to be integrated and tested on the AH-64 Apache. In late 1981, after a series of study efforts, a classified program was initiated for a millimeter wave radar seeker for the HELLFIRE Modular Missile System which, in conjunction with the fire control radar, yielded a total systems approach for Apache. In 1982, WEC and MMC were again awarded parallel competitive contracts for the first phase of this program named the Critical Technology Demonstration (CTD). During the three-plus years of the CTD program, both MMC and WEC demonstrated that the technology was in hand for further systems development. As a result of a Government In-Process Review in Aug 85, a contract was awarded in Nov 85 to MMC and WEC, as a joint venture (JV), for preliminary design of the tactical Longbow System. This was followed in Aug 86 by the award of a Proof of Principle demonstration contract to the JV. An Initial Design Phase contract was awarded to the JV in Sep 89. Proof of Principal of the Longbow missile was accomplished 11 Apr 90. The Defense Acquisition Board (DAB) granted approval for engineering and manufacturing development (EMD) of the Longbow Missile 5 Dec 90, and a letter contract for EMD of the Longbow missile was awarded

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LONGBOW HELLFIRE, December 31, 1996

7. (U) Executive Summary (Cont'd):

26 Dec 90. The letter contract was definitized 7 May 91. A Special Program Review (SPR) to assess the Longbow HELLFIRE Program and define funding strategies to support Longbow Apache, fire control radar and missile programs was held in Aug 92. To better align the Longbow HELLFIRE program with the Longbow Apache program, initiation of production was delayed by one year and the procurement program was stretched. The Conventional Systems Committee review for Longbow long lead items and initial production facilitization was held 5 Oct 94. Approval to proceed with long lead of the HELLFIRE missile was withheld until cost reduction efforts were evaluated and approved. The Longbow HELLFIRE Cost Reduction Plan was briefed to the Defense Acquisition Executive on 1 Dec 94. The plan was approved and funding was released for long lead procurement and execution of the cost reduction plan. The contract for long lead procurement was awarded 23 Dec 94 by definitization of option one under the engineering and manufacturing development contract. On 11 May 95, the final development flight test of the Longbow HELLFIRE Missile was conducted. This flight successfully met a cost effective combination of system qualification and live fire test objectives. This firing successfully concluded the development flight test program. Live fire tests were successfully completed 27 Jul 95. On 13 Oct 95 the Defense Acquisition Executive granted approval for Longbow HELLFIRE to enter low-rate initial production (LRIP) and delegated authority to the Army to make the full-rate production (FRP) decision. The Longbow HELLFIRE LRIP I option was definitized with available Continuing Resolution Authority funding 14 Dec 95. The remaining portion of this option was exercised 31 Jan 96. Qualification testing of Block I changes for the Cost Reduction Program (CRP) is in process to support FRP I production cut-in. Final design reviews for Block II changes for the CRP were completed Jan 97. The LRIP II contract was awarded to the Longbow Limited Liability Company 7 Feb 97. Savings from CRP hardware initiatives early cut-in for FY 97, were used to procure an additional 51 missiles in FY 97.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I In-Process Review	AUG 85	AUG 85	AUG 85
Milestone IB ASARC	JUL 89	JUL 89	JUL 89
Milestone II DAB	DEC 90	DEC 90	DEC 90
FSD Contract Award	DEC 90	DEC 90	DEC 90
Component Qual Test			
Start	AUG 93	AUG 93	AUG 93
Complete	MAY 95	MAY 95	MAY 95
System Qual Test			
Start	JUL 94	JUL 94	JUL 94
Complete	MAY 95	MAY 95	MAY 95
Milestone III (DAB)	OCT 95	OCT 95	OCT 95
Low-Rate Initial Production Contract	DEC 95	DEC 95	DEC 95
Award			
First Production Delivery	MAR 97	MAR 97	JUL 97 (Ch-1)
Full-Rate Production Contract Award	DEC 97	DEC 97	DEC 97
Authorization FY 99 Multiyear Contract	JAN 98	JAN 98	JAN 98 (Ch-2)
First Unit Equipped (FUE)	JUL 98	JUL 98	JUL 98 (Ch-3)

(U) FUE is based on a battalion of 24 aircraft (3 companies with 8 aircraft each) with a minimum of 384 missiles at the report date.

b. (U) Current Change Explanations --

(Ch-1) First Production Delivery was changed from Mar 97 to Jul 97 due to a four month delay in the completion of First Article Test.

(Ch-2) Authorization FY 99 Multiyear Contract was changed from Jan 97 to Jan 98 to reflect the actual date authorization would be received.

(Ch-3) First Unit Equipped (FUE) was changed from Oct 97 to Jul 98 to reflect an Aviation Restructure Initiative which changed the definition of FUE to a battalion of 24 aircraft.

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Independent Function	Yes	Yes / Yes	YES	YES
After Launch	<input type="checkbox"/>			

(b)(1)

(U) Demonstrated data source is the 42 missile radar aided guided development test firing program.

Performance characteristics for maximum range, missile reliability, probability of target acquisition given handover, probability of hit, and missile weight have been met and are no longer tracked.

10b. ~~10b~~ Performance Characteristics (Cont'd):

(b)(1)

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	411.0	411.0	461.0
Procurement	1941.0	1941.0	1940.1
Flyaway	(1932.9)		(1928.1)
Other Wpn Sys Cost	(2.8)		(5.7)
Peculiar Support	(5.3)		(6.3)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	2352.0	2352.0	2401.1
Escalation	283.6	283.6	211.9
Development (RDT&E)	(-24.4)	(-24.4)	(-12.3)
Procurement	(308.0)	(308.0)	(224.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2635.6	2635.6	2613.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	13311	13311	13003
Total	13311	13311	13003

Note: Excludes 70 RDTE prototypes from the SAR Baseline and 70 from the Current Estimate that are not considered fully configured.

(U) (1) Unit of measure is one missile.

(2) LRIP quantities were established at the Milestone II DAB in Dec 90. In order to align the missile deliveries with the aircraft fielding schedule, during a Special Program Review held in Aug 92, the LRIP quantities were increased to 83 missiles over the 10% limit. From the Dec 93 SAR to the Dec 94 SAR the LRIP I quantity changed from 364 to 352 and the LRIP II quantity changed from 1050 to 1056. From the Dec 94 SAR the LRIP II quantity has changed from 1056 to 1005. From the Dec 95 SAR the LRIP II quantity was increased from 1005 to 1056.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (Nov 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	2401.1	2352.0	
(2) Quantity	13003	13311	
(3) Unit Cost	0.185	0.177	+4.52
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	1940.1	1941.0	
(2) Quantity	13003	13311	
(3) Unit Cost	0.149	0.146	+2.05

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	386.6	2249.0	-	2635.6
Previous Changes:				
Economic	+5.5	-82.0	-	-76.5
Quantity	-	-13.1	-	-13.1
Schedule	-	-	-	-
Engineering	+56.8	-	-	+56.8
Estimating	-	+0.7	-	+0.7
Other	-	-	-	-
Support	-	+3.4	-	+3.4
Subtotal	+62.3	-91.0	-	-28.7
Current Changes:				
Economic	-0.4	-4.0	-	-4.4
Quantity	-	-29.9	-	-29.9
Schedule	+0.2	+2.7	-	+2.9
Engineering	-	-7.7	-	-7.7
Estimating	-	+44.6	-	+44.6
Other	-	-	-	-
Support	-	+0.6	-	+0.6
Subtotal	-0.2	+6.3	-	+6.1
Total Changes	+62.1	-84.7	-	-22.6
Current Estimate	448.7	2164.3	-	2613.0

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Longbow Hellfire, December 31, 1996

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

(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Production Estimate	411.0	1941.0	-	2352.0
Previous Changes:				
Quantity	-	-9.8	-	-9.8
Schedule	-	-	-	-
Engineering	+51.1	-	-	+51.1
Estimating	-	-3.9	-	-3.9
Other	-	-	-	-
Support	-	+3.3	-	+3.3
Subtotal	+51.1	-10.4	-	+40.7
Current Changes:				
Economic	-	-	-	-
Quantity	-	-23.1	-	-23.1
Schedule	-1.1	-	-	-1.1
Engineering	-	-7.1	-	-7.1
Estimating	-	+39.1	-	+39.1
Other	-	-	-	-
Support	-	+0.6	-	+0.6
Subtotal	-1.1	+9.5	-	+8.4
Total Changes	+50.0	-0.9	-	+49.1
Current Estimate	461.0	1940.1	-	2401.1

(U) Changes between the December 1995 SAR current estimate and the current Acquisition Program Baseline/new Production SAR Baseline are as follows:

		Base-Year	Then-Year
RDTE			
Economic:	Revised escalation indices	-	+ 5.5
Engineering:	Preplanned product improvement for Home on Jam and Counter Active Protection Capabilities	+51.1	+56.8
Procurement			
Economic:	Revised escalation indices	-	-82.0
Quantity:	Reduction of 51 missiles from 13311 to 13260	- 9.8	-13.1
Estimating:	Change in methodology for estimating in-house cost	- 3.9	+ .7
Support:	Increased unit cost for deicing domes, and increase for data	+ 3.3	+3.4

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1) RDTE			
	Revised escalation indices (Economic)	N/A	-0.4
	Adjustment for current and prior inflation (Economic)	N/A	0.0

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Longbow Hellfire, December 31, 1996

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Overestimated cost of inhouse support, as a result of starting product improvement in FY99 vs FY98 (Schedule)	-1.1	+0.2
RDT&E Subtotal	-1.1	-0.2
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-6.1
Economic adjustment for negative program change (Economic)	N/A	+2.1
Total cost associated with decrease of 257 missiles	-24.2	-31.2
Decrease of 257 units from 13260 to 13003 missiles (Quantity)	-23.1	-29.9
Allocation to estimating variance due to quantity change (Estimating)	-1.1	-1.3
Acceleration/stretch out of annual procurement buy profile (Schedule)	0.0	+2.7
Savings from Cost Reduction Program (CRP) hardware initiatives early cut-in for FY97, were used to procure an additional 51 missiles in FY97 (Engineering)	-7.1	-7.7
Change in estimating methodology to reflect changes in quantity and cost for economic order quantities for multiyear procurement FY99-FY03 (Estimating)	+39.2	+44.8
Adjustment for current and prior inflation (Estimating)	+1.0	+1.1
Revised cost estimates for data and environmental covers due to change in methodology (Support)	+0.6	+0.6
Procurement Subtotal	+9.5	+6.3

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Longbow Hellfire, December 31, 1996

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.20	-0.01	+0.01	--	--	--	--	--	--	0.20

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.17	-0.01	+0.01	--	--	--	--	--	--	0.17

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	AUG 85	AUG 85	AUG 85
Milestone II	N/A	DEC 90	DEC 90	DEC 90
Milestone III	N/A	OCT 95	OCT 95	OCT 95
FUE/IOC	N/A	APR 97	JUL 98	JUL 98
Total Cost	N/A	2190.3	2635.6	2613
Total Quantity	N/A	10896	13311	13003
Prog Acq Unit Cost	N/A	0.2	0.2	0.2

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

a. Procurement --		Initial Contract Price		
(U) Longbow HELLFIRE:		Target	Ceiling	Qty
Longbow LLC, Orlando, FL				
DAAH01-91-C-0057, FFP		\$183.1	N/A	352
Award: December 23, 1994				
Definitized: December 23, 1994				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$181.9	N/A	352	\$181.9	\$181.9

Explanation of Change:

None.

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Longbow Hellfire, December 31, 1996

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

(U) <u>Longbow Hellfire LRIP I:</u>	Initial Contract Price		
Longbow LLC, Orlando, FL	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-91-C-0057, FFP	\$183.1	N/A	352
Award: December 23, 1994			
Definitized: December 23, 1997			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$181.9	N/A	352	\$181.9	\$181.9

Explanation of Change:

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

(U) <u>Longbow Hellfire LRIP II:</u>	Initial Contract Price		
Longbow LLC, Orlando, FL	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-97-C-0082, FFP	\$233.7	N/A	1056
Award: February 7, 1997			
Definitized: February 7, 1997			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$233.7	N/A	1056	\$233.7	\$233.7

Explanation of Change:

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

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY91-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-05)	<u>Total</u>
RDT&E	386.2	-	15.8	46.7	448.7
Procurement	475.7	264.7	328.5	1095.4	2164.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	861.9	264.7	344.3	1142.1	2613.0

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Longbow Hellfire, December 31, 1996

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

b. Annual Summary -- Longbow Hellfire

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991			66.9	66.9	61.2
1992			107.6	107.6	100.8
1993			85.7	85.7	82.2
1994			108.7	108.7	106.2
1995			35.9	35.9	35.8
1996					
1997					
1998					
1999			14.6	14.6	15.8
2000			18.3	18.3	20.2
2001			15.1	15.1	17.0
2002			8.2	8.2	9.5
Subtotal			461.0	461.0	448.7

(U) Expenditures and obligations reflect program office records as of 16 Feb 95.

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995		25.1		40.5	41.2
1996	352	27.4	166.2	179.4	185.2
1997	1056	19.7	215.1	236.2	249.3
1998	1465	7.3	236.5	245.3	264.7
1999	2000		296.4	298.1	328.5
2000	2030		253.7	255.3	287.3
2001	2020		258.0	259.6	298.6
2002	2020		210.6	212.2	249.9
2003	2060	7.5	204.6	174.5	210.7
2004				21.1	26.2
2005				17.9	22.7
Subtotal	13003	87.0	1841.1	1940.1	2164.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	13003	87.0	2302.1	2401.1	2613.0

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Longbow HELLFIRE, December 31, 1996

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	70	70
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 474.7

(U) Percent Total Program Expended: 18.2%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
Operating and support costs for Longbow HELLFIRE are costed under the philosophy of a "certified round" concept. The sustainment phase costs are for FY 97 through FY 25. The following efforts are considered applicable:

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

There is no antecedent system.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Missile	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	0.0
Intermediate Maintenance	N/A	0.0
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	0.1	N/A
Indirect Costs	N/A	N/A
Total	0.1	0.0

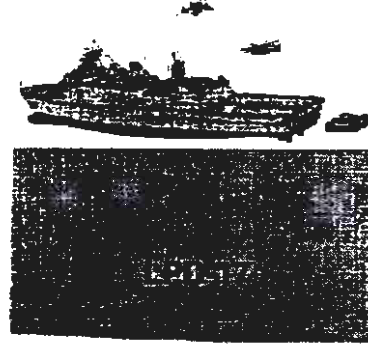
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: LPD 17 Class

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): LPD 17 Class Amphibious Transport Dock Ship

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

LPD 17 AMPHIBIOUS TRANSPORT DOCK	CAPT M.A. GAUTHIER
SHIP PROGRAM OFFICE (PMS317)	Assigned: October 17, 1994
NAVAL SEA SYSTEMS COMMAND	DSN N/A; COMM (703) 418-6074
ARLINGTON, VA 22242-5160	

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

RDT&E:

- (U) PE 0603564N (Shared) Project S0408 (Shared)
- (U) PE 0604567N Project S1803 (Shared), S2198 (Shared)
- (U) PE 0604311N Project S2283

PROCUREMENT:

- (U) APPN 1611 ICN 303600 (Navy)

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Declassification Date: 2025-03-24**

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LPD 17 Class, December 31, 1996

5. (U) References:

SAR Baseline (Planning Estimate):

(U) Milestone I Acquisition Decision Memorandum dated 19 Jan 93 and FY 1995 President's Budget dated 7 Feb 94.

Approved Program / Development Estimate (DE):

(U) DAE Approved Acquisition Program Baseline (APB) dated June 17, 1996.

6. (U) Mission and Description:

(U) The LPD 17 Class Amphibious Transport Dock Ship will be the functional replacement for the LPD 4, LSD 36, LKA 113, and LST 1179 Classes of Amphibious Ships in embarking, transporting and landing elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods to conduct the primary amphibious warfare mission. The LPD 17 Class is required to fill the projected lift shortfall created by the retirement of the above ships.

7. (U) Executive Summary:

(U) The Joint Requirements Oversight Council (JROC) validated the LPD 17 Class Mission Need Statement (MNS) on 18 September 1990. The Milestone 0 DAB was held on 1 November 1990 and feasibility studies initiated in February 1991. The Milestone I DAB was held on 11 January 1993 and on 19 January 1993, the Under Secretary of Defense for Acquisition, (USD(A)), signed the Acquisition Decision Memorandum (ADM) approving the Navy recommended ship alternative and authorizing the program to enter Phase I, Preliminary/Contract Design. The JROC validated the LPD 17 Key Performance Parameters in May 1995 and May 1996. The baseline ship includes the cooperative engagement capability and sufficient own-ship self-defense capability against sea-skimming anti-ship cruise missiles addressed by the FY94 and FY95 DoD Appropriation Act reports.

The program received Milestone II approval by OSD(A&T) on 17 June 1996 to enter Phase II, Engineering and Manufacturing Development and to produce the first three ships. The lead ship contract (with options for up to two follow ships) for detail design, ship systems integration, construction, testing, logistics and life cycle support was awarded to a team lead by Avondale Industries on 17 December 1996. A protest was filed by the losing team to GAO on 26 December 1996 resulting in a stop work order.

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LPD 17 Class, December 31, 1996

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

As a result of an accounting transfer of Test and Evaluation requirements from procurement (SCN) to RDT&E funds, an RDT&E cost breach of the Milestone II approved APB occurred. A program deviation report and revised APB are currently in the approval cycle.

9. (U) Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program/DE	Current Estimate	
	JAN 93	JAN 93	JAN 93	
Milestone I				
DT&E (DT-I)				
Start	MAR 93	MAR 93	MAR 93	
Complete	MAR 95	FEB 96	FEB 96	(Ch-1)
Program Status Review	MAR 94	N/A	N/A	(Ch-2)
OT&E (OT-I)				
Start	MAY 94	N/A	NOV 94	
Complete	NOV 94	N/A	JAN 95	
OT&E (OT-IA)				
Start	N/A	JAN 95	JAN 95	(Ch-3)
Complete	N/A	MAR 95	MAR 95	(Ch-3)
OT&E (OT-IB)				
Start	N/A	FEB 96	FEB 96	(Ch-3)
Complete	N/A	APR 96	APR 96	(Ch-3)
Milestone II	JUL 95	JUN 96	JUN 96	
Lead Ship Award	MAR 96	AUG 96	DEC 96	(Ch-4)
DT&E (DT-IIA)				
Start	APR 96	SEP 96	JAN 97	(Ch-5)
Complete	DEC 97	AUG 98	DEC 98	(Ch-5)

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

	<u>Planning Estimate (SAR)</u>	<u>Approved Program/DE</u>	<u>Current Estimate</u>	
OT&E (OT-II)				
Start	APR 96	N/A	N/A	(Ch-3)
Complete	DEC 97	N/A	N/A	(Ch-3)
Program Review	JAN 98	N/A	TBD	(Ch-3)
DT&E (DT-IIB)				
Start	FEB 98	SEP 98	JAN 99	(Ch-5)
Complete	JAN 02	JUN 02	SEP 02	(Ch-5)
OT&E (OT-IC)				
Start	N/A	SEP 98	JAN 99	(Ch-5)
Complete	N/A	MAR 99	JUL 99	(Ch-5)
Lead Ship Delivery	JAN 02	JUN 02	SEP 02	(Ch-5)
DT&E (DT-IIC)				
Start	FEB 02	JUL 02	OCT 02	(Ch-5)
Complete	MAY 03	JAN 04	MAR 04	(Ch-5)
OT&E (IIA)				
Start	N/A	JUN 03	SEP 03	(Ch-5)
Complete	N/A	SEP 03	DEC 03	(Ch-5)

(b)(1)

b. (U) Current Change Explanations --

(Ch-1):

DT-I Completion Current Estimate (CE) corrected previous reporting error.

(Ch-2):

Program Status Review CE revised to N/A since the review was no longer required.

(Ch-3):

Various Milestone events and dates revised to reflect Milestone II approved schedule.

(Ch-4):

Lead Ship Award CE reflects delay associated with longer than planned solicitation process primarily as a result of the introduction of acquisition reform initiatives.

(Ch-5):

Remaining CE's revised to reflect both the Milestone II approved schedule and subsequent changes as a result of Lead Ship Award delay.

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10. (U) Performance Characteristics:

a. Performance --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program/DE Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>	
Mobility					
(b)(1)					
Amphibious Warfare					
Embarkation (NET)					
Troops	720	750 / 650	TBD	720	
Vehicles (Sq Ft) (k)	25	25 / 22	TBD	25	
Cargo (Cubic Feet) (k)	25	25 / 22	TBD	36	(Ch-1)
Bulk Fuel (Gals) (k)	300	325 / 250	TBD	325	(Ch-1)
LCAC	2	2 / 1(+1)	TBD	2	
VTOL Land/Launch Spots (CH-46 or CH-53E or MV-22)	4/2/N/A	4/3/2 / 4/2/2	TBD	4/2/2	(Ch-2)
VTOL Maint/Storage (CH-46 or CH-53E or MV-22)	2/1/N/A	3/1/1 / 2/1/1	TBD	2/1/1	(Ch-2)
Ship To Shore					
Capability (LCAC)					
Sustained Operations (reload 6 LCACs) (mins)	285	220 / 285	TBD	285	
Well Deck Cycle Time (min/cycle)	35	N/A / N/A	TBD	N/A	(Ch-2)
Vertical Assault					
Capability					
External Load (min)	30	N/A / N/A	TBD	N/A	(Ch-2)
Internal Load (min)	25	N/A / N/A	TBD	N/A	(Ch-2)
Reliability	0.86	N/A / N/A	TBD	N/A	(Ch-2)
Operational Availability (Ao)	0.80	.90 / .80	TBD	.80	
Maintainability	TBD	N/A / N/A	TBD	N/A	(Ch-2)
Survivability					
Probability of Ship Loss Less than:	N/A	N/A / N/A	TBD		

(b)(1)

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LPD 17 Class, December 31, 1996

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

	Planning Estimate (SAR)	Approved Program; DE Obj/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

b. ⁴(C) Current Change Explanations --
(Ch-1):

Cargo and Bulk Fuel Current Estimates (CEs) increase to 36k Cubic Feet and 325k Gallons as a result of design refinements.

(Ch-2):

All other CE changes reflect Milestone II JROC Key Performance Parameters and Milestone II APB threshold values.

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LPD 17 Class, December 31, 1996

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

a. (U) Cost --	Planning Estimate (SAR)	Approved Program, DE	Current Estimate
Development (RDT&E)	61.1	78.7	87.2
Procurement	0.0	8939.4	8889.1
SAILWAY			(8889.1)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	61.1	9018.1	8976.3
Escalation	-2.0	1743.7	1715.4
Development (RDT&E)	(-2.0)	(-0.9)	(0.7)
Procurement	(0.0)	(1744.6)	(1714.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	59.1	10761.8	10691.7
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	12	12
Total	0	12	12

(U) The Milestone II approved LRIP is 12 ships. Milestone II approval was granted to produce the first three ships. An OIPT Program Review will be conducted prior to authorization of the remaining ships.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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LPD 17 Class, December 31, 1996

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUN 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	8976.3	9018.1	
(2) Quantity	12	12	
(3) Unit Cost	748.025	751.508	-0.46
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	8889.1	8939.4	
(2) Quantity	12	12	
(3) Unit Cost	740.758	744.950	-0.56

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	59.1	-	-	59.1
Previous Changes:				
Economic	+0.1	-	-	+0.1
Quantity	-	-	-	-
Schedule	+2.4	-	-	+2.4
Engineering	+3.5	-	-	+3.5
Estimating	+7.8	-	-	+7.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+13.8	-	-	+13.8
Current Changes:				
Economic	-0.2	-57.7	-	-57.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+63.4	-	+63.4
Estimating	+15.2	-85.9	-	-70.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+15.0	-80.2	-	-65.2
Total Changes	+28.8	-80.2	-	-51.4
Adjustments	-	+10684.0	-	+10684.0
Current Estimate	87.9	10603.8	-	10691.7

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LPD 17 Class, December 31, 1996

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

(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Planning Estimate	61.1	-	-	61.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	+1.7	-	-	+1.7
Engineering	+3.5	-	-	+3.5
Estimating	+7.6	-	-	+7.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+12.8	-	-	+12.8
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+55.7	-	+55.7
Estimating	+13.3	-106.0	-	-92.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+13.3	-50.3	-	-37.0
Total Changes	+26.1	-50.3	-	-24.2
Adjustments	-	+8939.4	-	+8939.4
Current Estimate	87.2	8889.1	-	8976.3

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDTE</u>		
	Revised escalation indices. (Economic)	N/A	-0.2
	Accounting transfer of Test Requirements (Estimating)	+13.3	+15.6
	Contract Dsgn Completion & Total Ship Integration Development (Estimating)	+3.8	+3.8
	Correction of Dec 95 SAR outyear President's Budget (PB) controls (Estimating)	-3.1	-3.6
	Pricing Adjustments (Estimating)	-0.7	-0.6
	RDTE Subtotal	+13.3	+15.0
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-57.7
	Ship Characteristics Improvement Panel (SCIP) lead ship upgrade incorporation & Additional Full-Up Combat System (plus VLS/ESSM) associated with profile change (Engineering)	+55.7	+63.4
	Accounting transfer of Test Requirements (Estimating)	-13.5	-14.4

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LPD 17 Class, December 31, 1996

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment for Prior year inflation offset (Estimating)	+4.1	+4.4
Pricing Adjustments (Estimating)	-77.6	-55.8
Outfitting & Post Delivery Pricing Adjustments (Estimating)	-19.0	-20.1
Procurement Subtotal	-50.3	-80.2

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Plan Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	890.98

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Plan Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	883.65

(b)(1)

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LPD 17 Class, December 31, 1996

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

a. Procurement --

(U) LPD 17:	Initial Contract Price		
AVONDALE IND. INC., NEW ORLEANS LA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-97-C-2202, CPAF	\$641.4	N/A	1
Award: December 17, 1996			
Definitized: N/A			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$641.4	N/A	1	\$641.4	\$646.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

(U) This is a new contract. There is no cost or schedule variance information available at this time, will provide updated information in next SAR.

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

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

<u>Appropriation</u>	<u>Prior Years</u> (FY90-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-05)	<u>Total</u>
RDT&E	69.0	0.5	1.7	16.7	87.9
Procurement	1002.1	-	812.5	8789.2	10603.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1071.1	0.5	814.2	8805.9	10691.7

b. Annual Summary -- LPD 17 CLASS

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				0.6	0.5
1991				5.4	4.9
1992				1.3	1.2
1993				10.8	10.3
1994				28.7	28.0
1995				10.9	10.8

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LPD 17 Class, December 31, 1996

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

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				9.1	9.2
1997				4.0	4.1
1998				0.5	0.5
1999				1.6	1.7
2000				2.4	2.7
2001				0.3	0.3
2002				1.0	1.1
2003				9.3	11.0
2004				1.1	1.3
2005				0.2	0.3
Subtotal				87.2	87.9

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	1		943.6	943.6	1002.1
1997					
1998					
1999	1		717.8	717.8	812.5
2000	2		1520.7	1520.7	1760.4
2001	2		1397.6	1397.6	1656.2
2002	2		1405.6	1405.6	1707.0
2003	2		1406.1	1406.1	1751.5
2004	2		1497.7	1497.7	1914.1
Subtotal	12		8889.1	8889.1	10603.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	12		8889.1	8976.3	10691.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date

	Plan	Actual
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.08

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LPD 17 Class, December 31, 1996

17b. (U) Delivery/Expenditure Information (Cont'd):

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 61

(U) Percent Total Program Expended: 0.6%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The costs include all personnel, equipment, supplies, software and services including support associated with operating, modifying, maintaining, supplying, training and supporting the LPD 17 Program. The primary source of data was the Visibility and Management of Operating and Support Costs (VAMOSC) data base. LSD 41 VAMOSC data was adjusted for differences in: ship size, crew size, propulsion & fuel consumption, and weapons systems to develop LPD 17 estimates. (Cost estimate dated April 1996.) There is no antecedent system.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

Cost Element	AVG ANNUAL COST PER LPD CLASS HULL	
Mission Pay & Allowances	15.7	N/A
Unit Level Consumption	5.5	N/A
Intermediate Maintenance	0.3	N/A
Depot Maintenance	11.8	N/A
Contractor Support	N/A	N/A
Sustaining Support	2.9	N/A
Indirect Costs	1.5	N/A
Total	37.7	N/A

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A-11 CSSCS

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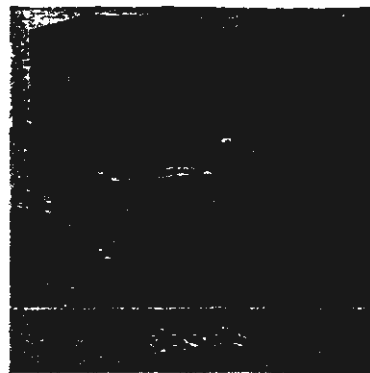
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)

PROGRAM: CSSCS

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Combat Service Support Control System (CSSCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

PM CSSCS

LTC STEPHEN E. BROUGHALL

ATTN: SFAE-C3S-STR-CSS

Assigned: July 7, 1995

6020 MEADE ROAD

DSN 656-5312; COMM 703-806-5312

FT BELVOIR, VA 22060-5259

4. Program Elements/Procurement Line Items:

RDT&E:

PE 63805 Project D091, D2GT, D091

PROCUREMENT:

APPN 2035 ICN BS9706

APPN 2035 ICN W34600 (Army)

5. References:

SAR Baseline (Development Estimate):

Army Acquisition Executive Memorandum, ASARC II, dated 26 December 1990, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 October 1991.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated June 23, 1995.

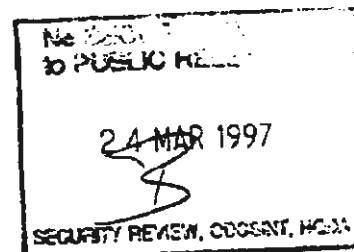
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DEPARTMENT OF DEFENSE

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6. Mission and Description:

The Combat Service Support Control System (CSSCS) is one of the five systems comprising the Army Tactical Command and Control System (ATCCS), which is a component of the Army Battle Command System (ABCS). The CSSCS will support Fire Support, Air Defense, Maneuver Control, Intelligence-Electronic Warfare and Battlefield Functional Areas (BFA) in the Active Army, Army Reserve and National Guard components. The CSSCS is an automated command and control system which will assist commanders and their staffs in the planning and execution of Combat Service Support (CSS) operations. CSSCS will provide timely situational awareness and force projection information to determine capability to support current operations and sustain future operations. CSSCS will extract summary information from the CSS Standard Army Management Information Systems (STAMIS), accept input from other elements of the CSS community, and exchange information with other automated systems to evaluate CSS information with respect to the force level commander's tactical course of actions.

The CSSCS also provides CSS Commanders and their staffs with automated C2 capabilities, including CSS planning, decision support, critical resource tracking, access to the common battlefield picture, briefing support, preparation and dissemination of orders and information exchange with other ATCCS BFA systems.

The CSSCS will be comprised of ATCCS common hardware, Common Operating Environment (COE) Software and CSSCS-unique software. This hardware and software, housed in the Standard Integrated Command Post System (SICPS) family of shelters, will enable CSS commanders and staffs to receive, analyze, process, and disseminate essential and critical C2 information to more effectively manage resources to support the maneuver commander's scheme of operation.

7. Executive Summary:

The Combat Service Support Control System (CSSCS) Project Management Office was chartered on 22 February 1988. In FY89, the CSSCS program was designated a Major Defense Acquisition Program. CSSCS was approved for Engineering and Manufacturing Development by the Army Systems Acquisition Review Council (ASARC) in December 1990. On 1 February 1991, the Version 3 & 4 software development contract was awarded to TRW. During September-October 1992, the CSSCS Early User Test & Evaluation (EUT&E) was successfully held and demonstrated that the system was easily learned, user friendly, and provided meaningful logistics data which assisted the commander in assessing the sustainability and supportability of combat operations. In June 1993, the Army decided at an ATCCS Operational Test Readiness Review (OTRR) to delay the CSSCS Initial Operational Test and Evaluation (IOT&E) until the fourth quarter FY94 and to conduct a Limited User Test (LUT) in the last quarter of FY93. An Enhanced Program Stability Panel met on 23 August 1993 to review the Acquisition Program Baseline (APB) schedule breach as well as the overall CSSCS acquisition strategy. The panel concluded that the postponement of the IOT&E and introduction of the LUT were justified as prudent management actions. The panel also requested a validation of the CSSCS life cycle costs, and following validation, a revised APB was submitted to HQDA and approved by the Army Acquisition Executive (AAE) on 22 February 1994. The LUT was concluded with the successful completion of III Corps' Phantom Sabre in November 1993. Formal training to support the IOT&E began on 9 May 1994. Training continued until the start of the pilot phase on 18 July 1994. The IOT&E was conducted using 26 CSSCS systems communicating between nodes via Local Area Network (LAN), Single Channel Ground and Airborne Radio System (SINGARS), Mobile Subscriber Equipment (MSE) and wire. The IOT&E was completed on 16 September 1994. In December 1993, the Army

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7. Executive Summary (Cont'd):

decided to consolidate PM CSSCS with PM Army WWMCS Information Systems (AWIS) and PM Standard Theater Army Command and Control System (STACCS). During August 1994, staff members from CSSCS met with AWIS and STACCS to prepare the Request for Proposal (RFP) for the new Army Global Command and Control System (AGCCS), which resulted in a contract award in December 1994. The CSSCS Milestone III preliminary Army Systems Acquisition Review Council (Pre-ASARC), chaired by the Military Deputy to the Assistant Secretary of the Army for Research, Development and Acquisition, was held on 24 February 1995. On 27 March 1995 the AAE approved the Acquisition Decision Memorandum (ADM) resulting from the Pre-ASARC. The ADM authorized the PM to enter into Low Rate Initial Production (LRIP), to procure CHS-2 hardware and begin the CSSCS transition to that platform. An IOT&E-II was directed be held in September-November 1996 to support a decision to enter full rate production and deployment. The ADM also directed that a Version 4 LUT be conducted in FY97 and a Version Follow On Test and Evaluation (FOT&E) be conducted in FY99. Changes to the CSSCS schedule required by the ADM were incorporated into a revised APB, which was approved by the AAE on 23 June 1995. On 20 April 1995, an information briefing was given to the Deputy Assistant Secretary of Defense (C3I) recapping the proceedings of the CSSCS Milestone III Pre-ASARC and the resulting ADM. During May 1995, the focus of the PM office was on planning, preparation and execution of PRAIRIE WARRIOR 95 at Fort Leavenworth, KS. Efforts included extensive use of simulations and models to ensure rapid and correct data input to and from CSSCS. On 12 May 1995 the CSSCS team completed the initial setup of garrison operations at 2nd Armored Division Support Command (DISCOM). These systems communicated daily over modems, providing the DISCOM commander and staff with operational status of critical items of supply. During the latter half of May 1995, the PM office supported the Team Fort Monmouth demonstration of sensor-to-target electronic capabilities for Force XXI at the annual AUSA Spring Symposium at Santa Clara, CA. The focus of 1996 activities was on planning for the successful execution of the IOT&E-II and Task Force XXI activities. During June 1996, both the Chief of Staff of the Army (CSA) and Vice Chief of Staff of the Army (VCSA) visited Ft. Hood, TX to view demonstrations of the Centralized Training Systems Facility (CTSF) as well as witness students being trained in the Client/Server functionality. In October 1996, PM CSSCS staff members coordinated with the 4th Infantry Division (4ID) Experimentation Control Cell (ECC) for the Task Force XXI National Training Center (NTC) Rotation in March 1997. The CSSCS IOTE-II began in October 1996. The 13th Corps Support Command (13th COSCOM) completed their portion of the control phase, and 1st Cavalry Division (1st CAV DIV) units executed their portion of the test during the week of 11 November 1996. The test was concluded on 13 December 1996, with the completion of a Command Post Exercise (CPX). On 2 December 1996, PM CSSCS staff members established a complete support package for Task Force XXI, field training exercise. Support consisted of two Army Battle Command System (ABCS) Tactical Operations Center (TOC) teams providing around the clock Centralized Training System Facility (CTSF) support. CSSCS was planned to be used by the 4ID DISCOM for the staging and onward movement of over 600 rail cars of equipment into the NTC in addition to providing support during the rotation.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
ROC Approved	JUL 88	JUL 88	JUL 88
Solicitation Issued	JUN 90	JUN 90	JUN 90
ROC Revised	SEP 90	SEP 90	SEP 90
Milestone I/II (ASARC)	DEC 90	DEC 90	DEC 90
Dev Contract Award (V 3&4)	FEB 91	FEB 91	FEB 91
SDR Version 3	MAY 91	MAY 91	MAY 91
SRS Version 3	SEP 91	SEP 91	NOV 91
PDR Version 3	DEC 91	DEC 91	MAR 92
CDR Version 3	MAR 92	MAR 92	JUN 92
Begin Version 4 Prototyping	JUL 92	OCT 92	OCT 92
EUT&E Version 3			
Start	N/A	SEP 92	SEP 92
Complete	N/A	OCT 92	OCT 92
Tech Test Version 3			
Start	NOV 92	APR 93	APR 93
Complete	JAN 93	JAN 94	JAN 94
Begin Version 4 Development	MAR 93	DEC 94	DEC 94
LUT Version 3	N/A	N/A	
Start	N/A	SEP 93	SEP 93
Complete	N/A	NOV 93	NOV 93
IOT&E Version 3			
Start	FEB 93	JUL 94	JUL 94
Complete	APR 93	SEP 94	SEP 94
ASARC (LRIP)	N/A	APR 95	APR 95
ASARC (MS III Full Production)	AUG 93	MAR 97	MAR 97
OIPT Review	SEP 93	MAR 97	MAR 97
Begin Version 3 Fielding	APR 94	JUN 97	JUN 97

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
First Unit Equipped	APR 93	JUN 97	JUN 97
IOC Version 3	APR 94	OCT 97	OCT 97
SDR Version 4	N/A	AUG 95	DEC 95
PDR Version 4	SEP 93	DEC 95	APR 96
CDR Version 4	DEC 93	DEC 95	MAY 96
IOT&E II Version 3			
Start	N/A	SEP 96	SEP 96
Complete	N/A	NOV 96	NOV 96
Begin Version 5 Development	MAR 95	JAN 97	JAN 97
Tech Test Version 4			
Start	MAY 95	MAY 97	MAY 97
Complete	JUN 95	JUN 97	JUN 97
LUT Version 4			
Start	AUG 95	SEP 97	SEP 97
Complete	OCT 95	NOV 97	NOV 97
PEO IPR - Version 4	N/A	DEC 97	DEC 97
Begin Fielding Version 4	NOV 95	JAN 98	JAN 98
PDR Version 5	JUL 96	APR 97	APR 97
CDR Version 5	DEC 96	JUL 97	JUL 97
Tech Test Version 5			
Start	JUN 97	MAY 98	MAY 98
Complete	JUL 97	JUN 98	JUN 98
FOT&E Version 5			
Start	AUG 97	SEP 98	SEP 98
Complete	OCT 97	NOV 98	NOV 98
PEO IPR - Version 5	N/A	DEC 98	DEC 98
Begin Fielding Version 5	NOV 97	JAN 99	JAN 99
Complete Fielding CS3CS	SEP 01	N/A	N/A
EUT&E Version 3	N/A	N/A	
Start	N/A	N/A	SEP 92
End	N/A	N/A	OCT 92
FOT&E VERSION 3	N/A	N/A	NOV 95

(ROC) Required Operational Concept
 (SDR) System Design Review
 (SRS) Software Requirements Specification
 (PDR) Preliminary Design Review
 (CDR) Critical Design Review
 (IOT&E) Initial Operational Test and Evaluation
 (EUT&E) Early User Test and Experimentation
 (FOT&E) Follow-on Operational Test and Evaluation
 (LUT) Limited User Test
 (PEO-IPR) Program Executive Officer In-Progress Review

b. Current Change Explanations -- None.

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10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
	0-+120	0-+120	/ +40-+95	TBD	+40-+95
Operational Temp (degF)					
Relative Humidity (%)	10-80	10-80	/ 10-80	TBD	10 - 80
Portability (no. person carry)	2	1	/ 2	TBD	2
Equipment					
Set-up/Tear-down (hrs)	<=.5	<=.5	/ <=.5	TBD	<=.5
Mean Time Between Op Msn Failure (hrs)					
ACCS Hardware	220	220	/ 220	TBD	220
ACCS CHS & CSSCS Software (HW&SW)	210	140	/ 140	TBD	140
Automatic Msg Handling					
User Responsiveness					
Disp 24 Lines (sec)	1.0	.7	/ 5.0	.1	.1
Scroll (lines/sec)	20	28	/ 20	21.6	21.6
Error Feedback (sec)	1.0	.7	/ 1.0	1.0	1.0
User Help Req (sec)	3.0	2.1	/ 3.0	3.0	3.0
Auto-message handling					
Speed-in (sec)	10/500	7/500	/ 10/500	6.5	6.5
Speed-out (sec)	10/1000	7/1000	/ 10/1000	46 sec	46 sec
Msg Trans and Receipt					
24 hr USMTF Trans	334	477	/ 334	334	334
24 hr Recpt&Process (million char)	6.9	9.86	/ 6.9	8.4	8.4
(STAMIS msgs)	4400	6286	/ 4400	5350	5350
Capable of Update (every x hrs)	3	2	/ 3	2.4	2.4
Process All Info					
Rec					
(within x hrs)	3	2	/ 3	.9	.9
On-Line Query Resp Time (sec/min)	5/180	5/7	/ 2/3	1.6	1.6
Local Data File Update	5/180	5/7	/ 5/15	6.3	6.3
Response Time (sec/min) (sec)					

Demonstrated performance characteristics of TBD will be changed to reflect actual test results following CHS-2 hardware testing.

* USMTF is the abbreviation for United States Message Text Format.

b. Current Change Explanations -- None.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	114.5	128.8	126.8
Procurement	131.6	89.7	90.5
Flyaway	(122.2)		(87.7)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(9.4)		(2.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 91 Base-Year \$	246.1	218.5	217.3
Escalation	44.6	47.9	36.8
Development (RDT&E)	(11.5)	(12.0)	(9.9)
Procurement	(33.1)	(35.9)	(26.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	290.7	266.4	254.1

The unit of measure for CSSCS is the number of systems, High Capacity Computer Units (HCU).

b. Quantity --

Development (RDT&E)	84	104	115
Procurement	1031	1115	1126
Total	1115	1219	1241

LRIP authority has been approved, which authorizes purchase of up to 10% of the procurement quantity (111 systems).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUN 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 91 BY\$)	217.3	218.5	
(2) Quantity	1241	1219	
(3) Unit Cost	0.175	0.179	-2.23
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 91 BY\$)	90.5	89.7	
(2) Quantity	1126	1115	
(3) Unit Cost	0.080	0.080	0.00

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	126.0	164.7	-	290.7
Previous Changes:				
Economic	-4.2	-3.8	-	-8.0
Quantity	-	+10.4	-	+10.4
Schedule	-	+18.2	-	+18.2
Engineering	-	-	-	-
Estimating	+19.0	-56.0	-	-37.0
Other	-	-	-	-
Support	-	-5.5	-	-5.5
Subtotal	+14.8	-36.7	-	-21.9
Current Changes:				
Economic	-2.2	-9.0	-	-11.2
Quantity	+1.1	+1.9	-	+3.0
Schedule	-	-0.4	-	-0.4
Engineering	-	-	-	-
Estimating	-3.0	-1.8	-	-4.8
Other	-	-	-	-
Support	-	-1.3	-	-1.3
Subtotal	-4.1	-10.6	-	-14.7
Total Changes	+10.7	-47.3	-	-36.6
Current Estimate	136.7	117.4	-	254.1

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

Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	114.5	131.6	-	246.1
Previous Changes:				
Quantity	-	+7.7	-	+7.7
Schedule	-	+0.2	-	+0.2
Engineering	-	-	-	-
Estimating	+15.3	-39.9	-	-24.6
Other	-	-	-	-
Support	-	-5.6	-	-5.6
Subtotal	+15.3	-37.6	-	-22.3
Current Changes:				
Economic	-	-	-	-
Quantity	+1.0	+1.5	-	+2.5
Schedule	-	-0.2	-	-0.2
Engineering	-	-	-	-
Estimating	-4.0	-3.8	-	-7.8
Other	-	-	-	-
Support	-	-1.0	-	-1.0
Subtotal	-3.0	-3.5	-	-6.5
Total Changes	+12.3	-41.1	-	-28.8
Current Estimate	126.8	90.5	-	217.3

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-2.2
	Quantity variance associated with increase of 11 units. (Quantity)	+1.0	+1.1
	Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+1.6
	Refinement of prior estimate. (Estimating)	-5.4	-4.6
	RDT&E Subtotal	-3.0	-4.1
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-10.7
	Economic adjustment for negative program change. (Economic)	N/A	+1.7
	Quantity increase of 11 units. (Quantity)	+1.5	+1.9
	Estimating variance resulting from Quantity Allocation. (Estimating)	-0.6	-0.8
	Acceleration of annual procurement buy profile. (Schedule)	-0.2	-0.4
	Adjustment for Current and Prior Inflation. (Estimating)	+0.8	+0.9
	Decrease in unit hardware cost. (Estimating)	-4.0	-1.9

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

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
Decrease in required initial spares. (Support)		-1.0	-1.3
Procurement Subtotal		-3.5	-10.6

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.26	-0.02	-0.01	+0.01	--	-0.03	--	-0.01	-0.06	0.20

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.16	-0.01	-0.01	+0.02	--	-0.05	--	-0.01	-0.06	0.10

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	DEC 90	N/A	DEC 90
Milestone II	N/A	DEC 90	N/A	DEC 90
Milestone III	N/A	MAR 97	N/A	MAR 97
FUE/IOC	N/A	JUN 97	N/A	JUN 97
Total Cost	N/A	290.7	N/A	254.1
Total Quantity	N/A	1115	N/A	1241
Prog Acq Unit Cost	N/A	0.26	N/A	0.2

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

There are no major contracts being reported. This contract was completed as of 30 April 1996.

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

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

<u>Appropriation</u>	<u>Prior Years (FY87-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-06)</u>	<u>Total</u>
RDT&E	124.8	5.9	6.0	-	136.7
Procurement	17.7	6.1	5.9	87.7	117.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	142.5	12.0	11.9	87.7	254.1

b. Annual Summary -- CSSCS

Appropriation: 2040 Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY91 Dollars Nonrec</u>	<u>Flyaway FY91 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1987			2.2	2.2	1.9
1988			3.5	3.5	3.2
1989			5.1	5.1	4.8
1990			4.5	4.5	4.4
1991			8.9	8.9	9.1
1992			20.5	20.6	21.6
1993			17.2	17.3	18.6
1994			18.7	18.9	20.6
1995			15.5	16.1	18.0
1996			10.3	10.4	11.8
1997			9.2	9.3	10.8
1998			4.7	5.0	5.9
1999			4.6	5.0	6.0
2000					
2001					
2002					
Subtotal	115		124.9	126.8	136.7

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CSSCS, December 31, 1996

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

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	73		5.3	5.3	6.0
1996	38		3.9	4.3	5.0
1997	51		4.9	5.7	6.7
1998	50		4.8	5.1	6.1
1999	56		4.6	4.8	5.9
2000	145		11.0	11.1	14.0
2001	145		10.7	10.8	13.9
2002	137		10.6	10.8	14.2
2003	150		10.9	11.0	14.9
2004	112		7.7	7.9	11.0
2005	94		6.3	6.4	9.1
2006	75		7.0	7.3	10.6
Subtotal	1126		87.7	90.5	117.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1241		212.6	217.3	254.1

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	115	115
Procurement	0	0

Percent Total Program Quantities Delivered: 9.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 130.4

Percent Total Program Expended: 51.3%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The concept of operation is for CSSCS to be fielded in both active and reserve units. The total manhours of operation per year for active duty units per device is 4745 hours during wartime, 2372.5 hours during peacetime, and 234 hours for reserve units. There are no new personnel costs involved, as CSSCS will be operated by personnel currently assigned to those organizations receiving these devices. The present maintenance concept for the CHS hardware is contractor logistics support for the operational life of the equipment, not to exceed ten years. Contractor will establish Regional Support Centers (RSC), which will provide all repairs above the unit level. Unit level maintenance consists of preventive maintenance, replacement of Line Replaceable Units (LRU), and

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CSSCS, December 31, 1996

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

replacement of expendable items (cables, batteries, fuses, and filters). Internal repair of LRUs requiring removal of covers will not be performed by U.S. Army personnel. Units will exchange unserviceable LRUs for serviceable LRUs through assigned Intermediate Direct Support (IDS) facilities. The IDS will perform fault verification and ship unserviceable LRUs to the nearest RSC for repair. There is no antecedent equipment for the CSSCS. It will replace current manual and non-standard automated processes. PM CSSCS will not be provided funding for O&S costs. All O&S costs will be funded at the unit level after delivery.

The Average Annual Cost is for the entire CSSCS system and is based on sustainment from FY 95-26. Source: Army Cost Position, March 1995.

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

Cost Element	Avg Annual Cost Per CSSCS System	Avg Annual Cost Per Antecedent System
Mission Pay & Allowances	1.5	N/A
Unit Level Consumption	0.6	0.0
Intermediate Maintenance	N/A	0.0
Depot Maintenance	3.5	0.0
Contractor Support	N/A	0.0
Sustaining Support	1.4	0.0
Indirect Costs	0.6	N/A
Total	7.6	0.0

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A-5 ATACMS-BAT

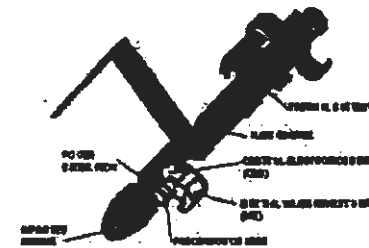
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: ATACMS/BAT

AS OF DATE: December 31, 1996

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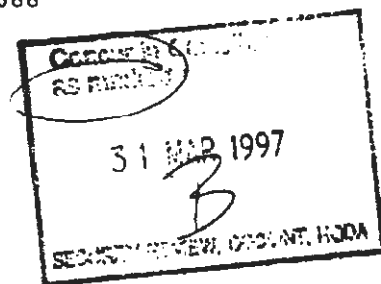
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ATACMS-BAT

IS AMENDED

1. (U) Designation and Nomenclature (Popular Name): ATACMS/BAT
2. (U) DoD Component: Army
3. (U) Responsible Office and Telephone Number:
HQDA COL John W. Holly
Program Executive Office Assigned: January 8, 1996
Tactical Missiles, ATTN: SFAC-MSL-AB DSN 746-1141; COMM 205-876-1141
Redstone Arsenal, AL 35898-5650 hollyj@redstone.army.mil
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 20302A (Shared) Project D685 (Shared), D686 (Shared)
(U) PE 63754A Project D600
(U) PE 64754A (Shared) Project D636
(U) PE 64768A Project D2NT, D641, D686, D687, D688
PROCUREMENT:
(U) APPN 2032 ICN CA6100 (Army)
(U) APPN 2032 ICN CA6105 (Army)
(U) APPN 2032 ICN CA6110 (Army)



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~~Downgrade instructions:~~
~~Declassify on: [redacted]~~

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5. (U) References:

BAT/BAT P3I

SAR Baseline (Development Estimate):

(U) Acquisition Decision Memorandum (ADM), dated May 15, 1991, approval to enter Engineering and Manufacturing Development (EMD).

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated September 22, 1995.

Army TACMS Blk II/Blk IIA

SAR Baseline (Development Estimate):

(U) AAE Acquisition Decision Memorandum (ADM) dated May 15, 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated September 22, 1995.

6. (U) Mission and Description:

(U) The ATACMS Block II and BAT systems support the Army's deep fires doctrine, which calls for the destruction and/or disruption of threat forces at ranges in excess of 100 kilometers. The BAT is a top attack submunition with acoustic and infrared (IR) seekers working in tandem for autonomous attack of moving armor. The BAT Preplanned Product Improvement (P3I) adds cold, sitting armor, heavy multiple launch rocket systems, and surface to surface missile transporter erector launchers to the target set through seeker and warhead improvements. BAT and BAT P3I submunitions are carried deep into enemy territory by variants of the ATACMS missile, then dispensed to attack and destroy targets. Being a certified round, both the missile and submunition have a low sustainment cost. The ATACMS Block II missile, a version of the currently fielded and combat-proven ATACMS Block I missile, will carry 13 BAT or BAT P3I submunitions. The ATACMS Block IIA missile, an extended range version of the Block II missile, will carry 6 BAT P3I submunitions to ranges of 300 kilometers. The ATACMS Block II and BAT Programs do not replace another system.

7. (U) Executive Summary:

(U) The BAT program was established in 1984 as a special access program and progressed through proof of principle to a successful Milestone II decision in May 1991. The Tri-Service Standoff Attack Missile (TSSAM) was designated as the first delivery vehicle for the BAT submunition, but upon termination of Army's participation in the TSSAM program, ATACMS Block II was designated as the carrier in December 1993. The BAT P3I received approval to continue Program Definition and Risk Reduction (PDRR) with ATACMS Block IIA as the carrier in February 1993. The ATACMS Block II Continued Development Program was approved in May 1995.

The BAT program has experienced considerable cost growth during this reporting period. The cost growth is due to initiation of corrective actions as a result of problems identified during flight testing, delays in the development of the

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ATACMS/BAT, December 31, 1996

7. (U) Executive Summary (Cont'd):

deceleration stabilization system (DSS), resolution of problems experienced during qualification of some BAT subsystems, and IR seeker qualification and manufacturing. In addition, \$3M must be paid as a result of a whistle blower lawsuit on the Air Force MX Missile Program in which the contractor was found not guilty. Even though it took place more than 5 years ago, the Army must pay most of this legal bill because BAT now represents over 50% of the overall business base at the Hawthorne, CA, site. Although the majority of these issues are resolved, cumulative cost and schedule variances incurred will not be recovered. Program funding for the BAT program has been adjusted to sustain the total anticipated contract cost growth.

The BAT completed Design Verification Testing (DVT) in April 1996. Contractor Development Testing (CDT) began in July 1996 and is expected to complete in June 1997. Five CDT flights were scored by the BAT Reliability Scoring Conference in December 1996. The results were: one no-test, three reliability successes, and one reliability failure. In each successful test, the BAT impacted at a vulnerable point on a moving target vehicle (either BMP or T72). This includes a successful test flight of a BAT with a tactical warhead and flights with data recorders in lieu of a warhead.

All BAT-On-A-Rocket (BOAR) tests have been completed and test objectives were met with the successful firing at White Sands Missile Range (WSMR), NM, in October 1996.

The ATACMS Block II program is progressing on schedule. A sled test at supersonic velocity was successfully conducted in October 1996 at Holloman Air Force Base, NM. This test, a key event toward first flight, demonstrated the missile's skin severance and submunition dispenser systems, and the BAT DSS at Mach 1.53. The first engineering development test flight of an ATACMS Block II missile with instrumented BAT simulants is scheduled for August 1997. The combined development test/operational test is scheduled to start in February 1999.

The BAT P3I program has been restructured due to a \$15M Congressional decrement in FY 97 funding. The restructured program, which extended the program for 7 months, was approved by the Deputy Secretary of Defense in December 1996. The ATACMS Block IIA program was delayed due to funding adjustments to pay higher Army priorities. These adjustments caused the Block IIA EMD and subsequent production to be delayed for approximately 1 year.

The BAT CDT-6 was conducted on January 28, 1997 at WSMR. This was the first BAT dual drop flight. Major test objectives were met; however, both test articles failed to impact the target. The failure to acquire and hit the targets was due to improper detector cool down of the IR seeker. This phenomenon has not been observed in previous flight testing; investigation is on going.

The BAT design to unit production cost is \$44,864 (FY 91 base year dollars). The current goal is \$30,652. Design to cost requirements for ATACMS Block II were waived by the Army Acquisition Executive.

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8. (U) Threshold Breaches:

BAT/BAT P3I

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

The Acquisition Program Baseline (APB), Sep 95, has been breached with the following BAT P3I schedule changes: Milestone II slipped from Mar 98 to Oct 98, EMD Contract Award slipped from Apr 98 to Nov 98. These slips are due to a \$15M Congressional decrement which caused the program to be restructured. A Program Deviation Report and a Proposed APB change have been submitted.

Army TACMS Blk II/Blk IIA

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

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ATACMS/BAT, December 31, 1996

8c. (U) Threshold Breaches (Cont'd):

Army TACMS Blk II/Blk IIA

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

The ATACMS/BAT APB, Sep 95, has been breached with the following ATACMS Block IIA schedule changes: Milestone IV (should read Milestone II) P3I Review slipped from Mar 98 to Mar 99, EMD Contract Award slipped from Apr 98 to Apr 99, LRIP Contract Award slipped from Jan 02 to Nov 02, Milestone III slipped from Feb 02 to Dec 03, Organic Support Capability slipped from Dec 03 to Oct 04, Service Depot Support slipped from Dec 03 to Oct 04, and IOC slipped from May 03 to Mar 04. These slips are due to funding adjustments to pay higher Army priorities. A Program Deviation Report and a Proposed APB change have been submitted.

9. (U) Schedule:

BAT/BAT P3I

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
BAT				
Milestone 0	JUN 84	JUN 84	JUN 84	
Milestone I	FEB 85	FEB 85	FEB 85	
Milestone II	MAY 91	MAY 91	MAY 91	
Preliminary Design Review	MAY 91	MAY 91	MAY 91	
EMD/PSD Contract Award	JUN 91	JUN 91	JUN 91	
Critical Design Review Complete	MAR 92	MAY 92	MAY 92	
Prototype Production				
Start	DEC 92	N/A	APR 93	
Complete	SEP 94	N/A	SEP 95	
Design Verification Test				
Start	JAN 93	MAY 93	MAY 93	
Complete	NOV 93	OCT 95	APR 96	
First Prototype Unit Delivery	OCT 93	OCT 94	OCT 94	
Contractor Development Test				
Start	NOV 93	FEB 96	MAY 96	
Complete	SEP 94	MAR 97	JUN 97 (Ch-1)	
Long Lead Program Review	DEC 93	N/A	N/A	
Long Lead Contract Award for LRIP	JAN 94	N/A	N/A	
LRIP Program Review (DAB)	NOV 94	DEC 97	DEC 97	
EMD/LRIP I Contract Award	NOV 94	JAN 98	JAN 98	
LRIP First Unit Delivery	N/A	JUL 99	AUG 99 (Ch-2)	
Submunition Readiness Date (IOC)	DEC 95	NOV 99	NOV 99	
Milestone III	DEC 96	SEP 00	SEP 00	
Production Contract Award	JAN 97	FEB 01	FEB 01	
First Production Unit Delivery	JAN 98	JUL 02	JUL 02	
BAT P3I				

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

BAT/BAT P3I

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
P3I Phase I Study Award	N/A	OCT 93	OCT 93
Milestone II	N/A	MAR 98	OCT 98 (Ch-3)
P3I EMD Contract Award	N/A	APR 98	NOV 98 (Ch-3)
LRIP IPR	N/A	APR 01	APR 01
Milestone III	N/A	FEB 02	JUN 02 (Ch-3)

b. (U) Current Change Explanations --

(Ch-1) - Completion of Contractor Development Test (CDT) slipped from Apr 97 to Jun 97 due to hardware problems uncovered during CDT flights and subsystem qualification.

(Ch-2) - LRIP First Unit Delivery slipped from Jul 99 to Aug 99 due to refinement of contract leadtime.

(Ch-3) - Milestones changed due to a \$15M Congressional decrement which caused the BAT P3I program to be restructured as follows:

<u>MILESTONE</u>	<u>FROM</u>	<u>TO</u>
Milestone II	Mar 98	Oct 98
P3I EMD Contract Award	Apr 98	Nov 98
Milestone III	Feb 02	Jun 02

Army TACMS Blk II/Blk IIA

a. Milestones --

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
BLOCK II ATACMS			
DA IPR	MAR 95	MAY 95	MAY 95
Continued Development Contract Award	MAY 95	JUN 95	JUL 95
Preliminary Design Review	MAY 96	OCT 96	OCT 96
Hardware Critical Design Review	FEB 97	MAR 97	APR 97 (Ch-1)
Software Critical Design Review	MAY 97	JUN 97	APR 97 (Ch-1)
Pre-production (PPT)			
Start	MAY 97	NOV 97	AUG 97
Complete	NOV 97	MAR 98	JAN 98
Production Qualification Tests (PQT)			
Start	DEC 97	JUN 98	APR 98
Complete	JUL 98	JAN 99	NOV 98
EMD OT Option Award	JAN 98	JAN 98	JAN 98
Combined DT/OT Test			
Start	JUL 98	APR 99	JAN 99
Complete	DEC 98	JUN 99	APR 99
PEO LRIP Decision	DEC 98	DEC 98	DEC 98
LRIP Contract Award	JAN 99	JAN 99	JAN 99

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

Army TACMS Blk II/Blk IIA

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Operational Tests (OT)			
Start	DEC 99	DEC 99	DEC 99
Complete	MAR 00	JUN 00	JUN 00
LRIP First Delivery	JUN 00	JUN 00	JUN 00
MS III	SEP 00	SEP 00	SEP 00
IOC	SEP 00	SEP 00	SEP 00
Organic Support Capability	SEP 00	SEP 00	SEP 00
Service Depot Support	SEP 00	SEP 00	SEP 00
First Full Rate Production Contract Award	JAN 01	JAN 01	JAN 01
BLOCK IIA ATACMS			
Milestone IV P3I Review	MAR 98	MAR 98	MAR 99 (Ch-2)
EMD Contract Award	APR 98	APR 98	APR 99 (Ch-2)
Low Rate Initial Production Contract Award	JAN 02	JAN 02	NOV 02 (Ch-2)
MS III	FEB 02	FEB 02	DEC 03 (Ch-2)
Organic Support Capability	DEC 03	DEC 03	OCT 04 (Ch-2)
Service Depot Support	DEC 03	DEC 03	OCT 04 (Ch-2)
IOC	MAY 03	MAY 03	MAR 04 (Ch-2)

b. (U) Current Change Explanations --

(Ch-1) - The ATACMS Block II Hardware Critical Design Review (CDR) and Software CDR will be conducted in Apr 97. The Hardware CDR changed from Mar 97 to Apr 97 and the Software CDR changed from Jun 97 to Apr 97.

(Ch-2) - ATACMS Block IIA milestones changed due to funding adjustments to pay higher Army priorities as follows:

MILESTONE	FROM	TO
Milestone IV P3I Review	Mar 98	Mar 99
EMD Contract Award	Apr 98	Apr 99
Low Rate Initial Production Contract Award	Jan 02	Nov 02
MS III	Feb 02	Dec 03
Organic Support Capability	Dec 03	Oct 04
Service Depot Support	Dec 03	Oct 04
IOC	May 03	Mar 04

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10. (U) Performance Characteristics:
BAT/BAT P3I

a. Performance --

BAT	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Weight (lbs)	44	44 / 44	40.64	44
Length (stowed) (ins)	36	36 / 36	36	36
Diameter (stowed) (ins)	5.5	5.5 / 5.5	5.5	5.5
Reliability (Operational)	.90	.90 / .86	TBD	.90
Useful Life (yrs)	20	20 / 10	mpd	20

(b)(1)

(U) TBDS in Demonstrated Performance signify test data is not available.

b. Current Change Explanations -- None.

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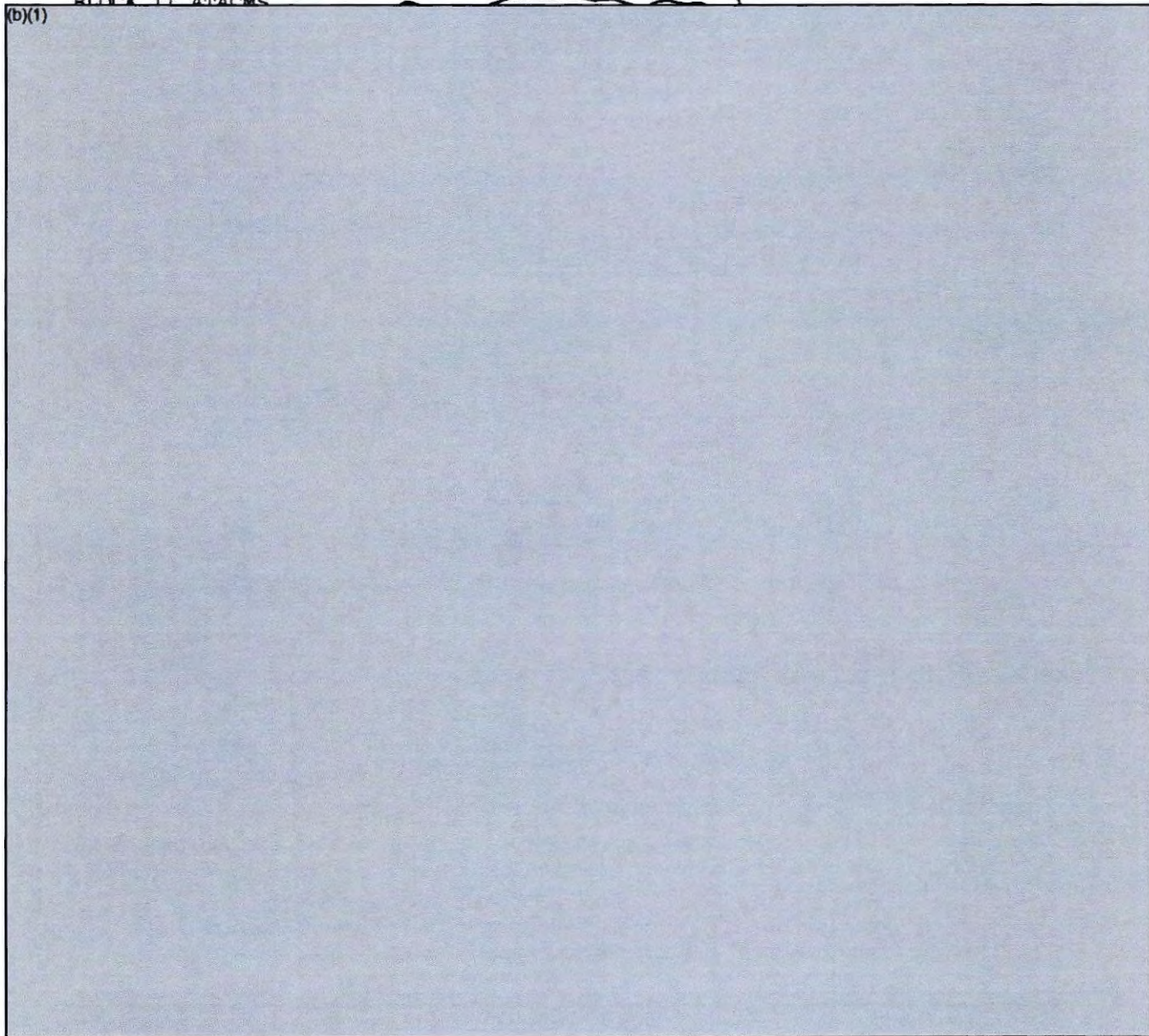
10a. (U) Performance Characteristics (Cont'd):
Army TACMS Blk II/Blk IIA

a. Performance --

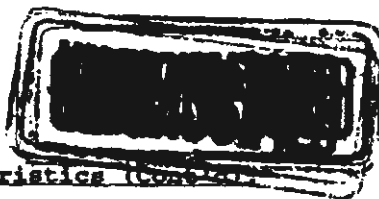
Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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BLOCK II ATACMS

(b)(1)



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10a. (U) Performance Characteristics (Continued)
Army TACMS Blk II/Blk IIA

(U) TEDs in Demonstrated Performance signify test data is not available.

b. Current Change Explanations -- None.

11. (U) Total Program Cost and Quantity (Dollars in Millions):
BAT/BAT P3I

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	702.1	1164.9	1214.8
Procurement	1586.2	1319.3	1308.9
Flyaway	(1553.6)		(1297.7)
	(16.3)		(11.2)
Other Wpn Sys Costs	(16.3)		(11.2)
Total Other Wpn Sys	(32.6)		(11.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 91 Base-Year \$	2288.3	2484.2	2523.7
Escalation	698.3	712.3	557.5
Development (RDT&E)	(29.5)	(118.0)	(108.5)
Procurement	(668.8)	(594.3)	(449.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2986.6	3196.5	3081.2

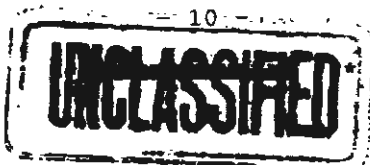
b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	30993	19902	19871
Total	30993	19902	19871

(U) BAT/BAT P3I unit of measure is a submunition.

The BAT Milestone II decision (Acquisition Decision Memo, 15 May 91) provided for an LRIP quantity of 3650 submunitions which exceeds the 10% guideline established in 10 U.S.C. 2400 (FASTA). The current LRIP quantity is 2352 which also exceeds the 10% guideline. The 2352 units are to be procured in three LRIPs whereas the originally planned 3650 units were to be procured in two LRIPs. The three LRIPs are required to: 1) provide operational test assets, 2) provide a reasonable ramp to production rate, 3) support Army TACMS Block II production requirements, and 4) maintain the BAT vendor base through continuous manufacturing. The first full rate production contract cannot be awarded until FY 01 because Milestone III, which is constrained to the completion of ATACMS Block II system operational testing and live fire testing, will not occur until Sep 00.

c. (U) Foreign Military Sales --



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

BAT/BAT P3I

None.

d. (U) Nuclear Costs --

None.

Army TACMS Blk II/Blk IIA

a. (U) Cost --	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Development (RDT&E)	385.4	382.3	394.9
Procurement	1210.3	1081.8	1088.1
Recurring Flyaway	(1092.3)		(1045.8)
Nonrecurring Flyaway	(89.6)		(10.8)
Total Flyaway	(1181.9)		(1056.6)
Other Weapon System	(22.0)		(26.5)
Peculiar Support	(3.6)		(2.4)
Initial Spares	(2.8)		(2.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	1595.7	1464.1	1483.0
Escalation	705.4	640.7	499.8
Development (RDT&E)	(103.1)	(97.1)	(82.9)
Procurement	(602.3)	(543.6)	(416.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	2301.1	2104.8	1982.8
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1806</u>	<u>1806</u>	<u>1806</u>
Total	1806	1806	1806

(U) ATACMS Block II/IIA unit of measure is a missile.

The total of Block II's LRIP I and LRIP II quantities (150 of the total 1206 Block II missiles) marginally exceeds the guidance contained in 10 U.S.C. 2400 (FASTA). The total LRIP quantities were logically selected to preserve the BAT production base and provide a logical ramp of both BAT and Block II production.

c. (U) Foreign Military Sales --

None.

d. (U) Nuclear Costs --

None.

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ATACMS/BAT, December 31, 1996

12. (U) Unit Cost Summary:

BAT/BAT P3I

	Current Estimate (Dec 96 SAR)	UCR Baseline (SEP 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 91 BY\$)	2523.7	2484.2	
(2) Quantity	19871	19902	
(3) Unit Cost	0.127	0.125	+1.60
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 91 BY\$)	1308.9	1319.3	
(2) Quantity	19871	19902	
(3) Unit Cost	0.066	0.066	0.00

Army TACMS Blk II/Blk IIA

	Current Estimate (Dec 96 SAR)	UCR Baseline (SEP 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 91 BY\$)	1483.0	1464.1	
(2) Quantity	1806	1806	
(3) Unit Cost	0.821	0.811	+1.23
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 91 BY\$)	1088.1	1081.8	
(2) Quantity	1806	1806	
(3) Unit Cost	0.602	0.599	+0.50

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ATACMS/BAT, December 31, 1996

13. (U) Cost Variance Analysis:

BAT/BAT P3I

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	731.6	2255.0	-	2986.6
Previous Changes:				
Economic	-26.9	-204.3	-	-231.2
Quantity	-	-699.4	-	-699.4
Schedule	+3.6	+165.6	-	+169.2
Engineering	+280.4	+60.1	-	+340.5
Estimating	+274.7	+206.7	-	+481.4
Other	-	-	-	-
Support	-	-5.0	-	-5.0
Subtotal	+531.8	-476.3	-	+55.5
Current Changes:				
Economic	-2.0	+6.3	-	+4.3
Quantity	-	-2.0	-	-2.0
Schedule	+27.1	+4.9	-	+32.0
Engineering	-	-0.1	-	-0.1
Estimating	+34.8	-29.7	-	+5.1
Other	-	-	-	-
Support	-	-0.2	-	-0.2
Subtotal	+59.9	-20.8	-	+39.1
Total Changes	+591.7	-497.1	-	+94.6
Current Estimate	1323.3	1757.9	-	3081.2

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ATACMS/BAT, December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):
BAT/BAT P3I

(U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	702.1	1569.9	-	2272.0
Previous Changes:				
Quantity	-	-417.1	-	-417.1
Schedule	-	-0.3	-	-0.3
Engineering	+237.3	+39.3	-	+276.6
Estimating	+225.0	+144.2	-	+369.2
Other	-	-	-	-
Support	-	-4.9	-	-4.9
Subtotal	+462.3	-238.8	-	+223.5
Current Changes:				
Economic	-	-	-	-
Quantity	-	-1.2	-	-1.2
Schedule	+20.6	-	-	+20.6
Engineering	-	-0.1	-	-0.1
Estimating	+29.8	-20.7	-	+9.1
Other	-	-	-	-
Support	-	-0.2	-	-0.2
Subtotal	+50.4	-22.2	-	+28.2
Total Changes	+512.7	-261.0	-	+251.7
Current Estimate	1214.8	1308.9	-	2523.7

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Additional funds to procure live fire/operational test assets. (Estimating)	+18.0	+21.3
Increase due to BAT contract cost growth. (Estimating)	+11.5	+13.2
Restructure of BAT P3I program/alignment with Block IIA. (Schedule)	+33.5	+42.1
Congressional reduction to BAT P3I funding which caused a 7 month schedule delay. (Schedule)	-12.9	-15.0
RDT&E Subtotal	+50.4	+59.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+3.2
Economic adjustment for negative program change. (Economic)	N/A	+3.1

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ATACMS/BAT, December 31, 1996

13b. (U) Cost Variance Analysis (Cont'd):
BAT/BAT P3I

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Total variance associated with decrease of 31 units.	-1.5	-2.5
Quantity decrease of 31 units from 19902 to 19871. (Quantity)	-1.2	-2.0
Allocation to engineering variance resulting from quantity change. (Engineering)	-0.1	-0.1
Allocation to estimating variance resulting from quantity change. (Estimating)	-0.2	-0.2
Allocation to schedule variance resulting from quantity change. (Schedule)	0.0	-0.2
Rephasing of annual procurement buy profile. (Schedule)	0.0	+5.1
Refinement of program estimate to reflect hardware and system test and evaluation updates. (Estimating)	-10.2	-12.4
Change in learning curve assumptions due to rephasing of annual buys. (Estimating)	-10.3	-17.1
Refinement of cost estimate for data, training, and transportation. (Support)	-0.2	-0.2
Procurement Subtotal	-22.2	-20.8

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ATACMS/BAT, December 31, 1996

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

Army TACMS Blk II/Blk IIA

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	488.5	1812.6	-	2301.1
Previous Changes:				
Economic	-21.5	-141.8	-	-163.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.5	-182.7	-	-187.2
Other	-	-	-	-
Support	-	+0.2	-	+0.2
Subtotal	-26.0	-324.3	-	-350.3
Current Changes:				
Economic	-2.0	+6.9	-	+4.9
Quantity	-	-	-	-
Schedule	+17.1	+6.3	-	+23.4
Engineering	-	-	-	-
Estimating	+0.2	-0.6	-	-0.4
Other	-	-	-	-
Support	-	+4.1	-	+4.1
Subtotal	+15.3	+16.7	-	+32.0
Total Changes	-10.7	-307.6	-	-318.3
Current Estimate	477.8	1505.0	-	1982.8

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ATACMS/BAT, December 31, 1996

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

Army TACMS Blk II/Blk IIA

(U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	385.4	1210.3	-	1595.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.0	-125.0	-	-126.0
Other	-	-	-	-
Support	-	+0.2	-	+0.2
Subtotal	-1.0	-124.8	-	-125.8
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	+10.3	-	-	+10.3
Engineering	-	-	-	-
Estimating	+0.2	-0.3	-	-0.1
Other	-	-	-	-
Support	-	+2.9	-	+2.9
Subtotal	+10.5	+2.6	-	+13.1
Total Changes	+9.5	-122.2	-	-112.7
Current Estimate	394.9	1088.1	-	1483.0

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.0
Adjustment for current and prior inflation. (Estimating)	+0.2	+0.2
Realignment and increase in funds due to inefficiencies associated with delay of the Block IIA program. (Schedule)	+10.3	+17.1
RDT&E Subtotal	+10.5	+15.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+6.8
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Rephasing of annual procurement buy profile. (Schedule)	0.0	+6.3
Revised estimate to reflect update of Government System Project Management and System Test and Evaluation requirements. (Estimating)	+19.7	+28.7

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13b. (U) Cost Variance Analysis (Cont'd):
Army TACMS Blk II/Blk IIA

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Deletion of funding for multi-year procurement advance materiel buys. (Estimating)	-13.3	-17.2
Learning curve efficiency as a result of acceleration of buys. (Estimating)	-6.7	-12.1
Refinement of estimate for data, training, support equipment, and transportation. (Support)	+4.5	+5.9
Refinement of estimate for Initial Spares. (Support)	-0.2	-0.2
Refinement of estimate for Peculiar Support (Missile Monitor Test Device (MMTD) Trainer and MMTD Modifications). (Support)	-1.4	-1.6
Procurement Subtotal	+2.6	+16.7

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):
BAT/BAT P3I

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.10	-0.01	+0.02	+0.01	+0.02	+0.02	--	--	+0.06	0.16

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.07	-0.01	+0.01	+0.01	--	+0.01	--	--	+0.02	0.09

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14c. (U) Unit Cost and Other History (Cont'd):
BAT/BAT P3I

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	FEB 85	N/A	FEB 85
Milestone II	N/A	MAY 91	N/A	MAY 91
Milestone III	N/A	DEC 96	N/A	SEP 00
FUE/IOC	N/A	DEC 95	N/A	NOV 99
Total Cost	N/A	2986.6	N/A	3081.2
Total Quantity	N/A	30993	N/A	19871
Prog Acq Unit Cost	N/A	0.1	N/A	0.16

(U) The BAT program began SAR reporting in Sep 91 after a successful Milestone II decision in May 91.

Army TACMS Blk II/Blk IIA

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.27	-0.09	+0.01	+0.01	--	-0.10	--	--	-0.17	1.10

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.00	-0.07	--	--	--	-0.10	--	--	-0.17	0.83

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	MAY 95	N/A	MAY 95
Milestone III	N/A	SEP 00	N/A	SEP 00
FUE/IOC	N/A	SEP 00	N/A	SEP 00
Total Cost	N/A	2301.1	N/A	1982.8
Total Quantity	N/A	1806	N/A	1806
Prog Acq Unit Cost	N/A	1.27	N/A	1.1

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14. (U) Unit Cost and Other History (Cont'd):

Army TACMS Blk II/Blk IIA

(U) The ATACMS Block II/IIA Program began SAR reporting in Dec 94.

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

a. RDT&E --

(U) BAT EMD:

Northrop-Grumman Corp., Hawthorne CA

DAAH01-91-C-A017, CPIF/AF

Award: June 5, 1991

Definitized: June 5, 1991

Initial Contract Price

Target	Ceiling	Qty
--------	---------	-----

\$383.9	N/A	0
---------	-----	---

Current Contract Price

Target	Ceiling	Qty
\$546.1	N/A	0

Estimated Price At Completion

Contractor	Program Manager
\$563.3	\$580.1

Cost Variance Schedule Variance

Previous Cumulative Variances

\$-4.6	\$-10.0
--------	---------

Cumulative Variances To Date (11/30/96)

\$-24.9	\$-13.0
---------	---------

Net Change

\$-20.3	\$-3.0
---------	--------

Explanation of Change:

(U) The unfavorable cost and schedule variances continue to be driven by the infrared (IR) seeker, inertial measurement unit (IMU), and deceleration stabilization subsystem (DSS). The IR seeker is behind schedule due to continued delays in hardware deliveries and qualification testing; qualification testing started in Jun 96. The IMU continues to experience technical difficulties which are delaying hardware deliveries. Solutions have been identified and are being incorporated. The DSS has slipped qualification testing due to the incorporation of the Gas Inflated Ram Air Stabilizer (GIRAS) design; qualification testing is scheduled to start during the second quarter of FY 97.

(U) BAT P3I DEM/VAL:

Northrop-Grumman Corp., Hawthorne CA

DAAH01-93-C-A014, CPIF

Award: October 18, 1993

Definitized: December 21, 1994

Initial Contract Price

Target	Ceiling	Qty
--------	---------	-----

\$81.8	N/A	0
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Current Contract Price

Target	Ceiling	Qty
\$84.0	N/A	0

Estimated Price At Completion

Contractor	Program Manager
\$84.0	\$84.0

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.1	\$-2.4
Cumulative Variances To Date (11/30/96)	<u>\$-1.9</u>	<u>\$-0.4</u>
Net Change	\$-3.0	\$2.0

Explanation of Change:

(U) The unfavorable schedule variance is driven by the two subcontractors, Alliant Techsystems and Northrop Grumman's Electronic Sensors and Systems Division (NGESSD). Work around plans have been implemented which will allow both subcontractors to meet the current captive flight test (CFT) schedule. A negative cost variance exists at the subcontractor level. Alliant's major cost drivers have been the tactical seeker hardware design and CFT design, fabrication, integration, and test (DFIT). NGESSD's major cost drivers have been the tactical seeker processor and seeker specification, system bench processor and CFT seeker DFIT. The subcontractors are predicting a negative cost variance at completion. However, it is expected that this variance will be offset by the positive cost variance of the prime contractor. The current contract price increase of \$2.2M is due to a contract modification on 15 Jul 96 for development of a breadboard central electronics unit (CEU).

(U) Contract Comments:

Phase I awarded in Oct 93 and NTE option for Phase II was awarded Dec 94. Phase II was definitized on 21 Dec 94.

(U) <u>ATACMS Blk II Cont Dev:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Vought Systems, Dallas, TX			
DAAH01-95-C-0001, CPIF	\$155.2	N/A	0
Award: July 12, 1995			
Definitized: July 12, 1995			

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$160.9	N/A	0	\$160.9	\$160.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.2	\$-0.5
Cumulative Variances To Date (11/30/96)	<u>\$3.7</u>	<u>\$-6.8</u>
Net Change	\$3.5	\$-6.3

Explanation of Change:

(U) The unfavorable cumulative schedule variance is due to less than planned staffing to support electronic design and systems engineering. Accordingly, the slow release of engineering drawings has resulted in delays in the development of material requirements, the processing of advanced material orders, the issuance of materials, and development of manufacturing processes. The processing of hardware delivery documentation in Dec 96 and the completion of a subcontractor's Critical Design Review in Feb 97 will eliminate approximately 35% of the cumulative schedule variance. The favorable cost variance comes from lower costs

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

for computers, travel, and ODCs as a result of the slow buildup of engineering personnel. The level of effort (LOE) required for the quality function has been less than originally planned. The increase in the current contract target price (\$5.7M) is due to the Engineering Development Test (EDT) option being exercised on 8 Feb 96 for \$5.6M and a contract modification for \$.1M for software upgrades, 28 Feb 96.

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

Total Program

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

<u>Appropriation</u>	<u>Prior Years (FY84-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-08)</u>	<u>Total</u>
RDT&E	1107.9	202.4	129.5	361.3	1801.1
Procurement	-	85.2	160.9	3016.8	3262.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1107.9	287.6	290.4	3378.1	5064.0

BAT/BAT P3I

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

<u>Appropriation</u>	<u>Prior Years (FY84-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	975.8	110.7	73.6	163.2	1323.3
Procurement	-	85.2	100.1	1572.6	1757.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	975.8	195.9	173.7	1735.8	3081.2

Army TACMS Blk II/Blk IIA

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

<u>Appropriation</u>	<u>Prior Years (FY95-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-08)</u>	<u>Total</u>
RDT&E	132.1	91.7	55.9	198.1	477.8
Procurement	-	-	60.8	1444.2	1505.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	132.1	91.7	116.7	1642.3	1982.8

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

b. Annual Summary -- BAT/BAT P3I

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1984				5.2	4.2
1985				18.4	15.2
1986				37.8	32.2
1987				34.2	30.0
1988				45.9	41.9
1989				46.3	44.0
1990				40.7	40.1
1991				70.2	71.9
1992				115.6	121.1
1993				106.8	114.5
1994				111.6	121.9
1995				94.5	105.4
1996				120.2	136.9
1997				83.0	96.5
1998				93.3	110.7
1999				60.8	73.6
2000				69.1	85.4
2001				49.0	61.9
2002				8.3	10.7
2003				3.9	5.2
Subtotal				1214.8	1323.3

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	305	16.8	52.8	70.6	85.2
1999	547	0.9	78.8	81.2	100.1
2000	1500	4.3	127.8	135.3	170.3
2001	1900	7.5	146.1	156.1	200.8
2002	2200		150.5	152.0	200.1
2003	2900		176.6	176.9	238.9
2004	3500		188.6	189.0	261.8
2005	3700		181.5	181.9	258.5
2006	3319		165.5	159.1	232.0
2007				6.8	10.2
Subtotal	19871	29.5	1268.2	1308.9	1757.9

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

BAT/BAT P3I

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	19871	29.5	1268.2	2523.7	3081.2

b. Annual Summary -- Army TACMS Blk II/Blk IIA

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				8.8	9.8
1996				47.0	53.5
1997				59.2	68.8
1998				77.3	91.7
1999				46.2	55.9
2000				49.5	61.2
2001				51.4	64.9
2002				42.6	54.9
2003				12.9	17.1
Subtotal				394.9	477.8

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	50	1.7	40.3	49.3	60.8
2000	100		63.1	64.1	80.7
2001	150		83.8	85.4	109.9
2002	89		70.1	71.6	94.3
2003	194	9.1	124.4	141.3	190.8
2004	367		195.2	199.8	276.8
2005	380		194.0	196.8	279.7
2006	346		178.2	181.0	263.9
2007	130		96.7	89.5	133.9
2008				9.3	14.2
Subtotal	1806	10.8	1045.8	1088.1	1505.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1806	10.8	1045.8	1483.0	1982.8

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17. (U) Delivery/Expenditure Information:

BAT/BAT P3I

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 877.3

(U) Percent Total Program Expended: 28.5%

Army TACMS Blk II/Blk IIA

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 46.9

(U) Percent Total Program Expended: 2.4%

18. (U) Operating and Support Costs:

BAT/BAT P3I

a. (U) Assumptions and Ground Rules --

The BAT Submunition will be furnished to the delivery vehicle contractor as GFE. The submunition is considered a certified round; therefore, O&S cost will be minimal. It will consist of stockpile reliability test for recertification, minimal depot maintenance, military personnel for Explosive Ordnance Disposal (EOD) and system project management. Based on the Level of Repair Analysis (LORA) and the associated Economic Analysis, contractor logistic support (CLS) is planned for the BAT. O&S costs will further solidify with the accelerated aging tests and stockpile reliability flight tests in FY96. There is no antecedent system.

Average Annual Cost Per BAT System reflects average annual cost for total BAT quantity of 19871.

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

Cost Element	Avg Annual Cost Per BAT System	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	0.6	0.0
Unit Level Consumption	0.0	0.0

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18b. (U) Operating and Support Costs (Cont'd):
BAT/BAT P3I

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

Cost Element	Avg Annual Cost Per BAT System	Avg Annual Cost Per Antecedent
Intermediate Maintenance	0.0	0.0
Depot Maintenance	1.4	0.0
Contractor Support	0.0	0.0
Sustaining Support	1.6	0.0
Indirect Costs	0.0	0.0
Total	3.6	0.0

Army TACMS Blk II/Blk IIA

a. (U) Assumptions and Ground Rules --

ATACMS Block II will be fired from the modified Multiple Launch Rocket System (MLRS) M270 launcher within the MLRS organizational units. Manning/crew support is provided by the MLRS organizational unit. ATACMS Block II will be a certified round. Maintenance will be determined on the basis of a Stockpile Reliability Program (SRP). There is no antecedent system.

Average Annual Cost Per ATACMS Block II reflects average annual cost for total ATACMS Block II quantity (1206).

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

Cost Element	Avg Annual Cost Per ATACMS Block II	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	1.0	0.0
Unit Level Consumption	0.3	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	1.2	0.0
Contractor Support	0.0	0.0
Sustaining Support	6.0	0.0
Indirect Costs	0.1	0.0
Total	8.6	0.0

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N-10 F/A-18 E/F

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: F/A-18E/F

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AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): F/A-18E/F Naval Strike Fighter (HORNET)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

F/A-18 Program Office	CAPT J. W. DYER, USN
Tactical Aircraft Program	Assigned: January 14, 1994
Washington, DC 20361-1265	DSN 664-2210 x7431
	COMM (703) 604-2210 x7431

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0204136N

PROCUREMENT:

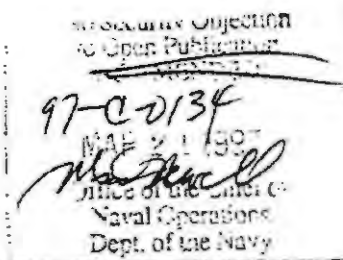
APPN 1506 ICN 014500 (Navy)

APPN 1506 ICN 060510 (Navy)

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE



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5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated February 15, 1996.

6. Mission and Description:

program inception. The F/A-18E (single seat) and the F/A-18F (two seat) will be a high performance twin-engine, multi-mission, multi-seat fighter designed to replace F/A-18C (single seat), F/A-18D (two seat), A-6, and F-14 aircraft as they reach the end of service life and retire. The F/A-18E/F will be designed primarily to meet current Navy and Marine Corps fighter escort, interdiction, fleet air defense and close air support mission requirements. Enhancements will include the increased range, improved survivability, and improved carrier suitability required for the F/A-18 to continue its key strike fighter role against the advanced threat of the late 1990's and beyond.

7. Executive Summary:

The F/A-18E/F program is currently on cost, on schedule, and meeting all performance requirements.

Aircraft is currently 741 pounds below (better than) SPEC weight.

The airframe development contract boasts a cost performance index (CPI) of 101.3 and a schedule performance index of 99.1. The engine development contract possesses a CPI of 94.4 and an SPI of 98.8.

The airframe engineering and manufacturing development (E&MD) contract is 87.8% complete and the engine E&MD contract is 93.3% complete.

All seven test E&MD aircraft have been delivered to NAS Patuxent River, MD and are in the midst of a rigorous, three year flight test program.

The Navy Program Review was successfully completed on 25 March 1996 and the advanced acquisition contract was awarded on 30 April 1996.

Initial Sea Trials (IST) were successfully completed aboard the USS John C. Stennis CVN 74.

Program projects that it will complete the E&MD program under the original cost estimate of \$4.88B (FY90\$).

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone IV/II	MAR 92	MAR 92	MAY 92
Production Readiness Review (Airframe)	APR 95	APR 95	AUG 95
First Engine to Test	APR 93	APR 93	MAY 93
Preliminary Design Review (Airframe)	APR 93	APR 93	JUN 93
Critical Design Review (Airframe)	JAN 94	JAN 94	JUL 94
Preliminary Flight Qualification (Engine)	MAR 95	MAR 95	SEP 95
First Flight	OCT 95	OCT 95	NOV 95
Long Lead Release for LRIP	DEC 95	DEC 95	MAR 96
Limited Production Qualification (Engine)	OCT 96	OCT 96	MAR 97 (Ch-1)
LRIP Contract Award	JAN 97	JAN 97	MAR 97
Full Production Qualification (Engine)	OCT 97	OCT 97	MAR 98 (Ch-1)
LRIP First Delivery	DEC 98	DEC 98	JAN 99
Milestone III	JAN 00	JAN 00	MAR 00
Full Rate Production Contract Award	JAN 00	JAN 00	MAR 00
DT&E			
DT-IIA	OCT 95	OCT 95	NOV 95
DT-IIB	NOV 96	NOV 96	DEC 96
DT-IIC	NOV 97	NOV 97	DEC 97
DT-IID	JUL 98	JUL 98	NOV 98
DT-IIIE	OCT 98	OCT 98	NOV 98 (Ch-2)
IOT&E			
OT-IIA	MAR 97	NOV 97	NOV 97
OT-IIB	DEC 97	DEC 97	MAR 98

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
	MAR 99	MAR 99	MAY 99
OT-IIC			
FOT&E			
DT-III	FEB 00	FEB 00	FEB 00
OT-III	FEB 00	FEB 00	JUN 00 (Ch-3)
O-Level Maintenance Capability (OPEVAL)	MAR 99	MAR 99	MAY 99
IOC	SEP 00	SEP 00	SEP 00
I-Level Maintenance Capability			
WRA TPS and Modified TPSs (IOC)	SEP 00	SEP 00	SEP 00
New SRA TPS (IOC + one year)	SEP 01	SEP 01	SEP 01
Material Support Date	OCT 02	OCT 02	APR 03
Navy Support Date	OCT 03	OCT 03	DEC 03
D-Level Maintenance Capability	OCT 03	OCT 03	DEC 03

b. Current Change Explanations --

(Ch-1): Limited Production Qualification and Full Production Qualification were delayed due to loss of testing time during the investigation and subsequent correction of failures in stator stages 3 and 6 of the high pressure compressor.

(Ch-2): DT-IIE adjusted to align with the beginning of TECHEVAL (DT-IIB). Starting in November 98, the aircraft not supporting TECHEVAL will support DT-IIE efforts.

(Ch-3): Start date adjusted to align with current FOT&E plan. This allows for enough time to complete the required DT efforts prior to the start of OT.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Deck Spot Factor (F/A-18A/B/C/D =1.2)	1.4	1.4 / <1.5	TBD	<1.5
Fighter Escort Radius (internal fuel) (Nm)	425	425 / 410	TBD	425
Interdiction Mission Radius (Nm)				
2 external tanks (retained)	400	400 / 390	TBD	400
3 external tanks (retained)	450	450 / 430	TBD	450
Combat Ceiling (max thrust) (ft)	>50000	>50000 / 50000	TBD	>50000
Carrier Suitability (Tropical Day Conditions)				
Launch: Catapult WOD (C-13 Catapult:TCGN) (kts)	25	25 / <30	TBD	<30

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Recovery: WOD (MK-7 MOD 3) (kts)	10	10 / <15	TBD	<15
Approach Speed (kts)	140	140 / <150	TBD	<150
Recovery Payload (lbs)	9000	9000 / 9000	TBD	9,000
Usable Load Factor (Subsonic; Nz) (G's)	+7.5	+7.5 / +7.5	TBD	+7.5
Specific Excess Power (Max Thrust, .9M, 1G, 10kft) (fps)	650	650 / >600	TBD	>600
Acceleration (.8M to 1.2M at 35kft) (sec)	60	60 / <70	TBD	<70
Mean Flight Hours Between Maintenance Actions	0.6	0.6 / 0.5	TBD	0.5
Mean Flight Hours Between Failures 1/	2.0	2.0 / 1.7	TBD	1.7
Maintenance Hours per flight hour (O&I-Level Unshed)	12.0	12.0 / 15.0	TBD	15.0
Built-In Test (All Avionics) 1/				
Fault Detection (%)	75	75 / 65	TBD	65
Fault Isolation (%)	90	90 / 85	TBD	85
False Alarm Rate (%)	30	30 / 45	TBD	45*
Speed (Mach)	.98	.98 / .96	TBD	.96
Fighter Escort Mission Configuration @10,000 ft with Intermediate Rated Thrust				
Empty Weight (lbs)	29950	29950 / 31950	TBD	30564

Note: Interdiction Mission Radius (NM) payload with:

2 external tanks: 2 AIM-9 + 4 MARK 83 LD + FLIR/TIN

3 external tanks: 2 AIM-9 + 4 MARK 83 LD + FLIR/TIN and Low Drag
Pylons

* Under study to establish common definition for hardware/software BIT
False Indication Rate.

b. Current Change Explanations -- None.

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

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	4883.3	4883.3	4754.4
Procurement	49076.3	49076.3	47546.8
Recurring Flyaway	(36450.2)		(35393.9)
Non-Recurring	(368.1)		(422.7)
Ancillary	(3858.5)		(5969.6)
Total Flyaway	(40676.8)		(41786.2)
Total Other Wpn Sys			(0.0)
Peculiar Support	(4301.9)		(4810.3)
Initial Spares	(4097.6)		(950.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	53959.6	53959.6	52301.2
Escalation	40623.4	40623.4	27190.4
Development (RDT&E)	(949.3)	(949.3)	(753.1)
Procurement	(39674.1)	(39674.1)	(26437.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	94583.0	94583.0	79491.6

Pre-development funding of \$36.6M in FY90 Base Year \$'s is reflected in the Development (RDT&E) current estimate. The \$36.6M (BY\$) was not a part of the E&MD estimate and is not to be included in the approved \$4.883B development cap.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	1000	1000	1000
Total	1000	1000	1000

Note: Excludes 0 RDTE prototypes from the SAR Baseline and 7 from the Current Estimate that are not considered fully configured.

LRIP quantities approved at the 1992 DAB were 12 aircraft in FY97, 12 in FY98, and 18 in FY99. The current LRIP quantities are 12 aircraft in FY97, 20 in FY98, and 30 in FY99.

c. Foreign Military Sales -- None.

d. Nuclear Costs --
N/A

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (FEB 96 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	52301.2	53959.6	
(2) Quantity	1000	1000	
(3) Unit Cost	52.301	53.960	-3.07
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	47546.8	49076.3	
(2) Quantity	1000	1000	
(3) Unit Cost	47.547	49.076	-3.12

13. Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Development Estimate	5832.6	88750.4	-	94583.0
Previous Changes:				
Economic	-181.4	-13669.3	-	-13850.7
Quantity	-	-	-	-
Schedule	-143.4	-1113.4	-	-1256.8
Engineering	-	+432.4	-	+432.4
Estimating	-104.4	+1002.8	-	+898.4
Other	-	-	-	-
Support	-	+152.4	-	+152.4
Subtotal	-429.2	-13195.1	-	-13624.3
Current Changes:				
Economic	-1.8	+1032.7	-	+1030.9
Quantity	-	-	-	-
Schedule	-	+1389.4	-	+1389.4
Engineering	-	-	-	-
Estimating	+105.9	-100.2	-	+5.7
Other	-	-	-	-
Support	-	-3893.1	-	-3893.1
Subtotal	+104.1	-1571.2	-	-1467.1
Total Changes	-325.1	-14766.3	-	-15091.4
Current Estimate	5507.5	73984.1	-	79491.6

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

Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	4883.3	49076.3	-	53959.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-153.6	+29.9	-	-123.7
Engineering	-	+262.4	-	+262.4
Estimating	-57.1	+668.2	-	+611.1
Other	-	-	-	-
Support	-	-21.8	-	-21.8
Subtotal	-210.7	+938.7	-	+728.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	+402.2	-	+402.2
Engineering	-	-	-	-
Estimating	+81.8	-253.3	-	-171.5
Other	-	-	-	-
Support	-	-2617.1	-	-2617.1
Subtotal	+81.8	-2468.2	-	-2386.4
Total Changes	-128.9	-1529.5	-	-1658.4
Current Estimate	4754.4	47546.8	-	52301.2

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-1.7
	Adjustment for prior/current inflation. (Economic)	N/A	-0.1
	Revisions due to increases in funding by Program Budget Decision (PBD) 113 and miscellaneous decreases (Navy Working Capital Fund, General Reductions, etc.). (Estimating)	+89.3	+113.9
	Pre-development effort funded under the F/A-18 C/D program. (Estimating)	-7.5	-8.0
	RDT&E Subtotal	+81.8	+104.1
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+1032.7
	Change in the maximum production rate from 72 to 60 per year. (Schedule)	+402.2	+1389.4
	Cost model updated to incorporate actual cost data to better reflect program requirements and to incorporate multi-year procurement. (Estimating)	-253.3	-100.2

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

b. Current Change Explanations --

(Dollars in Millions)

Base-Year	Then-Year
-2617.1	-3893.1

Support estimate revised to remove Aviation Outfitting Account (AOA) spares and to incorporate updated actual cost data to better reflect program requirements. (Support)

Procurement Subtotal	-2468.2	-1571.2
----------------------	---------	---------

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
94.58	-12.82	+0.01	+0.13	+0.43	+0.90	--	-3.74	-15.09	79.49

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
88.75	-12.64	--	+0.28	+0.43	+0.90	--	-3.74	-14.77	73.98

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	DEC 91	MAR 92	N/A	MAY 92
Milestone III	DEC 98	JAN 00	N/A	MAR 00
FUE/IOC	N/A	SEP 00	N/A	SEP 00
Total Cost	3974.4	94583	N/A	79491.6
Total Quantity	0	1000	N/A	1000
Prog Acq Unit Cost	0	94.58	N/A	79.49

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

a. RDT&E --			Initial Contract Price		
<u>Airframe E&MD:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MCDONNELL DOUGLAS, St. Louis, MO					
N00019-92-C-0059, CPAF/IF			\$3879.5	\$0.0	0
Award: July 20, 1992					
Definitized: December 7, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$4084.3	\$0.0	0	\$3874.0	\$4007.3	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/29/96)			\$8.8	-\$39.9	
Net Change			\$37.9	-\$31.5	
			\$29.1	\$8.4	

Explanation of Change:

Both the cost and schedule performance have improved greatly since December 1995. The cost variances at McDonnell Douglas and Northrop Grumman have improved by approximately \$11M and \$16M respectively. Underruns have been primarily driven by material underruns and reduced labor charges during the strike. As the contract moves towards completion the schedule variances have improved by approximately \$6M and \$7.5M at McDonnell Douglas and Northrop Grumman respectively. These improvements were driven largely by the delivery of spares, component parts, and aircraft.

YF414-GE-404 Engine:			Initial Contract Price		
General Electric Company, Lynn, MA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-92-C-0149, CPAF/IF					
Award: July 20, 1992			\$773.8	\$0.0	21
Definitized: December 7, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$773.8	\$0.0	21	\$790.3	\$797.2	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/31/96)			\$-32.3	-\$14.4	
Net Change			\$-37.2	-\$7.6	
			\$-4.9	\$6.8	

Explanation of Change:

The unfavorable cumulative cost variance increased by \$4.9M to -\$37.2M. The cost variance has increased primarily due to hardware and testing issues as well as indirect rate impacts. The unfavorable schedule variance improved by \$6.8M to -\$7.6M due primarily to delivery of flight test and spare flight test engines.

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

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

<u>Appropriation</u>	<u>Prior Years (FY92-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-16)</u>	<u>Total</u>
RDT&E	4982.1	267.5	128.7	129.2	5507.5
Procurement	2408.4	2261.3	3145.8	66168.6	73984.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	7390.5	2528.8	3274.5	66297.8	79491.6

b. Annual Summary -- F/A-18 E/F

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY90 Dollars Nonrec</u>	<u>Flyaway FY90 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1992				320.8	350.1
1993				754.0	842.1
1994				1227.1	1396.8
1995				1073.7	1246.8
1996				677.7	803.1
1997				283.7	343.2
1998				216.5	267.5
1999				102.0	128.7
2000				47.8	61.5
2001				42.1	55.4
2002				4.8	6.5
2003				4.2	5.8
Subtotal				4754.4	5507.5

Pre-development effort of \$8.0M in FY91 is included in the F/A-18 Improvements project line and is not reflected in the RDT&E total.

Pre-development effort of \$39.9M in FY92, previously reported as a part of the F/A-18 C/D SAR, is reflected in the RDT&E total. This \$39.9M (TY\$) is not included in the \$4.883B Congressionally mandated funding cap.

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

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				193.4	233.6
1997	12	172.6	1180.5	1763.4	2174.6
1998	20	255.4	1480.0	1795.8	2261.3
1999	30	336.4	1694.2	2446.6	3145.8
2000	48	475.5	2220.2	3194.6	4195.5
2001	50	397.1	2041.1	2788.8	3742.9
2002	50	385.0	1888.7	2617.2	3595.5
2003	50	302.1	1816.7	2500.1	3520.7
2004	48	284.4	1696.5	2275.5	3287.9
2005	48	279.8	1667.8	2194.5	3253.1
2006	48	275.9	1631.1	2185.2	3323.7
2007	60	374.1	1942.9	2582.6	4030.1
2008	60	329.0	1897.9	2499.8	4002.4
2009	60	325.5	1866.4	2489.8	4090.0
2010	60	322.5	1840.4	2396.9	4039.7
2011	60	319.8	1817.9	2382.4	4119.7
2012	60	317.8	1797.0	2350.2	4169.8
2013	60	316.6	1778.4	2324.6	4231.4
2014	60	315.1	1761.1	2311.9	4317.9
2015	60	313.7	1745.1	2288.7	4385.6
2016	56	294.0	1630.0	1964.8	3862.7
Subtotal	1000	6392.3	35393.9	47546.8	73984.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1000	6392.3	35393.9	52301.2	79491.6

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 4414.5

Percent Total Program Expended: 5.6%

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18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Current Program: F/A-18E

Flight hours per aircraft per month: 35

Number of aircraft per squadron: 12

Consumption rate, gallons per hour: 1154.0 POL cost, JP-5 per gallon FY90\$: \$0.60

Antecedent Program: F/A-18C

Flight hours per aircraft per month: 33.6

Number of aircraft per squadron: 12

Consumption rate, gallons per hour: 1055.7 POL cost, JP-5, per gallon, FY90\$: \$0.60

Date of estimate: February 1997

Source: AIR-4.2 Operating & Support Cost Estimate

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per F/A-18E Squadron 12 A/C Squadron	Avg Annual Cost Per F/A-18C Squadron 12 A/C Squadron
Mission Pay & Allowances	7.4	7.1
Unit Level Consumption	13.4	10.2
Intermediate Maintenance	0.5	0.4
Depot Maintenance	1.4	2.2
Contractor Support	0.0	0.0
Sustaining Support	1.8	1.5
Indirect Costs	0.5	0.4
Total	25.0	21.8

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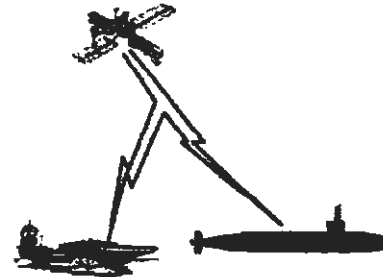
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: Navy EHF SATCOM Prog

AS OF DATE: December 31, 1996

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NESP

1. (U) Designation and Nomenclature (Popular Name): Navy EHF SATCOM Program (NESP) AN/USC-38(V)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

Space and Naval Warfare Systems	CAPT K.D. Slaght
Command - PMW 176	Assigned: March 11, 1993
2451 Crystal Drive	DSN 332-3950; COMM (703) 602-3950
Arlington, VA 22245-5200	

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

RDTE:

(U) PE 0303109N Project X0728

PROCUREMENT:

(U) APPN 1810 ICN 33321000 (Navy) (Shared)

(U) APPN 1810 ICN 33322000 (Navy) (Shared)

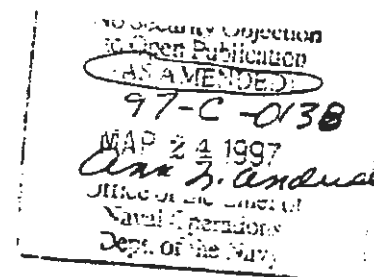
(U) APPN 1810 ICN 33902000 (Navy) (Shared)

(U) APPN 1611 ICN MULTIPLE (Navy)

MILCON:

(U) PE 0303109N

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5. (U) References:

Production Baseline (SAR):

(U) NAE Approved Acquisition Program Baseline dated March 24, 1993.

Approved Program (APB):

(U) NAE Approved Acquisition Program Baseline dated March 24, 1993.

6. (U) Mission and Description:

(U) a. (U) The Navy Extremely High Frequency (EHF) Satellite Communications (SATCOM) Program (NESP) AN/USC-38(V) is an anti-jam, low probability of intercept communications terminal designed to accommodate a wide variety of command and control communication applications (i.e., secure voice, teletype, data, and fleet broadcast systems). As the Navy's portion of Milstar, NESP terminals are an essential part of the number one command and control communications system within DOD as identified by the Chief of Naval Operations on February 9, 1993. The terminal operates within the EHF uplink and Super High Frequency (SHF) downlink radio frequency (RF) spectrums. The terminals are interoperable with Army and Air Force terminals and will operate with Milstar satellites as well as EHF packages on board Ultra High Frequency (UHF) Follow-On (UFO) Satellites 4 - 10 and with the Fleet Satellite (FLTSAT) EHF Packages (FEP) installed on FLTSATs 7 and 8. A Medium Data Rate (MDR) applique is being developed for incorporation into the NESP terminal to allow MDR communications with Milstar II satellites. The NESP terminals will provide vital survivable wartime command and control communications for the National Command Authority, Specified/Unified CINCs, and operational commanders. NESP has three configurations: Submarine (V)1, Ship (V)2, and Shore (V)3. This system does not replace another system.

7. (U) Executive Summary:

(U) (U) The terminal was developed to support the requirements of the Mission Elements Needs Statement (MENS), ASN (RE&S) letter of July 23, 1981, and Navy Decision Coordinating Paper (NDCP) of January 21, 1982, updated April 25, 1989. NESP's operational performance will meet the threat defined in the Milstar System Threat Assessment Report (STAR) updated March 1992. After a full and open competition, three companies began system definition and concept demonstration in 1979. Two companies were selected for Full Scale Development (FSD) in 1982; one company was awarded a Firm Fixed Price contract in 1986 for FSD completion and initial production. Low Rate Initial Production (LRIP) beginning in FY 90 was approved at a Milestone IIIA decision in May 1989. Operational Evaluation (OPEVAL) Phase I and OPEVAL Phase II were successfully completed in September 1990 and August 1992, respectively. Full Rate Production beginning in FY 93 was approved at a Milestone III decision in April 1993.

(U) The first Milstar satellite was launched on February 7, 1994. A production NESP terminal successfully communicated with an Air Force terminal over the on-orbit Milstar Satellite on 15 February 1994 as part of Milstar System Test

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7. (U) Executive Summary (Cont'd):

(MST)-8000. NESP Initial Operational Capability (IOC) was achieved in April 1994.

(U) NESP terminals were certified as participants in the Dedicated Asset Test (DAT) portion of the Milstar Initial Operational Test and Evaluation (IOT&E) in August 1994. This test was completed in September 1994 and all DAT performance requirements were successfully achieved by the NESP terminals. NESP terminals were also certified to initiate Follow-On Operational Test and Evaluation (FOT&E) in August 1994. In September 1994 this test was completed with all test objectives successfully achieved.

(U) Ultra High Frequency (UHF) Follow-On (UFO) Satellite Flights 4, 5, and 6, each equipped with an EHF package, were launched in 1995. Testing of the satellites with the EHF terminal was successful, providing worldwide EHF communications coverage for the DoD.

(U) The second Milstar satellite (DFS-2) was launched in November 1995. NESP terminals successfully participated in Milstar System Test (MST) 8000-2. In December 1995, the two on-orbit Milstar satellites successfully transmitted the first Milstar inter-satellite message via crosslinks.

(U) The first UFO satellite with the enhanced EHF package was launched in July 1996. The package includes enhanced beam switching capabilities, which allows for more efficient use of communication channels.

(U) Operational test event OT-IIIB, Signal Susceptibility and Vulnerability Assessment, which tested the anti-jam (AJ) and low probability of intercept (LPI) performance of the NESP terminal, was successfully completed in November 1996. During this test, EHF sub and ship terminals met their respective AJ and LPI requirements. Completion of this test represents a major accomplishment in the NESP program.

(U) NESP successfully completed Milstar System Test 3500 in November 1996. This event was initial development testing between the NESP Medium Data Rate (MDR) Upgrade and the LDR/MDR satellite Payload simulator.

(U) Compatibility testing between the NESP terminal and the Interim Polar satellite Flight Model was successfully accomplished early in December 1996. This function will allow EHF communications to Naval forces operating in regions above 65N and thereby provide global EHF communications coverage that would otherwise be unavailable until 2002.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
	OCT 79	OCT 79	OCT 79
System Definition/Concept Demo (CEB) (3 Contractors)			
FSD Approval (Milestone II) (2 Contractors)	JAN 82	JAN 82	JAN 82
PDR Complete	NOV 82	NOV 82	NOV 82
CDR Complete	JUN 84	JUN 84	JUN 84
Downselect (1 Contractor)	MAR 86	MAR 86	MAR 86
Factory Acceptance Test	JAN 88	JAN 88	JAN 88
Operational Assessment (OTIIA)	MAR 88	MAR 88	MAR 88
Program Review (Low Rate Initial Prod)	MAY 89	MAY 89	MAY 89
Operational Evaluation (OTIIB)	JUN 90	JUN 90	JUN 90
Low Rate Initial Production First Delivery	JUL 92	AUG 92	AUG 92
Additional Operational Testing (OTIIC)	JUL 92	JUL 92	JUL 92
Milestone III (Full Rate Production)	DEC 92	DEC 92	APR 93
First Unit Equipped Start	JAN 93	JAN 93	JAN 93
Service Depot Support Date	FEB 94	FEB 94	FEB 94
Organic Support Capability Date	FEB 94	FEB 94	FEB 94
Initial Operational Capability (Navy)	JAN 94	JAN 94	APR 94
FOT&E	MAR 94	MAR 94	AUG 94
Follow-On Procurement RFP Release	JAN 97	JAN 97	APR 97 (Ch-1)
MDR Applique Award	OCT 97	OCT 97	OCT 97
MDR Operational Test	OCT 98	OCT 98	OCT 98
Milestone IV	FEB 99	FEB 99	FEB 99

b. (U) Current Change Explanations --

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

(Ch-1) The PM's current estimate for follow-on terminal RFP release has changed from Jan 97 to Apr 97. The delay is due to:

-Incorporation of changes in the RFP to allow greater flexibility for growth to the Advanced EHF waveform, and to reduce the cost to upgrade the terminals in the future, and;

-Possible incorporation of efforts to incorporate other satellite communications bands (e.g., X-band and Ka-band) into the follow-on terminal procurement for consistency with the DoD Office of the Space Architect (OSA) MILSATCOM architecture vectors.

10. (U) Performance Characteristics:

a. Performance --	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
-------------------	------------------------------	--	---------------------------	---------------------

(b)(1)



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

a. Performance --	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
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(b)(1)



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Navy EHF SATCOM Prog, December 31, 1996

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

a. Performance --	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
-------------------	------------------------------	--	---------------------------	---------------------

(b)(1)

(U) Acronyms:

bps - bits per second

cal - calories

cm - centimeters

CEVR - Circular Equivalent Vulnerability Radius

dBi - logarithmic ratio of directional power relative to a spherical (isotropic) radio frequency radiator

dBW - logarithmic ratio relative to one watt

EIRP - effective isotropic radiated power

G/T - antenna receive gain/temperature of receive system (figure of merit)

nmi - nautical miles

sec - seconds

rads(si)/sec - radiation dose (square inches)/second

sv - secure voice

TTY - Teletype

hrs - hours

FLTBCST - Fleet Broadcast

b. (U) Current Change Explanations --

(Ch-1) The results of the OT-IIIB are documented in COMOPTEVFOR report Ser. 611/5049 of December 19, 1996. OT-IIIB test results verified that the performance of the NESF terminal meets or exceeds APB Thresholds.

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	457.4	457.4	486.4
Procurement	1395.2	1395.2	1395.4
Terminals	(991.7)		(1048.3)
Other Weapon Sys	(127.9)		(114.1)
Peculiar Support	(40.7)		(39.3)
Initial Spares	(234.9)		(193.7)
Construction (MILCON)	24.0	24.0	7.7
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	1876.6	1876.6	1889.5
Escalation	497.1	497.1	349.9
Development (RDT&E)	(6.0)	(6.0)	(13.9)
Procurement	(486.3)	(486.3)	(335.1)
Construction (MILCON)	(4.8)	(4.8)	(0.9)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2373.7	2373.7	2239.4
b. (U) Quantity --			
Development (RDT&E)	7	7	7
Procurement	386	386	392
Total	393	393	399

(U) Note: RDT&E units are fully configured

[U] A total of 116 EHF terminals were procured under LRIP, exceeding 10% of total production. Three one-year LRIPs were approved by the Navy Acquisition Executive as the Navy terminal program was ahead of Milstar Satellite schedules as well as Army and Air Force terminal program schedules.

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 93 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	1889.5	1876.6	
(2) Quantity	399	393	
(3) Unit Cost	4.736	4.775	-0.83
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	1395.4	1395.2	
(2) Quantity	392	386	
(3) Unit Cost	3.560	3.615	-1.52

(U) (U) None.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	463.4	1881.5	28.8	2373.7
Previous Changes:				
Economic	-5.9	-141.7	-0.6	-148.2
Quantity	-	-37.2	-	-37.2
Schedule	+7.6	+20.0	-	+27.6
Engineering	+12.8	+33.7	-	+46.5
Estimating	+0.1	-5.4	+0.8	-4.5
Other	-	-	-	-
Support	-	-87.3	-20.4	-107.7
Subtotal	+14.6	-217.9	-20.2	-223.5
Current Changes:				
Economic	-0.4	-3.7	-	-4.1
Quantity	-	+36.1	-	+36.1
Schedule	-	+20.2	-	+20.2
Engineering	+22.7	-	-	+22.7
Estimating	-	+22.4	-	+22.4
Other	-	-	-	-
Support	-	-8.1	-	-8.1
Subtotal	+22.3	+66.9	-	+89.2
Total Changes	+36.9	-151.0	-20.2	-134.3
Current Estimate	500.3	1730.5	8.6	2239.4

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

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	457.4	1395.2	24.0	1876.6
Previous Changes:				
Quantity	-	-23.2	-	-23.2
Schedule	+4.1	+13.1	-	+17.2
Engineering	+8.5	+23.8	-	+32.3
Estimating	+0.6	-3.8	+0.5	-2.7
Other	-	-	-	-
Support	-	-51.7	-16.8	-68.5
Subtotal	+13.2	-41.8	-16.3	-44.9
Current Changes:				
Economic	-	-	-	-
Quantity	-	+21.4	-	+21.4
Schedule	-	+12.0	-	+12.0
Engineering	+15.8	-	-	+15.8
Estimating	-	+13.3	-	+13.3
Other	-	-	-	-
Support	-	-4.7	-	-4.7
Subtotal	+15.8	+42.0	-	+57.8
Total Changes	+29.0	+0.2	-16.3	+12.9
Current Estimate	486.4	1395.4	7.7	1889.5

(U) Revised terminal and Medium Data Rate (MDR) requirements to meet restructured fleet communications needs resulted in 21 additional LDR/MDR Follow-On terminals and 56 fewer MDR upgrade retrofits.

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.4
	Funds are included in FY 02 and 03 to provide for Advanced EHF modifications to the existing NESP terminals. (Engineering)	+15.8	+22.7
	RDT&E Subtotal	+15.8	+22.3
(2)	<u>Procurement</u>		
	Revised inflation indices. (Economic)	N/A	-3.7
	Revised terminal and MDR requirements to meet restructured fleet communications needs resulted in 21 additional LDR/MDR Follow-On terminals and 56 fewer MDR upgrade retrofits. (Quantity)	+21.4	+36.1
	Revised procurement profiles for terminals, MDR upgrades and Navy EHF Communication Controllers (NECCs). (Schedule)	+12.0	+20.2

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimates to reflect increased reliance on forward-fit shipyard installations versus Alteration Installation Team installs. (Estimating)	+12.9	+21.7
Support changes due to quantity and schedule changes for LDR/MDR terminals and MDR upgrades. (Support)	-4.7	-8.1
Adjustment for current and prior inflation changes. (Estimating)	+0.4	+0.7
Procurement Subtotal	+42.0	+66.9

(3) MILCON

	0.0	0.0
MILCON Subtotal	0.0	0.0

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.04	-0.38	-0.09	+0.12	+0.17	+0.04	--	-0.29	-0.43	5.61

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.87	-0.37	-0.08	+0.10	+0.09	+0.04	--	-0.24	-0.46	4.41

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	JAN 82	JAN 82
Milestone III	N/A	N/A	DEC 92	APR 93
FUE/IOC	N/A	N/A	JAN 94	APR 94
Total Cost	N/A	N/A	2373.7	2239.4
Total Quantity	N/A	N/A	393	399
Prog Acq Unit Cost	N/A	N/A	6.04	5.61

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

a. Procurement --

(U) EHF Terminals:

RAYTHEON COMPANY, MARLBOROUGH, MA

N00039-82-C-0146, FFP

Award: February 14, 1990

Definitized: February 14, 1990

Initial Contract Price		
Target	Ceiling	Qty
\$83.7	N/A	24

Current Contract Price		
Target	Ceiling	Qty
\$393.2	N/A	244

Estimated Price At Completion	
Contractor	Program Manager
\$393.2	\$393.2

Explanation of Change:

(U) The Current Contract Price and Estimated Price At Completion increased \$14.5M in 1996 as a result of three modifications to the production contract, chiefly a modification which exercised an option to procure ten terminals.

(U) Cost and Schedule variance reporting is not required on this Firm Fixed Price contract.

(U) EHF Terminals:

Raytheon Company, Marlborough, MA

N00039-82-C-0146, FFP

Award: February 14, 1990

Definitized: February 14, 1990

Initial Contract Price		
Target	Ceiling	Qty
\$83.7	N/A	24

Current Contract Price		
Target	Ceiling	Qty
\$393.2	N/A	244

Estimated Price At Completion	
Contractor	Program Manager
\$393.2	\$393.2

Explanation of Change:

None.

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Navy EHF SATCOM Prog, December 31, 1996

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

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY82-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	381.0	16.2	25.2	77.9	500.3
Procurement	892.9	48.6	99.6	689.4	1730.5
MILCON	8.6	-	-	-	8.6
O&M	-	-	-	-	-
Total	1282.5	64.8	124.8	767.3	2239.4

b. Annual Summary -- NAVY EHF SATCOM PROGRAM

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY90 Dollars Nonrec</u>	<u>Flyaway FY90 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1982				22.3	17.2
1983				30.2	24.4
1984				29.7	24.8
1985				38.0	32.8
1986				23.9	21.2
1987				37.4	34.2
1988				42.8	40.4
1989				27.9	27.4
1990				19.8	20.3
1991				16.2	17.2
1992				30.3	33.1
1993				23.2	25.9
1994				12.7	14.5
1995				17.1	19.8
1996				11.3	13.4
1997				11.9	14.4
1998				13.1	16.2
1999				20.0	25.2
2000				18.7	24.1
2001				13.5	17.8
2002				13.2	17.8
2003				13.2	18.2
Subtotal	7			486.4	500.3

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990	3		6.6	4.0	4.3
1991	1		2.0	1.2	1.3
1992	1		2.2	2.0	2.3
1993	9		19.6	11.9	13.9
1994	7		26.7	11.4	13.7
1995				6.5	8.0
1996	3		9.1	14.7	18.4
1997				8.9	11.4
1998				5.1	6.7
1999	7		16.4	11.4	15.2
2000	8		16.7	9.2	12.6
2001	5		10.0	10.7	15.0
2002	3		5.7	9.1	13.1
2003				6.1	8.9
2004				2.9	4.4
Subtotal	47		115.0	115.1	149.2

(U) "Flyaway" costs include installation amounts in the year in which the equipment is procured. "Total Base Year" and "Total Then Year" costs reflect installation in the year in which funds are budgeted.

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989		4.3	4.5	8.8	9.1
1990	21	17.4	44.6	119.2	127.5
1991	37	2.8	71.4	98.2	106.9
1992	53	1.8	118.9	137.1	154.0
1993	54	1.0	110.5	110.9	126.0
1994	58	0.4	138.6	93.1	107.4
1995			1.1	48.0	56.5
1996	7		17.9	46.8	56.2
1997		7.8	4.1	62.0	76.0
1998		7.2	11.7	33.5	41.9
1999	13	1.8	48.2	66.0	84.4
2000	32	1.0	88.6	99.9	130.5
2001	16		43.3	62.7	83.6
2002	13		42.3	64.9	88.6
2003	13		41.0	65.4	91.5
2004	14		49.6	60.2	86.4
2005	14		49.7	63.9	94.1
2006			1.8	21.9	33.1

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Navy EHF SATCOM Prog, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007				17.8	27.6
Subtotal	345	45.5	887.8	1280.3	1581.3

(U) (U) "Flyaway" costs include installation in the year in which equipment is procured. "Total Base Year" and "Program" costs reflect installation in the year in which funds are budgeted. Also, "Flyaway Rec" numbers include production of upgrades such as MDR upgrades for retrofit into NESF terminals in the year in which the funds are budgeted.

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				7.7	8.6
Subtotal				7.7	8.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	399	45.5	1002.8	1889.5	2239.4

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	7	7
Procurement	234	234

(U) Percent Total Program Quantities Delivered: 60.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1113.0

(U) Percent Total Program Expended: 49.7%

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Navy EHF SATCOM Prog, December 31, 1996

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

(U) Operating and support costs are the sum of all costs resulting from the operation, maintenance, and support of the terminals after acceptance into the Navy inventory. The operating costs are the sum of the cost of operating personnel and facilities, in addition to energy and software maintenance. The prime equipment inventory objective consists of 246 Ship, 73 Submarine, 64 Shore, 6 Training, and 3 Support terminals.

(U) Support costs include the following: (1) corrective maintenance labor and material at Organizational/Intermediate (O/I) and depot levels, (2) packaging and shipping costs incurred as a result of shipping failed and repaired items between organizational and depot level maintenance facilities, (3) preventive maintenance labor and material costs, (4) Support and Test equipment maintenance and material costs, (5) O/I and depot level maintenance shop spare costs, (6) O/I and depot level inventory storage costs, (7) documentation maintenance costs, (8) replenishment spare costs, (9) supply system management costs and, (10) the cost of training operators and O/I and depot level maintenance personnel.

(U) Source of data: Program Life Cycle Cost Estimate (PLCCE) prepared for MS III approval decision granted April 1993.

(U) There is no Antecedent System for this program.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg. Annual Cost Per Terminal	N/A
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	18.0	0.0
Intermediate Maintenance	39.0	0.0
Depot Maintenance	41.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.0	0.0
Indirect Costs	0.0	0.0
Total	98.0	0.0

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: THAAD System

AS OF DATE: December 31, 1996

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THAAD

1. (U) Designation and Nomenclature (Popular Name): Theater High Altitude Area Defense (THAAD) System

2. (U) DoD Component: BMDO

Joint Participants:

The Department of the Army is the Executing Agency

3. (U) Responsible Office and Telephone Number:

THAAD Project Office
P.O. Box 1500
Huntsville, AL 35807-3801

COL Louis P. Deeter
Assigned: May 17, 1996
DSN 645-2169; COMM (205) 955-2169
DeeterL-MD-TH1@thaadl.army.mil

(U) Ballistic Missile Defense
Organization, The Pentagon
Washington, DC 20301-7100

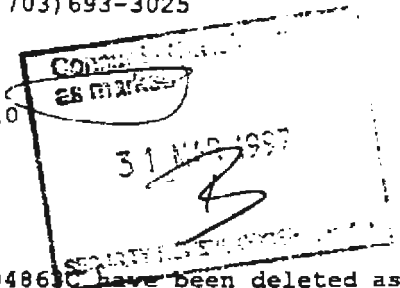
LTG Lester Lyles, USAF
Assigned: August 1, 1996
DSN 223-3025 COMM (703) 693-3025

4. (U) Program Elements/Procurement Line Items:

RDT&E:

- (U) PE 0603216C (Shared) Project A2104, A3304, A2210
- (U) PE 0603861C Project M2260, A2260
- (U) PE 0603862C Project A2154
- (U) PE 0603872C
- (U) PE 0604861C Project M2260

(U) PEs 0603218C, 0604216C, 0604225C, 0604862C, and 0604861C have been deleted as there were no funds expended against them.



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5. (U) References:

SAR Baseline (Planning Estimate):

(U) ADM, dated January 28, 1992, subject: ADM for Upper Tier Theater Missile Defense System (UTTMDS) Program

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated September 10, 1996.

6. (U) Mission and Description:

(U) The mission of the Theater High Altitude Area Defense (THAAD) system is to defend against Theater Ballistic Missiles (TBMs) at long ranges and high altitudes. THAAD's long range capability will protect U.S. and allied Armed Forces, broadly dispersed assets and population centers against TBM attacks. THAAD's capability to intercept at high altitudes allows multiple intercept opportunities and will significantly mitigate the effects of weapons of mass destruction. The THAAD System consists of missiles, launchers, radar(s), battle management/command, control, communications, computer and intelligence (BM/C4I) units, and support equipment. The THAAD radar utilizes state-of-the-art radar technology to accomplish its required functions of threat attack early warning, threat type classification, interceptor fire control, external sensor cueing, launch and impact point estimation, and kill assessment after intercept. The THAAD program includes an option for building 40 missiles which will be a part of a prototype called the User Operational Evaluation System (UOES). In addition to the 40 missiles, the UOES consists of 4 launchers, 2 BM/C4I units, 2 radars, and support equipment. The UOES will be used for early operational assessment and testing, allowing the user to influence the design in the development process. Additionally, the UOES will be available for a Commander-in-Chief to consider deployment during a national emergency. The THAAD System does not replace another system.

7. (U) Executive Summary:

(U) The Theater High Altitude Area Defense (THAAD) System (formerly Upper Tier Theater Missile Defense System) requirement was initiated as a Concept Definition Program in 1990. The THAAD System was approved at Milestone Decision Review I in January 1992 for the Demonstration/Validation (Dem/Val) acquisition phase I. The Dem/Val contract was awarded to Lockheed Missiles and Space Company (LMSC) in September 1992.

The Ground Based Radar (GBR) Program evolved from the Ballistic Missile Defense Organization (BMDO) Terminal Imaging Radar (TIR) Project which supported the BMDO in their sensor programs. The TIR program changed into the GBR-X in January 1988 and was again restructured to support near term goals of the Missile Defense Act of 1991 to include Theater Missile Defense (TMD) and Strategic Defense System protection against limited attacks.

The THAAD and TMD-GBR Project Offices merged on June 30, 1995, forming the THAAD System Project Office.

The first three THAAD missile flight tests, all non-intercept missions, were

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THAAD System, December 31, 1996

7. (U) Executive Summary (Cont'd):

performed in April, July, and October 1995. The third test added the Storm Target; the actual system BMC/4I; the THAAD radar in the "shadow mode"; and additional software complexity. The fourth THAAD flight (the first intercept attempt) occurred in December 1995 with the THAAD radar successfully operating in a shadow mode. Flight test-05 was launched in March 1996. Even though the intercept did not occur, the flight test successfully demonstrated the first launch from the tactical Palletized Load System Launcher. Flight test-06, an unsuccessful intercept attempt, was conducted in July 1996. Extensive post-flight analysis indicated a need to modify the missile design to permit additional electrical checks of the seeker and resulted in a several-month delay of subsequent flight tests. Flight test-07 was conducted March 6, 1997 with the primary objective of successfully demonstrating a high endo-atmospheric, body-to-body intercept of a Hera target. A successful intercept was not achieved. Preliminary indications are that the other segments of the system performed nominally. A flight test failure investigation has been initiated.

Lockheed Martin Courtland Operations began performing all missile integration, assembly, and test operations for full missile round assemblies beginning with flight test vehicle-06 in November 1995.

The first THAAD User Operational Evaluation System (UOES) Battalion was activated at Ft. Bliss in February 1996. By August 1996, all of the UOES components were delivered (less missiles).

The FY97 President's Budget caused a major restructure of the THAAD Program as a result of deferring \$2B in the Future Years Defense Plan. A revised Acquisition Program Baseline (APB) for the restructured program was approved by the Under Secretary of Defense for Acquisition and Technology on September 10, 1996. This APB revised only cost and schedule objectives and thresholds.

The Under Secretary of Defense for Acquisition and Technology notified Congress on September 27, 1996 that both UOES and the objective system have been certified compliant with the 1972 Anti-Ballistic Missile Treaty since neither has capability against strategic ballistic missiles.

The FY98 President's Budget increases the program \$722M to accelerate the First Unit Equipped milestone from FY06 to FY04, resulting in another restructure to the THAAD program. The increase also includes funding for additional UOES testing and the second EMD radar which is necessary for the program acceleration. Procurement funding responsibility has been moved from BMDO to the Army.

This is an RDT&E-only SAR in accordance with Title 10, United States Code, Section 2432, "Selected Acquisition Reports".

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
	MAY 92	MAY 92	MAY 92
Army Concept Definition Studies Complete			
Milestone I Review	JAN 92	JAN 92	JAN 92
THAAD Dem/Val Contract Award	JUN 92	JUN 92	SEP 92
GBR Dem/Val Contract Award	JUN 92	SEP 92	SEP 92
Integrated System Test Start	JUL 95	OCT 95	SEP 95
UOES Capability*	N/A	N/A	MAR 99 (Ch-1)
System Delivery Complete (Less Missiles and Radars)	JUL 96	AUG 97	FEB 98 (Ch-1)
Delivery of Optional 40 UOES Missiles Complete	TBD	TBD	TBD
Milestone II DAB Review	JUL 96	JUL 97	JAN 98 (Ch-1)
THAAD EMD Contract Award	AUG 96	AUG 97	FEB 98 (Ch-1)
GBR EMD Contract Award	AUG 96	N/A	N/A
LRIP Review	FEB 99	NOV 02	JAN 02 (Ch-2)
Begin LRIP*	N/A	N/A	JAN 02 (Ch-2)
Milestone III DAB Review	JUL 01	SEP 04	AUG 04 (Ch-2)
Full Rate Production Contract Award	N/A	NOV 04	NOV 04 (Ch-3)
FUE	JUL 01	FEB 06	SEP 04 (Ch-2)
IOC	TBD	TBD	TBD

(U) *UOES Capability and Begin LRIP will be deleted after this SAR as they are not approved APB milestones.

(U) FUE - One firing battery

b. (U) Current Change Explanations --

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9b. (U) Schedule (Cont'd):

(Ch-1) Extensive post-flight analysis of flight test 06 indicated a need to modify the missile design which resulted in an extension of the Dem/Val program from Jun 97 to Oct 97. As a result of the extension, System Delivery Complete changed from Apr 97 to Feb 98; Milestone II DAB Review changed from Mar 97 to Jan 98; and THAAD EMD Contract Award moved from Apr 97 to Feb 98. This extension also resulted in the UOES Capability change from Sep 98 to Mar 99.

(Ch-2) The FY98 President's Budget increased program funding causing a restructure which accelerated LRIP Review and Begin LRIP from Nov 02 to Jan 02; Milestone III DAB Review moved from Sep 04 to Aug 04; and FUE moved from Feb 06 to Sep 04.

(Ch-3) Full Rate Production Contract Award milestone was added to the APB dated 10 Sep 96.

10. (U) Performance Characteristics:

a. Performance --

Planning Estimate (SAP)	Approved Program (APB) Obj/Threshold	Demon- strated Data	Current Estimate
----------------------------	--	---------------------------	---------------------

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate Operate (Ch-1) thru/ cont. opera- tions
Nuclear Survivability	TBD	TBD / TBD	TBD	

(b)(1)

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	3165.2	4454.9	4746.6
Procurement	0.0	N/A	
Total Flyaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 88 Base-Year \$	3165.2	4454.9	4746.6
Escalation	1158.5	1500.3	1593.0
Development (RDT&E)	(1158.5)	(1500.3)	(1593.0)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4323.7	5955.2	6339.6

(U) An RDT&E option exists for 40 missiles for the User Operational Evaluation System (UOES). These missiles are configured differently than the Objective system missile.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	0	N/A	0
Total	0	0	0

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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THAAD System, December 31, 1996

12. (U) Unit Cost Summary:

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Planning Estimate	4323.7	-	-	4323.7
Previous Changes:				
Economic	-325.6	-	-	-325.6
Quantity	-	-	-	-
Schedule	+859.9	-	-	+859.9
Engineering	+577.9	-	-	+577.9
Estimating	+528.9	-	-	+528.9
Other	-	-	-	-
Support	-4.4	-	-	-4.4
Subtotal	+1636.7	-	-	+1636.7
Current Changes:				
Economic	+7.3	-	-	+7.3
Quantity	-	-	-	-
Schedule	+119.5	-	-	+119.5
Engineering	+192.5	-	-	+192.5
Estimating	+59.9	-	-	+59.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+379.2	-	-	+379.2
Total Changes	+2015.9	-	-	+2015.9
Current Estimate	6339.6	-	-	6339.6

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	3165.2	-	-	3165.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	+547.2	-	-	+547.2
Engineering	+398.5	-	-	+398.5
Estimating	+351.7	-	-	+351.7
Other	-	-	-	-
Support	-3.9	-	-	-3.9
Subtotal	+1293.5	-	-	+1293.5
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	+99.0	-	-	+99.0
Engineering	+143.7	-	-	+143.7
Estimating	+45.2	-	-	+45.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+287.9	-	-	+287.9
Total Changes	+1581.4	-	-	+1581.4
Current Estimate	4746.6	-	-	4746.6

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Correct March 1997 SAR "Adjustment for negative program change".		
(Economic)	N/A	+21.3
(Schedule)	0.0	-21.3
Revised escalation indices (Economic)	N/A	-14.0
Realigned EMD effort to support FY04 FUE.	+99.0	+140.8
(Schedule)		
Revised estimate to fund target costs.	+41.9	+56.0
(Estimating)		
Adjustment for Current and Prior Inflation	0.0	-0.1
(Estimating)		
Reprogrammed FY93 NMD-GBR funds to TMD-GBR to restructure "Family of Radars".	+3.3	+4.0
(Estimating)		
Acquire Production representative radar for IOT&E.	+111.9	+149.7
(Engineering)		

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Fund Navy (AEGIS) interoperability engineering studies/efforts. (Engineering)	+7.6	+10.0
New requirement for additional UOES testing. (Engineering)	+24.2	+32.8
RDT&E Subtotal	+287.9	+379.2

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

- a. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.
- b. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JAN 92	N/A	N/A	JAN 92
Milestone II	JUL 96	N/A	N/A	JAN 98
Milestone III	JUL 01	N/A	N/A	AUG 04
FUE/IOC	JUL 01	N/A	N/A	SEP 04
Total Cost	4323.7	N/A	N/A	6339.6
Total Quantity	N/A	N/A	N/A	N/A
Prog Acq Unit Cost	N/A	N/A	N/A	N/A

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

(U) THAAD Dem/Val:

Lockheed Martin Msl&Space, Sunnyvale CA

DASG60-92-C-0101, CPFF

Award: September 4, 1992

Definitized: September 4, 1992

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$858.4	N/A	0	\$1502.9	\$1502.9

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$688.9	N/A	0

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15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-66.9	\$-18.5
Cumulative Variances To Date (12/31/96)	\$-157.7	\$-16.4
Net Change	\$-90.8	\$2.1

Explanation of Change:

(U) During the past 10 months, subcontractors' overruns were responsible for \$23M (25%) of the cost variance, and Lockheed Martin Missiles and Space (LMMS) costs were responsible for the remaining \$67.8M (75%). Lockheed Martin Infrared Imaging Systems (LMIRIS, formerly Loral) continued to experience seeker production problems with both the Platinum Silicide (PtSi) and Indium Antimonide (InSb) seekers. Additionally, the rework/retest of PtSi seekers and flight test failure analysis at both LMIRIS and LMMS required additional effort. Litton had to increase their efforts beyond budget to try to meet contractual schedules. The contract was scheduled to end September 1996; however, technical problems and flight test delays have necessitated an extension. A comprehensive estimate to complete the remaining work has been jointly developed by the THAAD Project Office and LMMS for implementation of an over-target-baseline (OTB). The OTB is based on a contract complete date of April 1998 and will be implemented month-end March 1997. There is no significant impact to the contract because of the schedule variance.

(U) GBR DEM/VAL:
Raytheon Corporation, Wayland, MA
DASG60-92-C-0184, CPIF/AF
Award: September 17, 1992
Definitized: September 17, 1992

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$318.4	N/A	3

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$407.5	N/A	3

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$557.8	\$576.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-155.0	\$-11.3
Cumulative Variances To Date (12/31/96)	\$-159.4	\$-1.4
Net Change	\$-4.4	\$9.9

Explanation of Change:

(U) During the past 10 months, Raytheon has incurred a net -\$4.4M in cost variance which was primarily due to increased efforts required during antenna manufacturing and integration, assembly, test and checkout phases, prior to delivery of both User Operational Evaluation System antennas to White Sands Missile Range (WSMR). Additionally, increased effort was required on the data processing equipment software and the test and evaluation tasks being conducted at WSMR. Since all hardware has been delivered and Raytheon is essentially supporting flight tests, no additional major cost impacts are anticipated. There is no significant impact to the contract because of the schedule variance.

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15. (U) Contract Information (Cont'd):

(U) TMD Targets Program:
 Coleman Research Corp., Orlando FL
 DASG60-92-C-0217, CPFF
 Award: October 14, 1992
 Definitized: October 14, 1992

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$144.2	N/A	25

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$219.2	N/A	25	\$208.2	\$215.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.1	\$-1.6
Cumulative Variances To Date (12/31/96)	\$-5.4	\$-3.9
Net Change	\$-1.3	\$-2.3

Explanation of Change:

(U) The unfavorable cost variance is the result of various problems from development to reworking hardware and performing additional testing. The remaining 19 Hera targets are to be re-designed to provide four new types of re-entry threat signature. This change in contract scope resulted in an increase of \$40M to the contract. There are no significant impacts to the contract because of the variances.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-04)	<u>Total</u>
RDT&E	3042.9	556.1	595.2	2145.4	6339.6
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3042.9	556.1	595.2	2145.4	6339.6

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16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- THAAD System

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				100.9	119.6
1993				324.5	393.6
1994				567.1	701.0
1995				514.7	649.4
1996				436.1	561.8
1997				469.5	617.5
1998				414.5	556.1
1999				434.5	595.2
2000				431.2	603.2
2001				409.2	584.6
2002				283.6	413.9
2003				249.3	372.7
2004				111.5	171.0
Subtotal				4746.6	6339.6

(U) Base-Year dollars reflect Army indices prepared on December 27, 1996. Then-Year dollars reflect Current Program Status (CPS) FA97-6 FINAL, dated February 1997, for FY96 & 97; CPS FY98-99 PB FINAL, dated January 1997, for FY98-03; and BMDO cost position, dated December 19, 1996, for FY04.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				4746.6	6339.6

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2234.1

(U) Percent Total Program Expended: 35.2%

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18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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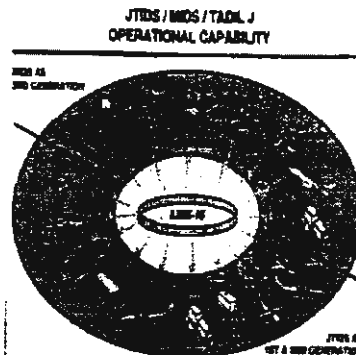
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: MIDS-LVT

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Multifunctional Information Distribution System - Low Volume Terminal (MIDS-LVT)
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
 PEO for Space, Comms & Sensors CAPT David P. Fitch
 MIDS Program (PMW 101) Assigned: September 20, 1993
 2451 Crystal Drive DSN 332-7618; COMM (703) 602-7618
 Arlington, VA 22245-5200 fitchd@SMTP-GW.spawar.navy.mil
4. (U) Program Elements/Procurement Line Items:
 RDT&E:
 (U) PE 0205604N (Shared) Project P2126
 (U) PE 0604771D (Shared) Project P773 (Shared)
 PROCUREMENT:
 (U) APPN 1506 ICN 3105250000 (Navy)
 (U) APPN 1810 ICN 3326140000 (Navy) (Shared)
 (U) APPN 1611 ICN SCN DDG-51 (Navy) (Shared)

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5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 8, 1994.

6. (U) Mission and Description:

(U) The Multifunctional Information Distribution System (MIDS) is a multinational (U.S., France, Germany, Italy and Spain) cooperative development program established to design, develop and deliver low volume, lightweight tactical information system terminals for U.S. fighter aircraft, as well as foreign fighter aircraft, helicopters, ships and ground sites. The terminals will be designed as a Pre-Planned Product Improvement (P3I) to the JTIDS Time Division Multiple Access (TDMA) Class 2 terminals. The goal of the MIDS program is to produce a terminal that is smaller, lighter, highly reliable, interoperable with JTIDS Class 2 terminals, compatible with all the Participants' designated platforms, affordable, and reconfigurable to individual user needs and budgets. The U.S. effort includes both participation in the terminal development, and the integration and test of the terminal in the F/A-18, ships, submarines, and U.S. Army platforms. The MIDS program office also manages an accelerated procurement of the MIDS Fighter Data Link variant.

7. (U) Executive Summary:

(U) Participants (U.S., France, Italy, Germany, and Spain) are committed to cooperative development. The Milestone II DAB ADM was signed December 17, 1993, authorizing contract award, initiating a 6-month study of options to reduce Engineering, Manufacturing and Development (EMD) phase program cost and schedule, and with direction to incorporate Measures of Effectiveness (MOEs) into the MIDS TEMP. The contract was awarded on March 18, 1994. The study was completed, and the results approved by USD(A&T). A TEMP incorporating MOEs was approved by DT&E and DOT&E. A contract modification to implement the restructured program was executed, and exit criteria were promulgated in a USD(A&T) memorandum of October 5, 1994. Army memorandum (PEO-COMMS) of April 11, 1995 requested development of a MIDS variant to replace the more costly JTIDS Class 2M. Following coordination with OASD (C3) and (C3IA), a contract modification to accomplish the Army development effort was awarded in August 1995. Critical design reviews were held for the basic terminal and remote power supply, and closure of action items is being coordinated within and among the respective integrated product teams. Fabrication, integration and testing of brassboards continues. A design review of the MIDS interface simulator (MIS), as well as the preliminary design review for the Army MIDS Variant

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7. (U) Executive Summary (Cont'd):
(MIDS-LVT(2)) was held in June 1996.

Other accomplishments, since the December 1995 SAR, include progressing the MIDS-LVT form/fit/function brassboard development to near completion and completion of the first Operational Assessment (OA) of MIDS integration into the F/A-18 using simulation. Contractor Developmental Test and Evaluation has commenced. EMD terminal deliveries will commence in the fourth quarter of 1997.

On August 15, 1995, USD (A&T) issued an ADM that directed various actions by the Air Force and Navy needed to initiate a procurement of limited capability Link-16 terminals for some USAF F-15s through the MIDS program office. This procurement is called the MIDS F-15 Fighter Data Link (FDL). An RFP for competitive procurement of FDL was released to industry on February 22, 1996 after coordination with Congressional staffs. Proposals were received April 8, 1996. Discussions with offerors were required, and a revision to the RFP was coordinated with SAF/AQ; revised proposals were received July 29, 1996. The FDL contract was awarded to a joint venture comprised of GEC-Marconi Hazeltine and Rockwell Collins on September 30, 1996. The award of a single FDL qualification contract with production options was based upon an affordability determination that was coordinated with the USAF and USD(A&T).

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	Yes
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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8a. (U) Threshold Breaches (Cont'd):

c. (U) Explanation of Breach:

As of December 31, 1996, the MIDS Program has deviated by more than 15 percent (RDT&E costs) and 5 percent (Procurement costs) from its current approved baseline. Additional RDT&E funding addresses increases in program scope directed by USD(A&T), including efforts to accelerate MIDS transition into competitive production, and program support associated with new MIDS platforms.

Procurement funding has increased due to increased quantities of MIDS for the F/A-18 E/F and Navy ships.

A Program Deviation Report (PDR) was submitted to ASN (RD&A) on March 1, 1997.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone II (DAB)	DEC 93	DEC 93	DEC 93
Development Contract Award	DEC 93	DEC 93	MAR 94
F/A-18 Integration Contract Award (NAVAIR)	MAR 94	MAR 94	JUL 94
Critical Design Review (MIDS Terminal)	DEC 95	DEC 95	NOV 95
First EMD Terminal Delivery (IRT 1)	OCT 97	OCT 97	JUN 97
First EMD Flight	JUN 98	JUN 98	APR 98
TECHEVAL			
Start	JUN 00	JUN 00	JUL 99
Complete	JUN 00	JUN 00	SEP 99
OPEVAL			
Start	DEC 00	DEC 00	DEC 99
Complete	DEC 00	DEC 00	FEB 00
Low-Rate Initial Production First Delivery	OCT 00	OCT 00	JUL 00
Initial Operational Capability	DEC 00	DEC 00	APR 00
Milestone III (DAB)	JUN 01	JUN 01	MAY 00
Full Rate Production Contract Award	JUN 01	JUN 01	JUN 00
Organic Support Capability Date	JUN 03	JUN 03	JUL 03
Service Depot Support Date	JAN 04	JAN 04	JAN 04

(U) Acronyms:

IRT - Integration Readiness Testing

b. (U) Current Change Explanations --

Note: This SAR does not report MIDS F-15 Fighter data Link (FDL) estimates. The MIDS FDL costs are included in the overall F-15 modification program budget. Another Acquisition Program Baseline Agreement is in process to incorporate a recent revision to the MIDS Acquisition Strategy Report and expanded use of MIDS in U.S. platforms.

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10. (U) Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Coded Data Rate (Kbps)				
Standard Packing	28.8	28.8 / 28.8	TBD	28.8
Packed 2 DP	57.6	57.6 / 56.6	TBD	57.6
Packed 4 DP	115.2	115.2 / 115.2	TBD	115.2
	115.2			
Relay Range (nm)	1200	1200 / 500	TBD	1200
Communication Range (NM)	300	300 / 300	TBD	300
Voice Channels	2	2 / 1	TBD	2
Coded Message Error Probability (%)	1	1 / 2	TBD	1

(b)(1)

(U) Acronyms:

DM3 - Cubic Decimeters

DP - Double Pulse

KBPS - Kilobytes per second

KG - Kilograms

MFHBMCF - Mean Flight Hours Between Mission Critical Failures

MTBF - Mean Time Between Failures

MTTR - Mean Time to Repair

NM - Nautical miles

b. Current Change Explanations -- None.

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11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	481.1	481.1	559.6
Procurement	443.8	443.8	832.1
Prime Mission Eqmt (PME)	(313.7)		(652.4)
Production Support	(10.5)		(18.3)
Total Flyaway	(324.2)		(670.7)
Other Wpn Sys	(55.7)		(94.4)
Peculiar Support	(6.6)		(2.8)
Initial Spares	(57.3)		(64.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 92 Base-Year \$	924.9	924.9	1391.7
Escalation	194.6	194.6	372.7
Development (RDT&E)	(51.9)	(51.9)	(71.6)
Procurement	(142.7)	(142.7)	(301.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1119.5	1119.5	1764.4
b. (U) Quantity --			
Development (RDT&E)	42	42	42
Procurement	630	630	1565
Total	672	672	1607

(U) Note: The increase in procurement is due to the increased quantities of MIDS terminals for the F/A-18 E/F aircraft and Navy ships. An agreement between PEO-SCS and DOT&E on November 7, 1996 agreed that the MS III decision would be defined as a Full Rate Production for ships and a Low Rate Initial Production (LRIP) for the F/A-18. Approved LRIP quantities are 58 in FY-99 and 130 in FY-00. Additionally, the Beyond LRIP Report would not be submitted until the Operational Test for the F/A-18 is successfully completed in the April 00 time frame. These clarifications will be incorporated in the next update to the Acquisition Strategy Report (ASR).

c. (U) Foreign Military Sales --
Funding for MIDS-LVT European Participants:

	1994-96	1997	1998	1999	TOTAL
France	52.5	41.3	30.8	5.2	129.8
Italy	37.7	30.8	22.8	3.6	94.9
Germany	16.0	10.9	8.4	1.7	37.0
Spain	13.9	12.5	7.4	1.4	35.2
NETMA	2.8	8.1	5.7	.9	17.5

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11c. (U) Total Program Cost and Quantity (Cont'd):
Includes foreign common (PMOU) RDT&E costs only.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAR 94 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BY\$)	1391.7	924.9	
(2) Quantity	1607	672	
(3) Unit Cost	0.866	1.376	-37.06
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BY\$)	832.1	443.8	
(2) Quantity	1565	630	
(3) Unit Cost	0.532	0.704	-24.43

(U) Note: Includes MIDS-LVT costs only. Unit cost reduction is attributable to restructured MIDS architecture and acquisition reform implementation. The MIDS F-15 FDL terminal is budgeted and managed as part of the F-15 modification program.

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	533.0	586.5	-	1119.5
Previous Changes:				
Economic	-3.8	-41.6	-	-45.4
Quantity	-	+22.7	-	+22.7
Schedule	-	-	-	-
Engineering	-	+63.2	-	+63.2
Estimating	+21.5	-87.9	-	-66.4
Other	-	-	-	-
Support	-	+36.3	-	+36.3
Subtotal	+17.7	-7.3	-	+10.4
Current Changes:				
Economic	-1.2	+1.1	-	-0.1
Quantity	-	+440.0	-	+440.0
Schedule	-	-13.6	-	-13.6
Engineering	-	+44.0	-	+44.0
Estimating	+81.7	+56.5	-	+138.2
Other	-	-	-	-
Support	-	+26.0	-	+26.0
Subtotal	+80.5	+554.0	-	+634.5
Total Changes	+98.2	+546.7	-	+644.9
Current Estimate	631.2	1133.2	-	1764.4

(U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	481.1	443.8	-	924.9
Previous Changes:				
Quantity	-	+18.1	-	+18.1
Schedule	-	-	-	-
Engineering	-	+49.5	-	+49.5
Estimating	+12.0	-91.7	-	-79.7
Other	-	-	-	-
Support	-	+27.4	-	+27.4
Subtotal	+12.0	+3.3	-	+15.3
Current Changes:				
Economic	-	-	-	-
Quantity	-	+289.6	-	+289.6
Schedule	-	-	-	-
Engineering	-	+28.9	-	+28.9
Estimating	+66.5	+52.1	-	+118.6
Other	-	-	-	-
Support	-	+14.4	-	+14.4
Subtotal	+66.5	+385.0	-	+451.5
Total Changes	+78.5	+388.3	-	+466.8
Current Estimate	559.6	832.1	-	1391.7

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.2
Increase in OSD RDT&E due to the current acquisition strategy which accelerates MIDS-LVT transition into competitive production with concurrent completion of international development. (Estimating)	+55.2	+66.7
Revised estimate of MIDS-LVT terminal development costs. (Navy RDT&E) (Estimating)	+11.3	+15.0
RDT&E Subtotal	+66.5	+80.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+0.1
Economic adjustment for negative program change. (Economic)	N/A	+1.0
Total Quantity variance associated with increase of 812 units. (APN)	+208.5	+318.9
Quantity increase in F/A-18 terminals from 630 to 1442 terminals. (APN) (Quantity)	+260.8	+399.2
Allocation to engineering variance resulting from Quantity increase. (APN) (Engineering)	+26.1	+39.9
Allocation to estimating variance resulting from Quantity increase. (APN) (Estimating)	-78.4	-120.2
Total Quantity variance associated with decrease of 2 shipboard terminals. (SCN)	-0.6	-1.9
Quantity decrease in shipboard terminals from 18 to 16 terminals. (SCN) (Quantity)	-0.7	-2.0
Allocation to engineering variance resulting from Quantity decrease. (SCN) (Engineering)	+0.1	+0.1
Total Quantity variance associated with increase of 84 shipboard terminals. (OPN)	+24.1	+34.8
Quantity increase in shipboard terminals from 23 to 107 terminals. (OPN) (Quantity)	+29.5	+42.8
Allocation to engineering variance resulting from Quantity increase. (OPN) (Engineering)	+2.7	+4.0
Allocation to estimating variance resulting from Quantity increase. (OPN) (Estimating)	-8.1	-12.0
Stretchout of annual procurement buy profile and addition of 8 program years. (APN) (Schedule)	0.0	-11.3
Stretchout of annual procurement buy profile and the addition of 1 program year. (SCN) (Schedule)	0.0	+0.1

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Stretchout of annual procurement buy profile and the addition of 12 program years. (OPN) (Schedule)	0.0	-2.4
Change in estimating assumptions due to increase in quantity buy profile. (APN) (Estimating)	+86.2	+116.6
Estimating change due to decrease in the MIDS terminal unit cost. (APN) (Estimating)	+1.8	+2.4
Change in estimating assumptions due to decrease in quantity buy profile. (SCN) (Estimating)	+9.0	+12.9
Estimating change due to decrease in MIDS terminal unit cost. (SCN) (Estimating)	+2.1	+2.8
Change in estimating assumptions due to increase in quantity buy profile. (OPN) (Estimating)	+36.8	+50.3
Estimating change due to decrease in MIDS terminal unit cost. (OPN) (Estimating)	+2.7	+3.7
Change in initial spares due to additional F/A-18 MIDS terminals. (APN) (Support)	+17.8	+28.4
Change in Peculiar Support due to decrease in support equipment requirements. (APN) (Support)	-4.2	-5.3
Change in Other Weapons System due to increase in data costs and change in assumptions that decrease aircraft terminal installation costs. (APN) (Support)	-11.9	-16.3
Change in initial spares due to additional shipboard terminals. (OPN) (Support)	+4.9	+7.2
Change in Other Weapons System due to installation cost increases resulting from increased ship quantities. (OPN) (Support)	+7.8	+12.0
Procurement Subtotal	+385.0	+554.0

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14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.67	-0.03	-0.68	-0.01	+0.07	+0.04	--	+0.04	-0.57	1.10

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.93	-0.03	-0.26	-0.01	+0.07	-0.02	--	+0.04	-0.21	0.72

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	DEC 93	N/A	DEC 93
Milestone III	N/A	JUN 01	N/A	MAY 00
FUE/IOC	N/A	DEC 00	N/A	APR 00
Total Cost	N/A	1119.5	N/A	1764.4
Total Quantity	N/A	672	N/A	1607
Prog Acq Unit Cost	N/A	1.67	N/A	1.1

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

(U) MIDS-LVT EMD:

MIDSCO, Inc., Wayne, NJ

N00039-94-C-0008, CPIE/AF

Award: March 18, 1994

Definitized: March 31, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$360.1	N/A	60

Current Contract Price		
Target	Ceiling	Qty
\$339.9	N/A	88

Estimated Price At Completion	
Contractor	Program Manager
\$348.8	\$356.8

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15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2.9	\$-4.7
Cumulative Variances To Date (12/31/96)	\$-7.2	\$-14.9
Net Change	\$-4.3	\$-10.2

Explanation of Change:

(U) The cumulative SPI is 0.93 and CPI is 0.96. The program Estimate At Completion (EAC) reflects Power Amplifier redesign to comply with National Telecommunication Information Administrator (NTIA) guidelines, and increased cost of development of Factory Test Equipment and Software. The program Contract Budget Baseline (CBB) increased by \$24.5 million (Dec 95 to Dec 96) as a result of: Exercising U.S. Army LVT 2 options; Government Purpose License Rights (funded by Germany and Italy); a U.S. order for 16 additional EMD terminals to support expanded Navy implementation of MIDS; and the exercise of options for technical studies and logistics support during EMD.

The program is now 55% complete. The Cost Variance Net Change (between reports) of \$-4.3 contributes to the cumulative Cost Variance percentage of -3.94 for the program. As mentioned above, it reflects difficulties experienced by Power Amplifier due to required redesign efforts, Factory Test Equipment and Software Development related to a significant growth in lines of code versus the contractor's original basis for estimation. The Schedule Variance Net Change (between reports) of \$-10.2 contributes to the cumulative Schedule Variance percentage of -7.48 for the program. In this area also, the situation is reflective of schedule impact predominantly associated with Software Development and Factory Test Equipment. In all areas, close monitoring remains in place via Integrated Process Teaming and joint industry/government weekly status update briefings

The contract value reflects the international effort, including U.S., France, Italy, Germany, and Spain. The MIDS prime contract is a CPIF/AF that was awarded on March 18, 1994. Options that have not been exercised are not included in the PM's EAC. The contractor commenced CPR reporting in October 1994, and an integrated baseline review (IBR) of the restructured MIDS program was completed in the Spring of 1995. C/SCSC validation of GEC-Marconi was accomplished under the leadership of a DCMC team (validation effective November 8, 1996). DCMC also participated in the initial IBR and a follow-on IBR conducted to assess contractor progress and planning for a major contract modification. The EMD contract is 55.5 percent complete based upon budget at completion.

A formal design to cost program is not established in the contract; however, the contractor and program office are pursuing reductions to production unit costs through application of cost as an independent variable concepts, including implementation of commercial/industrial parts where feasible. Production unit cost exit criteria for LRIP have been established.

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15. (U) Contract Information (Cont'd):

(U) <u>F/A-18 INTEGRATION:</u>			Initial Contract Price		
McDonnell Douglas, St. Louis, MO			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
W00019-91-G-0091, CPFF			\$26.3	N/A	0
Award: July 1, 1994					
Definitized: March 1, 1996					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$28.1	N/A	0	\$26.3	\$26.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.6	\$-1.3
Cumulative Variances To Date (01/21/97)	\$1.0	\$-0.6
Net Change	\$-0.6	\$0.7

Explanation of Change:

(U) The cumulative cost and schedule variances are insignificant at this time and have no impact on the overall program. The F/A-18 integration contract (CPFF) was awarded to McDonnell Douglas Aerospace (MDA) to perform the F/A-18 hardware development and integration of the MIDS-LVT A-Kit in July 1994. The contract was definitized in March 1996 at approximately \$22.5 million. A subsequent modification for the development of an Interface Blanker Unit (IBU) increased the target cost to \$26.3 million. A successful CDR was completed in September 1996.

An approved program replanning was completed in December 1996. The contractor's schedule performance index is .95 and the CPI is nearly 1.1. The OT-IIA-1 report on MIDS software was received with a determination of potentially operationally suitable and potentially operationally effective.

Extensive software development, integration and test is also being performed through a basic ordering agreement between MANC-WD, China Lake, and MDA. The software effort is extensive, with an estimate of nearly 100,000 lines of code involved in the integration of MIDS into the F/A-18. A PDR and CDR for the software development has been completed. This effort is also reported to be essentially on schedule for the current F/A-18 software build and test plan. The best case PM estimate is based on an 80/20 performance factor.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY90-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-15)</u>	<u>Total</u>
RDT&E	337.7	91.0	69.6	132.9	631.2
Procurement	-	-	93.7	1039.5	1133.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	337.7	91.0	163.3	1172.4	1764.4

b. Annual Summary -- MIDS-LVT

Appropriation: 0400 RDT&E, Defense Agencies

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY92 Dollars Nonrec</u>	<u>Flyaway FY92 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1990				9.4	9.0
1991				5.1	5.0
1992				16.2	16.5
1993				22.9	23.9
1994				21.9	23.3
1995				45.8	49.6
1996				38.6	42.7
1997				33.6	37.9
1998				45.3	52.2
1999				24.4	28.7
2000				10.9	13.1
2001				11.2	13.7
2002				11.2	14.0
2003				11.1	14.3
Subtotal	26			307.6	343.9

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY92 Dollars Nonrec</u>	<u>Flyaway FY92 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1990				3.0	2.9
1991				4.8	4.7
1992				9.8	10.0
1993				11.9	12.4
1994				21.7	23.0
1995				17.0	18.4
1996				28.0	31.0

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				24.3	27.4
1998				33.7	38.8
1999				34.8	40.9
2000				23.1	27.7
2001				13.3	16.3
2002				13.3	16.7
2003				13.3	17.1
Subtotal	16			252.0	287.3

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	58	11.7	21.7	46.9	56.2
2000	130	9.3	55.9	83.5	102.3
2001	132		66.7	79.0	98.9
2002	132		59.5	73.4	94.1
2003	132		56.7	69.7	91.6
2004	132		55.3	68.1	91.8
2005	86		29.6	38.0	52.6
2006	50		10.1	15.4	21.8
2007	72		17.7	22.0	32.0
2008	72		19.0	21.9	32.7
2009	72		18.9	21.8	33.4
2010	72		18.9	21.8	34.3
2011	72		18.9	21.8	35.2
2012	72		19.0	21.8	36.1
2013	72		19.0	21.8	37.0
2014	72		19.0	21.8	38.0
2015	14		4.1	4.6	8.2
Subtotal	1442	21.0	510.0	653.3	896.2

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	3	0.6	7.3	7.9	10.1
2000	3	0.2	7.6	7.8	10.3
2001	3		7.8	7.8	10.5
2002	1		3.0	3.0	4.2
2003	2		6.2	6.2	8.7

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004	2		6.1	6.1	8.9
2005	2		6.1	6.1	9.1
Subtotal	16	0.8	44.1	44.9	61.6

Appropriation: 1610 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	15	3.1	16.9	23.0	27.4
2000	12	0.8	12.4	15.2	18.5
2001	11		11.9	18.8	23.4
2002	13		10.6	16.9	21.5
2003	11		7.1	12.7	16.6
2004	8		5.8	9.5	12.7
2005	7		5.2	7.7	10.6
2006	7		5.1	7.1	10.0
2007	7		5.0	6.7	9.7
2008	7		4.9	6.5	9.7
2009	7		4.7	6.4	9.7
2010	2		1.3	2.4	3.8
2011				0.9	1.4
2012				0.1	0.2
Subtotal	107	3.9	90.9	133.9	175.2

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	26			307.6	343.9
Navy	1581	25.7	645.0	1084.1	1420.5
Grand Total	1607	25.7	645.0	1391.7	1764.4

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 186.8

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MIDS-LVT, December 31, 1996

17b. (U) Delivery/Expenditure Information (Cont'd):

(U) Percent Total Program Expended: 10.6%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The O&S Cost portion of the Program Manager Life Cycle Cost Estimate of April 1993 depicted a 24-year support period of terminals installed on 630 F/A-18 aircraft. This period included a phase-in, steady-state, and phase-down profile with a terminal operational life estimated to be 15 years. The annual operating hours per aircraft for peace-time deployment were estimated to be 400. The maintenance concept analyzed is the three level structure (i.e., Organizational, Intermediate and Depot) and assumes the availability of Consolidated Automated Support System (CASS) stations at the Intermediate and Depot levels of maintenance. The terminal reliability and maintainability characteristics used are consistent with the requirements contained in the Operational Requirements Document. Other pertinent cost estimates include use of values experienced by analogous systems including JTIDS and the AN/ARC-182 radio. The program office will analyze alternative life cycle support strategies concurrent with preparation for production, with the objective of reducing per unit Operating and Support costs.

b. (U) Costs -- (FY 1992 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per MIDS - LVT	Avg Annual Cost Per N/A
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.4	0.0
Intermediate Maintenance	2.5	0.0
Depot Maintenance	0.5	0.0
Contractor Support	1.3	0.0
Sustaining Support	2.5	0.0
Indirect Costs	0.9	0.0
Other ILS	0.1	0.0
Total	8.2	0.0

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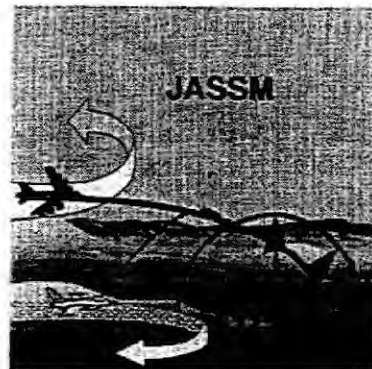
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PROGRAM: JASSM

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Joint Air-to-Surface Standoff Missile (JASSM)

2. (U) DoD Component: USAF

Joint Participants:
USAF, USN

3. (U) Responsible Office and Telephone Number:

ASC/YV
JASSM System Program Office
102 West D Ave, Suite 300
Eglin AFB, FL 32542-6807

SES Terry R. Little
Assigned: January 2, 1996
DSN 872-4785 x3046
COMM 904-882-4785 x3046
little@eglin.af.mil

4. (U) Program Elements/Procurement Line Items:

RDT&E:

(U) PE 0207325F
(U) PE 0604312N

CLEARED
FOR OPEN PUBLICATION
AS AMENDED
17 FEB 27 1997

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

SAF/PAS

97--0084

CONGRESSIONAL

~~Classified by: JASSM Security Classification Guide, 1 Feb 96~~
~~Declassify on: E.O. 12958, Section 1.4~~
Declassify on: Not subject to automatic downgrading

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5. (U) References:

SAR Baseline (Planning Estimate):

(U) Approved Acquisition Program Baseline dated June 13, 1996.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated June 13, 1996.

6. (U) Mission and Description:

(U) The Joint Air-to-Surface Standoff Missile (JASSM) is a next generation missile that will enable Air Force and Navy bombers and fighters to destroy the enemy's war-sustaining capabilities from outside the ranges of enemy air defenses. The autonomous precision strike weapon will attack both fixed and relocatable targets ranging from non-hardened above ground to hardened shallow buried, point targets. The system will offer reliable performance in world-wide operational environments. The system will also offer low operational support costs. The JASSM does not replace any existing weapon system.

7. (U) Executive Summary:

(U) This is an RDT&E-only submission; it includes only the Development Program costs in accordance with 10 USC 2432.

The Joint Air-to-Surface Standoff Missile (JASSM) is an FY96 new start program. It is a joint Air Force/Navy program, but initial funding for FY96 and FY97 is Air Force only. The Navy is programming monies for their unique requirements in FY98 and out.

The Air Force and Navy require a standoff weapon to attack high priority targets. The Joint Requirements Oversight Council (JROC) on August 31, 1995, validated the CAF 303-95 Mission Need Statement (MNS). The Milestone 0 Acquisition Decision Memorandum (ADM) was signed September 20, 1995. The Air Force was assigned as lead service and directed to explore alternative concepts, including modification of existing designs. Threshold platforms for the JASSM were initially only the B-52H and the F-16C/D. The F/A-18E/F was later incorporated as a threshold requirement as well (see discussion below).

The Commander, Air Combat Command (ACC), and the Deputy Chief of Naval Operations (Resources, Warfare Requirements and Assessments) signed the Operational Requirements Document (ORD), CAF 303-95-I (A), on March 29, 1996. The JASSM program has only three key performance parameters: Missile Mission Effectiveness (MME), range, and carrier operability. All other requirements are tradable to meet cost objectives.

The Single Acquisition Management Plan (SAMP) was initially approved on March 9, 1996, and has been updated with the Milestone I decision. JASSM is incorporating many of the tenets of DoD acquisition reform and is the premier DoD Flagship Program for Cost as An Independent Variable (CAIV).

On June 13, 1996, the Under Secretary of Defense (Acquisition & Technology)

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7. (U) Executive Summary (Cont'd):

(USD(A&T)) signed the Milestone I ADM authorizing entry into Program Definition and Risk Reduction (PDRR) and directing incorporation of the F/A-18E/F as a threshold requirement. Although the weapon will be fully integrated on the B-52H and the F-16C/D during Engineering and Manufacturing Development (EMD), full integration on the F/A-18E/F will occur after EMD is over. The Navy was directed to fund integration and testing on a schedule that preserves the existing Initial Operational Capability (IOC) but ensures carriage on the F/A-18E/F.

JASSM awarded two 24-month PDRR contracts to Lockheed Martin Integrated Systems and McDonnell Douglas Aerospace on June 17, 1996, with options for EMD. Through a rolling downselection process, the program office will exercise the option on a single contract for the follow-on EMD phase and production lots 1 and 2 after Milestone II approval.

Hughes Missile Systems protested the award following debrief, with two supplemental protests. Although Hughes successfully obtained a stop work order for ten calendar days, it ended on July 19, 1996, and we have continued to work aggressively with both winning contractors. The Government Accounting Office (GAO) ruled on the protest in favor of the government.

The FY97 Appropriations Act reduced the FY97 President's Budget Request by \$30M. The impact to the program is a six week schedule slip and the requirement for an additional \$25.3M in FY98.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. (U) Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate	
Milestone 0	SEP 95	SEP 95	SEP 95	
Milestone I	JUN 96	JUN 96	JUN 96	
PDRR Contract Award	JUN 96	JUN 96	JUN 96	
Milestone II	JUN 98	JUN 98	JUL 98	(Ch-1)
EMD Contract Award	JUN 98	JUN 98	JUL 98	(Ch-1)
LRIP Decision/Contract Award	JAN 00	JAN 00	JAN 00	
Lot II Contract Award	APR 01	APR 01	APR 01	
Milestone III	APR 01	APR 01	APR 01	
RAA/B-52	JUN 01	JUN 01	JUN 01	
RAA/F-16	JAN 03	JAN 03	DEC 03	(Ch-2)

(U) PDRR - Program Definition and Risk Reduction

RAA - Required Assets Available

RAA for the B-52 is 45 missiles

RAA for the F-16 is 25 missiles

b. (U) Current Change Explanations --

(Ch-1) Due to the FY97 Appropriations Act reduction of \$30M in FY97, Milestone II and EMD Contract Award have slipped six weeks from Jun 98 to Jul 98. \$25.3M has been added to the FY98 budget to ensure successful completion of PDRR.

(Ch-2) RAA/F-16 has been delayed from Jun 03 to Dec 03 based on the projected availability of the F-16 operational flight program (OFF) software.

10. (U) Performance Characteristics:

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

b. (U) Current Change Explanations --

(Ch-1) Performance estimates updated based upon contractors' latest data.

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JASSM, December 31, 1996

11. (U) Total Program Cost and Quantity (Dollars in Millions):

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	732.4	732.4	656.8
Procurement	0.0	N/A	
Total Flyaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 95 Base-Year \$	732.4	732.4	656.8
Escalation	78.9	78.9	59.9
Development (RDT&E)	(78.9)	(78.9)	(59.9)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	811.3	811.3	716.7
b. (U) Quantity --			
Development (RDT&E)	44	44	44
Procurement	N/A	N/A	N/A
Total	44	44	44

(U) Note: Development quantity represents the Government-required 44 fully-configured RDT&E units for EMD (9 Initial Operational Test and Evaluation (IOT&E) units and 35 pre-production units). The number of fully-configured RDT&E units for contractor-directed Developmental Test and Evaluation (DT&E) is TBD pending receipt of EMD proposals at Call For Improvements (CFI) (approximately May 1998).

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

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JASSM, December 31, 1996

12. (U) Unit Cost Summary:

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	811.3	-	-	811.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-27.1	-	-	-27.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-27.1	-	-	-27.1
Current Changes:				
Economic	-3.3	-	-	-3.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-64.2	-	-	-64.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-67.5	-	-	-67.5
Total Changes	-94.6	-	-	-94.6
Current Estimate	716.7	-	-	716.7

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JASSM, December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	732.4	-	-	732.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-19.4	-	-	-19.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-19.4	-	-	-19.4
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-56.2	-	-	-56.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-56.2	-	-	-56.2
Total Changes	-75.6	-	-	-75.6
Current Estimate	656.8	-	-	656.8

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-3.7
	Economic adjustment for negative program change. (Economic)	N/A	+0.4
	Refinement of Navy Estimate (Estimating)	+0.7	+0.9
	Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.5
	Congressionally-directed reductions, pro-rata share (Small Business Innovative Research, etc.) (Estimating)	-7.2	-7.6
	Refinement of Air Force estimate due to PDRR/EMD adjustments. (Estimating)	-48.3	-55.9
	Additional Inflation Adjustment, Pro-rata Share (Estimating)	-1.9	-2.1
	RDT&E Subtotal	-56.2	-67.5

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JASSM, December 31, 1996

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

- a. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.
- b. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JUN 96	N/A	N/A	JUN 96
Milestone II	JUN 98	N/A	N/A	JUL 98
Milestone III	APR 01	N/A	N/A	APR 01
FUE/IOC	JUN 01	N/A	N/A	N/A
Total Cost	811.3	N/A	N/A	716.7
Total Quantity	44	N/A	N/A	44
Prog Acq Unit Cost	18.44	N/A	N/A	16.29

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --
(U) JASSM PDRR:
Lockheed Martin, Orlando, FL
F08626-96-C-0002, CPFF
Award: June 17, 1996
Definitized: June 17, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$110.1	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$	\$

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

Cost Variance	Schedule Variance
\$	\$
\$	\$
\$	\$

Explanation of Change:

None.

(U) Contract Comments:

Due to the competitive nature of this contract, Current Contract Price, Estimated Price at Completion, and Cost and Schedule Variance data are Source Selection Sensitive.

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JASSM, December 31, 1996

15. (U) Contract Information (Cont'd):

(U) JASSM PDRR:			Initial Contract Price		
McDonnell Douglas Aero, St. Louis MO			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F08626-96-C-0281, CPFF			\$126.3	N/A	0
Award: June 17, 1996					
Definitized: June 17, 1996					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$	N/A	0	\$	\$

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

None.

(U) Contract Comments:

Due to the competitive nature of this contract, Current Contract Price, Estimated Price at Completion, and Cost and Schedule Variance data are Source Selection Sensitive.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY96-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RDT&E	188.6	212.9	153.2	162.0	716.7
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	188.6	212.9	153.2	162.0	716.7

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JASSM, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- JASSM

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				8.9	9.6
1999				16.0	17.7
2000				14.9	16.8
2001				6.3	7.3
2002				5.4	6.3
2003				8.7	10.5
Subtotal				60.2	68.2

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				26.6	27.6
1997				152.2	161.0
1998				188.2	203.3
1999				122.8	135.5
2000				77.3	87.0
2001				25.2	29.0
2002				4.3	5.1
Subtotal	44			596.6	648.5

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy				60.2	68.2
USAF	44			596.6	648.5
Grand Total	44			656.8	716.7

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 38.1

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JASSM, December 31, 1996

17b. (U) Delivery/Expenditure Information (Cont'd):

(U) Percent Total Program Expended: 5.3%

(U) Expenditures reflect Program Office information as of 3 February 1997.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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A-10 CRUSADER

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: Crusader

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Crusader Field Artillery System
2. DoD Component: Army

Joint Participants:
N/A

3. Responsible Office and Telephone Number:

Project Manager Crusader	COL William Sheaves
Attention: SFAE-GCSS-CR	Assigned: September 16, 1994
Picatinny Arsen, NJ 07806-5000	DSN 880-4588; COMM 201/724-4588

4. Program Elements/Procurement Line Items:

RDTE:

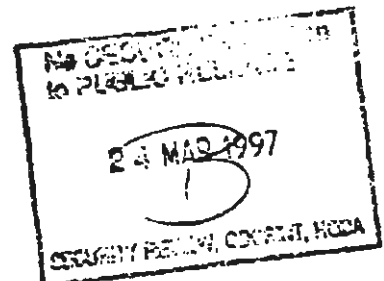
PE 6.36.45.A Project D409, DB87, DB88, DB98
PE 6.38.54.A Project C68, D505
PE 6.48.54.A Project D2KT, D503

The Program Element for Project D2KT, Crusader Operational Testing, was changed from 64645 to 64854.

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5. References:

SAR Baseline (Planning Estimate):

DAE Approved Acquisition Program Baseline dated January 04, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated January 4, 1995.

6. Mission and Description:

Crusader will be the indirect fire support system providing direct and general support fires to the maneuver forces on the battlefield. Crusader consists of a self-propelled howitzer (SPH), and a resupply vehicle (RSV). Crusader responds to the battlefield deficiencies identified in the Close Combat Battlefield Functional Mission Area and the Fire Support Battlefield Functional Mission Area and fulfills the need for an indirect fire weapon system that has increased range and can survive through autonomous operations.

Crusader's SPH will provide close, tactical, and operational fires during offensive and defensive operations; have a 155mm primary armament with significantly increased capabilities over the current M109-series fleet; provide increased rate-of-fire, hold more ammunition, be more responsive and survivable on the battlefield, with reduced manpower requirements; provide increased lethality; be deployable worldwide; and, provide for forward maintenance and employ future maintenance concepts.

The companion vehicle to the SPH will be Crusader's RSV. The RSV will sustain the SPH with ammunition and fuel as it provides close, tactical, and operational fires; be a self-propelled armored vehicle with significantly increased capabilities over the current system, the M992A1 FAASV; automate resupply functions; provide increased payload capability, and increased survivability with reduced manpower requirements; enable the SPH to achieve increased lethality levels and achieve independent mission execution; be deployable worldwide; and, provide forward maintenance support and employ future maintenance concepts.

7. Executive Summary:

Early in fiscal year 1995, the Principal Deputy Under Secretary of Defense (Acquisition & Technology) signed the Acquisition Decision Memorandum which approved Crusader to proceed into Program Definition and Risk Reduction (PDRR) phase as a single program. The ADM also directed that the Army shall plan for a Milestone II DAB or equivalent review, incorporating as many acquisition reform and streamlining measures as practical.

The Government entered into an Unfinitized Contract Action to initiate the PDRR efforts of requirements analysis and concepting early in Fiscal Year 1995. The effort was recently definitized for the design, fabrication, testing and delivery of two prototype Crusader systems in 1999 and completion of PDRR in 2000. The contract engages the expertise of United Defense Armament Systems Division (Minneapolis, Minnesota) as prime contractor, and United Defense Ground Systems Division (San Jose, California), General Dynamics Land Systems (Muskegon, Michigan and Sterling Heights, Michigan), General Dynamics Defense Systems (Pittsfield, Massachusetts), General Dynamics Armament Systems (Burlington, Vermont), and

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Crusader, December 31, 1996

7. Executive Summary (Cont'd):

Electronic Data Systems (Herndon, Virginia) as major subcontractors. The contract is based upon streamlined acquisition initiatives, and upon an integrated product development philosophy with "Team Crusader" consisting of each of the contractor team players and the Army's Project Management Office.

In March 1996, the Army changed the armament system for Crusader from a liquid propellant-based system to a solid propellant-based system. The solid propellant system selected by United Defense was the congressionally directed Crusader backup armament system developed by the Army Armament Research, Development, and Engineering Center (Picatinny Arsenal, New Jersey) and Benet Weapons Laboratory (Watervliet, New York). This change was made with due consideration given to the potential benefits of liquid propellant and the technical performance, schedule, and cost risks associated with the development and weaponization of that technology. The PDRR contract was refocused discontinuing liquid propellant requirements analysis and component maturation, and addressing necessary requirements, maturation, and development efforts for a solid propellant-based Crusader.

During the past year the program continued to incorporate the concept of "Cost as an Independent Variable" (CAIV). CAIV places a significant emphasis on cost versus performance tradeoff analyses as a design tool, with active participation by the user. A unit cost target has been incorporated in the PDRR contract with due consideration to total life cycle costs. Significant accomplishments include training of over 250 technical personnel in life cycle cost management and principles, establishment by the contractor of a baseline life cycle cost estimate/model, formation of an Integrated Cost Management Team, and establishment of an award fee structure that emphasizes the importance of this area and compensates the contractor for successful implementation of CAIV processes and achievement of the unit cost goal.

The Crusader System Functional Review (SFR) was successfully completed in June 1996. The review reflected the results on the Crusader requirements analysis and concept development performed by the contractor and government team, which translated the war fighting needs into design requirements and a design solution (i.e., initial Crusader concept). The SFR resulted in the analytical foundation representing the balance of requirements between cost, risk and performance. The analyses were supported by an initial Crusader design concept and program planning and documentation to support the Crusader development approach. Key OSD and Army staff personnel jointly participated in the review, which included product demonstrations of the requirements database and concept formulation. The SFR represented the transition to preliminary design; and, the analytical foundation established represents the decision database for preliminary and detailed design.

Since SFR the program has been in the initial stages of preliminary design. During this stage of the program the contractor is further defining the basic Crusader design approach to include establishing the subsystem design concepts and the partitioning of requirements between hardware, software and man-machine interfaces to support the initial system concept presented at SFR.

As an acquisition reform initiative, the Army's Project Manager for Crusader, with agreement from the user, will be combining development and early user testing. Testing is scheduled to begin December 2000.

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7. Executive Summary (Cont'd):

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

The Project Manager submitted a Program Deviation Report (PDR) 30 January 1997. The PDR was precipitated by the FY97 Appropriations Act decrementing the Crusader President's Budget request by \$25 million. The program will be stretched out to accommodate the decrement and will result in a breach of the Milestone II threshold. Replanning activities were on-going at time of writing. New program baseline parameters will be forthcoming.

9. Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
ORD Approval	JUN 93	JUN 93	JUN 93
Milestone I ASARC	OCT 94	OCT 94	OCT 94
Milestone I DAB Review	NOV 94	NOV 94	NOV 94
Development Phase I & II Contract Award	JUN 95	JUN 95	DEC 94
First Prototype Delivered	OCT 99	OCT 99	DEC 00 (Ch-1)
Early User Test Start			
Start	OCT 99	OCT 99	DEC 00 (Ch-1)
Complete	JAN 00	JAN 00	FEB 01 (Ch-1)
DAE IPR	APR 00	APR 00	MAR 01 (Ch-1)
Phase III Contract Award	APR 00	APR 00	MAR 01 (Ch-1)
Critical Design Review (CDR)	JUN 00	JUN 00	MAY 01 (Ch-1)

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9a. Schedule (Cont'd):

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate	
First Pre-Production Delivery	APR 02	APR 02	MAR 03	(Ch-1)
Pre-Production Qualification Test				
Start	APR 02	APR 02	MAR 03	(Ch-1)
Complete	JUL 03	JUL 03	JUN 04	(Ch-1)
LRIP IPR	AUG 03	AUG 03	JUL 04	(Ch-1)
LRIP Contract Award	OCT 03	OCT 03	SEP 04	(Ch-1)
LRIP First Delivery	OCT 04	OCT 04	SEP 05	(Ch-1)
IOT&E				
Start	JAN 05	JAN 05	DEC 05	(Ch-1)
Complete	APR 05	APR 05	MAR 06	(Ch-1)
First Unit Equipped (FUE)	JUL 05	JUL 05	JUN 06	(Ch-1)
Organic Support Capability	SEP 05	SEP 05	AUG 06	(Ch-1)
Milestone III DAB Review	OCT 05	OCT 05	SEP 06	(Ch-1)
Full Rate Production Contract Award	OCT 05	OCT 05	SEP 06	(Ch-1)
Service Depot Support Date	DEC 06	DEC 06	NOV 07	(Ch-1)
First Full Rate Production Delivery	FEB 07	FEB 07	JAN 08	(Ch-1)

b. Current Change Explanations --

(Ch-1) A Program Deviation Report (PDR) was issued January 30, 1997. The PDR announced a slip of the Crusader schedule that was precipitated by a congressional reduction of \$25 million to the FY97 President's Budget. Other contributing factors included a \$10 million congressional reduction to Crusader's FY96 President's Budget, and a slowed propellant decision stretching the completion of the requirements analysis. The following milestones have changed from the 1995 SAR:

Milestone	1995 SAR Current Estimate	1996 SAR Current Estimate
First Prototype Delivered	OCT 99	DEC 00
Early User Test		
Start	OCT 99	DEC 00
Complete	JAN 00	FEB 01
DAE IPR	APR 00	MAR 01
Phase III Contract Award	APR 00	MAR 01
Critical Design Review (CDR)	JUN 00	MAY 01
First Pre-Production Delivery	APR 02	MAR 03
Pre-Qualification Test		
Start	APR 02	MAR 03
Complete	JUL 03	JUN 04
LRIP IPR	AUG 03	JUL 04
LRIP Contract Award	OCT 03	SEP 04
LRIP First Delivery	OCT 04	SEP 05
IOT&E		
Start	JAN 05	DEC 05
Complete	APR 05	MAR 06
First Unit Equipped (FUE)	JUL 05	JUN 06
Organic Support Capability	SEP 05	AUG 06
Milestone III DAB Review	OCT 05	SEP 06
Full Rate Production Contract Award	OCT 05	SEP 06
Service Depot Support Date	DEC 06	NOV 07
First Full Rate Production Delivery	FEB 07	JAN 08

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9b. Schedule (Cont'd):

10. Performance Characteristics:

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
AFAS					
Maximum rate of fire (rds/min)	12 for 3-5 mins	12 for 3-5 mins	/ 10 for 3-5 mins	TBD	10 for (Ch-1) 3-5 mins
Maximum range assisted (km)	50	50	/ 40	TBD	40 (Ch-2)
Cross Country Mobility (with rolling resis- tance of 90 kg per metric ton) (km/hr)	48	48	/ 39	TBD	48
Highway Mobility (on level hard surface) (km/hr)	78	78	/ 67	TBD	78
Mean Time Between System Abort/1 (MTBSA) (hrs)	68	68	/ 62	TBD	68
FARV					
Rearm AFAS/3	60 complete rds in less than 12 mins	60 complete/ rds in less than 12 mins	/ 60 complete rds in 12 mins	TBD	60 complete rds in 12 mins
Cross Country Mobility (with rolling resis- tance of 90 kg per metric ton) (km/hr)	48	48	/ 39	TBD	48
Highway Mobility (on hard surface road) (km/hr)	78	78	/ 67	TBD	78
Mean Time Between System Abort (MTBSA)/1	116	116	/ 104	TBD	116

b. Current Change Explanations --

(Ch-1) The PM's estimate for maximum rate of fire was revised from twelve to ten rounds per minute (RPM) to reflect the results derived from the cost/performance trade and force effectiveness analyses. The analyses showed that while improving from eight to ten RPM provides significant improvement in force effectiveness, only marginal improvements are gained by going above ten

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10b. Performance Characteristics (Cont'd):

RPM. Twelve RPM is technically achievable but with higher cost.

(Ch-2) The PM's estimate for range was changed from 50 kilometers to 40.3 kilometers to reflect the current state of technology for a solid propellant 155 millimeter cannon (52 to 54 calibers in length) with the current rocket assist artillery projectile (M549) and a full complement of propellant (six increments of the Modular Artillery Charge System). Crusader's range is estimated to increase to more than 47 kilometers given the successful completion of the development effort for a new artillery projectile employing rocket-assist and basebleed technology (XM982). The XM982 is being developed by the Army and is scheduled to be fielded in the same timeframe as Crusader.

11. Total Program Cost and Quantity (Dollars in Millions):

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	2357.0	2357.0	2342.1
Procurement	0.0	N/A	
Total Sailaway			(0.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	0.0	N/A	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 95 Base-Year \$	2357.0	2357.0	2342.1
Escalation	423.0	423.0	290.9
Development (RDT&E)	(423.0)	(423.0)	(290.9)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2780.0	2780.0	2633.0
b. Quantity --			
Development (RDT&E)	0	0	N/A
Procurement	N/A	N/A	N/A
Total	N/A	0	N/A

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Planning Estimate	2780.0	-	-	2780.0
Previous Changes:				
Economic	-123.1	-	-	-123.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-15.8	-	-	-15.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-138.9	-	-	-138.9
Current Changes:				
Economic	-13.2	-	-	-13.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+5.1	-	-	+5.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-8.1	-	-	-8.1
Total Changes	-147.0	-	-	-147.0
Current Estimate	2633.0	-	-	2633.0

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2357.0	-	-	2357.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-14.9	-	-	-14.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-14.9	-	-	-14.9
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.0	-	-	0.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	0.0	-	-	0.0
Total Changes	-14.9	-	-	-14.9
Current Estimate	2342.1	-	-	2342.1

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	RDT&E		
	Revised escalation indices. (Economic)	N/A	-13.2
	Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+0.7
	Revised program estimate (Estimating)	-0.7	+4.4
	RDT&E Subtotal	0.0	-8.1

14. Unit Cost and Other History (Then-Year Dollars in Millions):

- a. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.
- b. Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

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14c. Unit Cost and Other History (Cont'd):

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	NOV 94	N/A	N/A	NOV 94
Milestone II	APR 00	N/A	N/A	MAR 01
Milestone III	OCT 05	N/A	N/A	SEP 06
FUE/IOC	JUL 05	N/A	N/A	JUN 06
Total Cost	2780	N/A	N/A	2633
Total Quantity	N/A	N/A	N/A	N/A
Prog Acq Unit Cost	N/A	N/A	N/A	N/A

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --
 Crusader Ph I/II Develop:
 United Defense, Minneapolis, MN
 DAAE30-95-C-0009, CPIF/AF
 Award: December 29, 1994
 Definitized: January 29, 1997

Initial Contract Price		
Target	Ceiling	Qty
\$61.4	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$995.4	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$1006.7	\$1009.3

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-5.4	\$-20.3
Cumulative Variances To Date (12/27/96)	\$-13.3	\$-32.7
Net Change	\$-7.9	\$-12.4

Explanation of Change:

Current Contract Price was revised to \$995.4 million to reflect the full target cost and full target fee of Crusader's PDRR contract efforts through 2000 as a result of the modification to the contract on 29 January 1997 which authorized the continued development of Crusader beginning with preliminary design. Please note that it does not include previously provided award fee of \$5.3 million or account for future award fee considerations. The contract prices in last year's SAR submission only reflected the definitized portion of the scope that was incrementally awarded for initial requirements analysis and component maturation efforts.

Current cost variance is primarily attributable to unrecoverable overruns in the now terminated Regenerative Liquid Propellant Gun (RLPG) efforts. Smaller overruns exist in the powerpack design efforts, but are offset by underruns in the data area.

The schedule variance is driven by delays in receipt of the long-lead items for the powerpack transmission. The contractor has encountered difficulty in acquiring necessary engineering resources, resulting in staffing shortfalls in the system engineering area, also contributing to the schedule variance.

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15. Contract Information (Cont'd):

The cost overrun associated with the RLPG accounts for the Contractor's and Project Manager's Estimated Price at Completion being higher than the Current Contract Price. The Estimated Price at Completion will be revised accordingly at the completion of the replanning efforts discussed earlier in sections 8 and 9.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-05)</u>	<u>Total</u>
RD&E	486.3	322.3	294.4	1530.0	2633.0
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	486.3	322.3	294.4	1530.0	2633.0

b. Annual Summary -- Crusader (AFAS/FARV)

Appropriation: 2040 Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY95 Dollars Nonrec</u>	<u>Flyaway FY95 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994				3.8	3.8
1995				63.9	65.0
1996				174.9	181.7
1997				222.4	235.8
1998				297.9	322.3
1999				266.5	294.4
2000				318.7	359.5
2001				377.5	434.8
2002				368.8	434.0
2003				171.0	206.1
2004				51.7	63.9
2005				25.0	31.7
Subtotal				2342.1	2633.0

	<u>Qty</u>	<u>Flyaway Dollars Nonrec</u>	<u>Flyaway Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
Grand Total				2342.1	2633.0

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17. Delivery/Expenditure Information:

a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 0.0

Percent Total Program Expended: 0.0%

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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AF-16 JPATS

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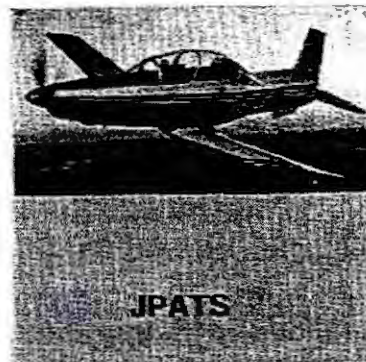
SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)

PROGRAM: JPATS

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Joint Primary Aircraft Training System/JPATS

2. DoD Component: USAF

Joint Participants:
USAF/USN

3. Responsible Office and Telephone Number:

Aeronautical System Center/YT	COL ROBERT C. HOOD
Wright-Patterson AFB	Assigned: May 15, 1996
Dayton, OH 45433-7014	DSN 785-2896; COMM (937) 255-2896
	hoodrc@yt.wpafb.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603208N (Shared) Project H1150
PE 0604233F (Shared) Project 654102

PROCUREMENT:

APPN 3010 ICN 0804740F (Air Force)
APPN 1506 ICN 0804745N (Navy)
APPN 3010 ICN 0804740F (Air Force)
APPN 1506 ICN 0804745N (Navy)
APPN 3010 ICN 0804740F (Air Force)
APPN 1506 ICN 0804745N (Navy)

MILCON:

PE 0804741F
PE 0805796N

O&M:

PE 0804741F

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4. Program Elements/Procurement Line Items (Cont'd):

RDT&E PROGRAM ELEMENT: 64233F FY94 and prior: Project 644102

5. References:

SAR Baseline (Development Estimate):

Program Management Directive 1104(15)

/PE64233F/PE84740F/84741F Dated 24 Apr. 96

Operational Requirements Document dated 15 Aug 93, Change 2 dated 6 Jun 94.

DAE Approved Acquisition Program Baseline dated August 4, 1995

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated August 4, 1995.

6. Mission and Description:

The Joint Primary Aircraft Training System (JPATS) is a joint USAF/USN program to replace the USAF's T-37B aircraft and at least the USN's T-34C aircraft and their associated Ground Based Training Systems (GBTS). The aircraft and GBTS will be used to train entry-level students in the fundamentals of flying so they can transition into advanced training tracks leading to qualification as military pilots, navigators, and Naval Flight Officers.

The program includes the purchase of aircraft, simulators, associated ground-based training devices, training management systems, instructional courseware, and logistics support. The USAF will train at 5 bases and the USN at 3 bases. The USAF will have contractor logistics support for the off-aircraft equipment maintenance. The GBTS will be a total contractor logistics support (CLS) effort. The on-equipment maintenance will be performed by third party contractor or organically supported. The USN will employ total CLS for the entire aircraft and GBTS.

7. Executive Summary:

Program History

In Feb 89 the the DoD Trainer Masterplan was approved documenting the Joint Air Force/Navy near and long term primary aircraft training requirements.

In Dec 90 the Mission Need Statement was validated by the Joint Requirements Oversight Council. The Joint Services Operational Requirements Document was published.

In Jan 93 the DAB conducted a Milestone 0/I Review. Milestone 0 was approved with the Air Force designated lead service. Milestone I was approved contingent upon completion of several actions prior to Request for Proposal (RFP) release.

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7. Executive Summary (Cont'd):

In Jan 94 the Updated Operational Requirements Document (ORD) II dated 15 Aug 93 was released.

In Mar 94 the program's acquisition strategy changed, which resulted in delaying the release of the RFP. A new ASR and APB were approved and implemented. The updated ASR required the prime contractor to conduct the GBTS source selection and subsequently choose the GBTS contractor.

In May 94 the Source Selection began with the RFP release to industry. The flight evaluation phase of source selection began on 24 Jul 94 and was successfully completed on 30 Sep 94. On 24 Jan 95, an amendment to the RFP was released to the JPATS contenders.

In Jun 95 the Source Selection Authority was briefed and the winner, Raytheon Aircraft Company (RAC), was announced on 22 Jun 95 by the Secretary of the Air Force. Protests (2) were filed following the announcement and the contract award was delayed.

In Aug 95 the JPATS Milestone II DAB was conducted and all documentation was approved. The ADM was signed on 9 Aug 95 allowing the JPATS contract award to proceed once the protests were resolved. JPATS was redesignated an Acquisition Category 1C program.

In Nov 95 the GAO released its decision on the Rockwell protest, all allegations were denied.

Program Activity Since Last Report

The GAO released their decision on the Cessna protest (full denial) on 5 Feb 96 and the Manufacturing Development (MD) contract was awarded the same day. Concurrent with contract award a request for contract change proposal (RFCCP) for the GBTS was issued. First production lot option (Lot II for 3 aircraft) was exercised on 14 Feb 96. Post-Award Conference and Systems Requirements Review (SRR) were held the week of 26 Feb 96.

The MD integrated baseline review (IBR) was conducted in May 96 and the production IBR was held in Aug 96. The reviews focused on establishing cost and schedule allocations and agreeing to cost performance baselines.

The flight test program began in Jun 96. The flight test focus during 1996 was laying the groundwork for initial FAA certification tests to begin in early CY97. The specific tests completed include the propeller stress evaluation, pitot-static system airspeed calibration, and aircraft loads model verification. In addition, center of gravity envelope expansion tests were completed to provide a wider margin for mixing heavy and light weight crewmembers in the front and back seats.

On 30 May 96 at a meeting chaired by SAF/AQ, the GBTS two-step strategy was approved. This strategy included RAC conducting a dual-competitor, seven month effort to refine GBTS component requirements through analysis and early prototyping (in particular the Training Integration Management System).

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7. Executive Summary (Cont'd):

Raytheon and the Government signed a Contract Change Proposal (CCP) for the GBTS on 13 September initiating the two-step strategy. This effort will culminate with the submission of a CCP from Raytheon in April 1997 that selects one subcontractor for the GBTS.

A successful Air Vehicle Preliminary Design Review (PDR) was conducted the week of 3 Jun 96.

The program office awarded the FY96 procurement option (at maximum quantity = 6) on 23 Sep 96. Congress approved the use of JPATS fenced FY95 funds to procure the FY96 quantity.

The program office successfully conducted a one day Air Vehicle Critical Design Review (CDR) at Raytheon on 21 Nov 1996.

ORD II Rev 1 was signed by the CSAF and the CNO in Dec 96. Aircraft procurement quantities were increased from 711 to 740 and the simulator quantities were increased from 101 to 109. Both increases support joint undergraduate navigator training. The GBTS also had some performance improvement requirements.

NOTE: The new procurement quantities identified in ORD II, Rev1 are NOT reflected in the current SAR.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 0/I	JAN 93	N/A	JAN 93
Milestone II	AUG 95	N/A	AUG 95
Low Rate Initial Production Option (LRIP) Exercise Award	FEB 95	N/A	N/A
Aircraft Critical Design Review (CDR)	JUN 96	JUN 96	NOV 96 (Ch-1)
DD 250 of T-1 (Test Aircraft)	MAY 98	MAY 98	NOV 98
Milestone III	SEP 99	SEP 99	DEC 99
Initial Operational Capability (AF)	FEB 01	FEB 01	AUG 01
Initial Operational Capability (Navy)	JUL 03	JUL 03	JUL 03

b. Current Change Explanations --

(Ch-1): The current estimate for the aircraft Critical Design Review changed from Dec 96 to Nov 96 to reflect actual occurrence.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Syllabus Maneuvers	Accomp-	Accomp- / Accomp-	TBD	Accomp-
Mission Profiles	lish all	lish all/ lish all		lish all
(Contact,	five	five / five		five
Familiarization,	mission	mission / mission		mission
Precision Aero-	profiles	profiles/ profiles		profiles
batics, Instrument,				
and Navigation -				
High and Low)				
Sustained Speed at	270	270 / 250 (270 TBD		250 (270
1000 ft MSL, hot day		/ Dash)		Dash)
(KTAS)				
Operational G	+7 to -3	+7 to -3/ +6 to -3 TBD		+6 to -3
Envelope (Gs)	sym-	sym- / sym-		sym-
	metric	metric / metric;		metric;
		/ +4 to 0		+4 to 0
		/ asym-		asym-
		/ metric		metric
Pressurization (PSI	5.0	5.0 / 3.5	TBD	3.5
Differential)				
Bird Strike Capabil-	Max Low	Max Low / 270	TBD	270
ity (4 lb bird, no	Level	Level /		
catastrophic damage)	Airspeed	Airspeed/		
(KTAS)				

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10a. Performance Characteristics (Cont'd):

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Ejection Seat with Survival Kit (Altitude/Airspeed in Knots)	0/0	0/0 / 0/60	TBD	0/60
Able To Perform an Engine Out Landing	Unpre- pared surface	Unpre- / Runway pared / surface /	TBD	Runway
Anthropometric Accommodation (Sitting Height in inches)	31.0 to 40.0	31.0 to / 32.8 to 40.0 / 40.0	TBD	32.8 to 40
Able to be Flown Operationally from Either Cockpit	Inter- change- able Instruc- tor/ Student	Inter- / Yes change- / able / Instruc-/ tor / Student /	TBD	Yes
Stepped Tandem	0 Degree Over-the -Nose Visi- bility from the Rear Cockpit at Design Eye Height	0 Degree/ Yes Over-the/ -Nose / Visi- / bility / from the/ Rear / Cockpit / at / Design / Eye / Height /	TBD	Yes
Exterior Noise	FAR Part 36, Most Restric- tive App- licable Standard	FAR Part/ FAR Part 36, Most/ 36, Most Restric-/ Restric- tive / tive App- / App- licable / licable Standard/ Standard	TBD	FAR Part 36, Most Restric- tive App- licable Standard
Takeoffs/Touch & Go/Land (Wx, Weight, Configuration) at Main Operating Bases (Runway Length - FT)	4000	4000 / 5000	TBD	5000
IFR Certified Instrumentation	All Digital except Backups	All / IFR Digital / Cert- except / ified Backups / (Select- / able / EADI/ / EHSI)	TBD	IFR Cert- ified (Select- able EADI/ EHSI)

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10a. Performance Characteristics (Cont'd):

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Visual System (GBTS)	Yes	Yes / Yes	TBD	Yes

b. Current Change Explanations -- None.

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Program (APB)</u>	Current <u>Estimate</u>
Development (RDT&E)	314.7	314.7	320.8
Procurement	2501.0	2501.0	2501.2
Navy	(825.5)		(842.4)
Air Force	(974.6)		(1030.7)
Total Flyaway	(1800.1)		(1873.1)
Navy GBTS	(163.8)		(161.4)
Air Force GBTS	(178.2)		(210.4)
Navy Mission Support	(11.5)		(13.6)
Air Force Mission Suppo	(35.3)		(31.2)
Air Force Other Support	(35.5)		(13.3)
Navy Other Support	(7.7)		(5.7)
Total Other Wpn Sys	(432.0)		(435.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(268.9)		(192.5)
Construction (MILCON)	63.2	63.2	37.2
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 95 Base-Year \$	2878.9	2878.9	2859.2
Escalation	1171.7	1171.7	795.5
Development (RDT&E)	(48.6)	(48.6)	(27.1)
Procurement	(1102.4)	(1102.4)	(759.8)
Construction (MILCON)	(20.7)	(20.7)	(8.6)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	4050.6	4050.6	3654.7

The approved base year changed from BY91 to BY95. A conversion factor of 1.097 was used to convert all appropriations in current estimate to BY95.

b. Quantity --

Development (RDT&E)	1	1	1
Procurement	<u>711</u>	<u>711</u>	<u>711</u>
Total	712	712	712

JPATS' RDT&E aircraft is fully configured.

The Low Rate Initial Production Rate (LRIP) quantities authorized by the Milestone II ADM (9 Aug 95) are up to a maximum of 108 aircraft (through Lot 7) LRIP establishes an initial production base and permits an orderly increase in

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11b. Total Program Cost and Quantity (Cont'd):

the production to lead to full-rate production upon successful completion of operational testing. Milestone III is scheduled to occur before the exercise of Lot 7. If Milestone III is delayed and the Lot 7 option cannot be exercised on time, a break in the production line could occur. However, to mitigate any schedule risk, approval through Lot 7 was sought and approved at Milestone II. Including the Lot 7 quantities in the LRIP, authorization will exceed the 10% quantity threshold normally established for LRIP. However, approval at this time provides the program office latitude to manage risk. Given the pilot program status, a management reserve in the schedule is reasonable. The program office will execute subsequent production contracts for the remaining aircraft with a maximum anticipated production rate of five per month.

The new procurement quantities identified in the ORD II Rev 1 are not reflected in the current SAR.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	Current Estimate (Dec 95 SAR)	UCR Baseline (AUG 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	2859.2	2878.9	
(2) Quantity	712	712	
(3) Unit Cost	4.016	4.043	-0.67
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	2501.2	2501.0	
(2) Quantity	711	711	
(3) Unit Cost	3.518	3.518	0.00

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	363.3	3603.4	83.9	4050.6
Previous Changes:				
Economic	-	-356.9	-7.2	-364.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-11.5	+72.4	+7.3	+68.2
Other	-	-	-	-
Support	-	-90.9	-	-90.9
Subtotal	-11.5	-375.4	+0.1	-386.8
Current Changes:				
Economic	-0.6	+36.3	+5.4	+41.1
Quantity	-	-	-	-
Schedule	-	-11.9	-	-11.9
Engineering	-	-	-	-
Estimating	-3.3	+15.1	-43.6	-31.8
Other	-	-	-	-
Support	-	-6.5	-	-6.5
Subtotal	-3.9	+33.0	-38.2	-9.1
Total Changes	-15.4	-342.4	-38.1	-395.9
Current Estimate	347.9	3261.0	45.8	3654.7

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	314.7	2501.0	63.2	2878.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+7.4	+69.1	+5.0	+81.5
Other	-	-	-	-
Support	-	-73.6	-	-73.6
Subtotal	+7.4	-4.5	+5.0	+7.9
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.3	+3.9	-31.0	-28.4
Other	-	-	-	-
Support	-	+0.8	-	+0.8
Subtotal	-1.3	+4.7	-31.0	-27.6
Total Changes	+6.1	+0.2	-26.0	-19.7
Current Estimate	320.8	2501.2	37.2	2859.2

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.6
Navy Adjustment for Current and Prior Inflation. (Estimating)	-0.9	-0.9
Transferred Navy non unique Mission Support funding (FY98-00) to the Air Force. (Estimating)	-4.4	-4.8
Navy refined current estimate to realign to program requirements. (Estimating)	-6.0	-7.0
Air Force adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Miscellaneous 98PB cuts, plus transfer of Navy non unique Mission Support to the Air Force. (Estimating)	+4.4	+4.6
Air Force refined current estimate to realign to program requirements. (Estimating)	+5.5	+4.7
RDT&E Subtotal	-1.3	-3.9
(2) <u>Procurement</u>		
Revised escalation indices (outyear rates increased). (Economic)	N/A	+34.6
Economic adjustment for negative program change. (Economic)	N/A	+1.7
Air Force savings resulting from buying maximum quantities for FY 96 AND FY97 (Lots 3&4). (Schedule)	0.0	-11.9
Navy refinement of current estimate to realign program requirements. (Estimating)	+15.7	+22.7
Air Force adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
Air Force refinement of current estimate to realign to program requirements. (Estimating)	-12.2	-8.0
Navy change in Initial Spares requirements to reflect current program requirements (Support)	+9.2	+13.7
Change in Navy GBTS to reflect current program requirements. (Support)	-1.1	-0.7
Change in Navy Mission Support to reflect current program requirements. (Support)	+2.6	-3.1
Air Force change in Initial Spares to realign to program requirements. (Support)	+0.1	-0.9
Change in Air Force GBTS to reflect current program requirements. (Support)	+1.3	+1.9

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in Air Force Mission Support to reflect current program requirements . (Support)	-2.6	-5.6
Change in Air Force Other Support to reflect current program requirements . (Support)	-8.7	-11.8
Procurement Subtotal	<u>+4.7</u>	<u>+33.0</u>
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Economic adjustment for negative program change. (Economic)	N/A	+5.8
Navy refined current estimate to realign to program requirements. (Estimating)	-24.2	-32.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Air Force refined current estimate to realign to program requirements. (Estimating)	-6.9	-10.8
MILCON Subtotal	<u>-31.0</u>	<u>-38.2</u>

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5.69	-0.45	--	-0.02	--	+0.05	--	-0.14	-0.56	5.13

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5.07	-0.45	+0.01	-0.02	--	+0.12	--	-0.14	-0.48	4.59

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14c. Unit Cost and Other History (Cont'd):

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JAN 93	JAN 93	N/A	JAN 93
Milestone II	JUN 94	AUG 95	N/A	AUG 95
Milestone III	JUN 98	SEP 99	N/A	DEC 99
FUE/IOC	MAR 00	AUG 01	N/A	AUG 01
Total Cost	277.3	4050.6	N/A	3654.7
Total Quantity	2	712	N/A	712
Prog Acq Unit Cost	138.65	5.69	N/A	5.13

Air Force IOC is Aug. FY01; Navy IOC is Jul FY03.

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --
JPATS MD:
 Raytheon Aircraft Company, Wichita KS
 F33657-94-C-0006, PPIF
 Award: February 5, 1996
 Definitized: February 5, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$84.8	\$101.0	1

Current Contract Price		
Target	Ceiling	Qty
\$89.0	\$105.5	1

Estimated Price At Completion	
Contractor	Program Manager
\$89.0	\$105.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$2.4	\$-1.0
Net Change	\$2.4	\$-1.0

Explanation of Change:

Variance data is taken from the Nov 96 Cost Performance Report and was reflected in the January 1997 DAES report.

Variance Analysis:

The instant contract is now about 23% complete. (It should be noted that the future incorporation of the Ground Based Training System (GBTS) contract change in six months will reduce this figure significantly).

The positive cost variance of 12% is due to two major reasons: actual overhead rates coming in less than planned rates, and Raytheon's efforts to streamline the GBTS source selection. Raytheon continues to aggressively monitor and control contract costs.

The negative schedule variance of -5% is due to delays in test due to additional center of gravity testing and birdstrike testing. The

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15. Contract Information (Cont'd):

government and Raytheon are working on recovery plans which are expected to recover all schedule delays.

Raytheon is currently formulating a grass roots EAC, it is premature to project any underrun at this time. Several factors must still be considered: a potentially large impact to overhead rates if projected foreign sales do not materialize and the risk involved in the qualification test program yet to be done. It is the program office's position that the PM estimate at completion is at the ceiling level (\$105.5M).

b. Procurement --			Initial Contract Price		
<u>JPATS PROD LOT2:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Aircraft Company, Wichita KS					
F33657-94-C-0006, FPIF			\$43.9	\$49.0	3
Award: February 14, 1996					
Definitized: February 14, 1996					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$43.9	\$49.0	3	\$43.9	\$49.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			N/A	N/A	
Cumulative Variances To Date			\$0.5	\$-0.4	
Net Change			\$0.5	\$-0.4	

Explanation of Change:

Variance data is taken from the Nov 96 Cost Performance Report and was reflected in the January 1997 DAES report.

Variance Analysis:

All variances are insignificant at this time. The production contract values reflect only the first exercised option (Lot II - 3 aircraft). Lot III was exercised on 23 Sep 96, the contract values are not yet reflected in the CPR data. There is not enough data at this time to establish a performance trend. Until this phase approaches 15% complete the PM estimate will remain equal to the ceiling price.

JPATS PROD LOT 3:			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Aircraft Company, Wichita KS					
F33657-94-C-0006, FPIF			\$31.2	\$34.3	6
Award: September 23, 1996					
Definitized: September 23, 1996					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$31.2	\$34.3	6	\$31.2	\$34.3	

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	<u>N/A</u>	<u>N/A</u>
Net Change	N/A	N/A

Explanation of Change:

None.

Contract Comments:

CPR data is not available at this time. This is the first time reporting for the SAR.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-14)	<u>Total</u>
RDT&E	149.2	63.8	58.9	76.0	347.9
Procurement	171.7	65.4	92.5	2931.4	3261.0
MILCON	0.2	2.5	3.2	39.9	45.8
O&M	-	-	-	-	-
Total	321.1	131.7	154.6	3047.3	3654.7

b. Annual Summary -- JPATS

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY95 Dollars Nonrec</u>	<u>Flyaway FY95 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994				3.6	3.6
1995				3.7	3.8
1996				1.1	1.1
1997				1.8	1.9
1998				0.4	0.4
1999				0.5	0.6
2000				0.3	0.3
Subtotal				11.4	11.7

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16b. Program Funding Summary (Cont'd):

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				1.1	1.1
1993				1.9	1.9
1994				3.0	3.0
1995				35.3	35.9
1996				42.6	44.1
1997				49.9	52.8
1998				58.7	63.4
1999				52.9	58.3
2000				33.4	37.6
2001				13.6	15.6
2002				1.7	2.0
2003				1.7	2.1
2004				1.7	2.1
2005				1.7	2.2
2006				1.7	2.2
2007				1.7	2.3
2008				1.7	2.3
2009				1.7	2.4
2010				1.7	2.4
2011				1.7	2.5
Subtotal	1			309.4	336.2

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999					
2000	8		19.6	29.5	34.2
2001	24		54.8	69.7	82.7
2002	24		62.7	69.3	84.3
2003	24		61.1	88.9	110.8
2004	24		60.8	103.9	132.9
2005	24		60.1	78.0	102.4
2006	24		59.8	76.6	103.2
2007	24		59.3	77.1	106.5
2008	24		60.6	85.5	121.2
2009	24		60.0	81.5	118.5
2010	24		59.1	78.2	116.6
2011	24		59.0	78.1	119.5
2012	24		59.1	73.6	115.7
2013	24		58.9	66.3	106.9
2014	19		47.9	52.6	87.0

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16b. Program Funding Summary (Cont'd):

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	339		842.4	1108.8	1542.4

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	3		37.5	85.5	89.3
1996	6		32.8	14.3	15.3
1997	15		66.5	61.6	67.1
1998	18		51.8	58.8	65.4
1999	12		35.3	81.4	92.5
2000	18		43.6	79.7	92.4
2001	34		77.2	103.6	123.0
2002	43		114.3	149.4	181.7
2003	43		110.4	205.6	256.4
2004	43		111.5	155.8	199.3
2005	43		110.5	127.7	167.5
2006	43		109.7	120.8	162.7
2007	43		108.8	119.9	165.7
2008	8		20.8	24.6	34.8
2009				1.9	2.8
2010				1.8	2.7
Subtotal	372		1030.7	1392.4	1718.6

Flyaway exceeds total program costs in FY96, and 97 due to OSD direction to roll funds to procure Aircraft. OSD directed the use of \$40.5M of FY95 excess funds A/C in FY96. OSD further directed the use of \$15.3M of FY96 funds to procure 3 A/C of the next lot (15 A/C) in FY97.

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997				0.2	0.2
2000				4.0	4.6
2001				9.5	11.2
2003				1.5	1.9

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16b. Program Funding Summary (Cont'd):

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2007				7.3	10.0
2008				0.5	0.7
2011				0.6	0.9
Subtotal				23.6	29.5

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				2.3	2.5
1999				2.8	3.2
2002				2.7	3.2
2004				2.7	3.4
2005				3.1	4.0
Subtotal				13.6	16.3

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	339		842.4	1143.8	1583.6
USAF	373		1030.7	1715.4	2071.1
Grand Total	712		1873.1	2859.2	3654.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 31.7

Percent Total Program Expended: 0.9%

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18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The operations and support costs are based on the purchase of 711 aircraft, Aircrew Training Devices (ATDs), Training Integration Management System (TIMS), development and conversion courseware, and CLS which will be provided by Raytheon Aerospace.

Section 18b consists of five elements. Mission Personnel includes the cost of military and civilian system-related personnel involved in the operation of this system. Unit-Level Consumption includes the cost of fuel resources and unit level consumables. Sustaining Support includes the costs of replacement support equipment, modification kits, sustaining engineering, software maintenance, and simulator operations for the aircraft system. Indirect Support includes the costs of personnel support for specialty training, permanent changes of station and medical care. Finally, Program Management includes the cost of managing the system by the Air Force Flight Training System Program Office.

Section 18c consists of costs for contract labor, materials, and overhead incurred in providing the logistics support required by an aircraft system, subsystem or associated support equipment. Aircraft CLS covers depot maintenance for both the Air Force and the Navy, and covers organizational and intermediate maintenance activities for the Navy. GBTS CLS support is provided separately.

Typically, CLS is estimated in Base Year (BY) and not converted to Then Year due to the length of the O&S support relative to the number of years for which inflation indices are available. Due to the lack of inflation indices through 2038, the dollar amounts in this section are in BY95.

This reflects the information briefed by the OSD Cost Analysis Improvement Group at the DAB reflecting the JPATS Most Probable Life Cycle Cost documenting the Source Selection dated 25 Jul 95.

* The antecedent systems are the T-37 for the Air Force and T-34 for the Navy.

At the JPATS Milestone I decision, the requirement for a Cost\Operational Effectiveness Analysis (COEA) was waived due to the streamlining initiatives for pilot programs. Thus, the direct comparison to the antecedent systems was not prepared.

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per JPATS PROGRAM	Avg Annual Cost Per *
Mission Pay & Allowances	85.0	0.0
Unit Level Consumption	15.7	0.0

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per JPATS PROGRAM	Avg Annual Cost Per *
Intermediate Maintenance	4.9	0.0
Depot Maintenance	35.1	0.0
Contractor Support	5.9	0.0
Sustaining Support	N/A	0.0
Indirect Costs	N/A	N/A
Total	146.6	0.0

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N-21 STRATEGIC SEALIFT

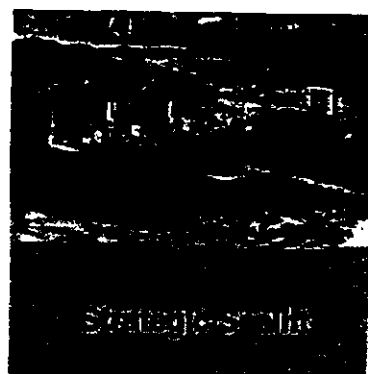
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SEALIFT

AS OF DATE: December 31, 1996

INDEX

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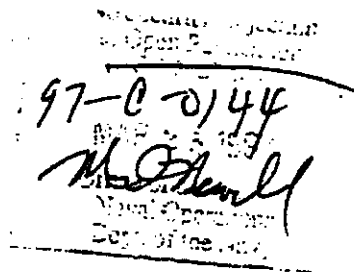
1. Designation and Nomenclature (Popular Name): STRATEGIC SEALIFT
2. DoD Component: Navy
3. Responsible Office and Telephone Number:
PMS 385 STRATEGIC SEALIFT PROGRAM R. S. LISIEWSKI
NAVAL SEA SYSTEMS COMMAND Assigned: June 5, 1995
2531 JEFFERSON DAVIS HWY DSN 332-2003/7881; COMM 703-602-2003/7881
ARLINGTON, VA 22242-5160
4. Program Elements/Procurement Line Items:
RDT&E:
PE 0604567N
PROCUREMENT:
APPN ICN 4557 (NDSF)

National Defense Sealift Fund account executed by the Naval Sea Systems Command under procedures directed by the National Defense Sealift Fund Charter dated October 15, 1994. This SAR addresses the Sealift Ship Acquisition Program financed by the NDSF.

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DEPARTMENT OF DEFENSE



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5. References:

Development Baseline (SAR):

Approved Acquisition Program Baseline dated July 20, 1993.

Approved Program (APB):

Approved Acquisition Program Baseline dated September 18, 1995.

6. Mission and Description:

To carry Army equipment for afloat prepositioning and to transport ARMY/USMC or other services surge equipment to include wheeled/tracked vehicles, helicopters and cargo from CONUS to contingency area.

7. Executive Summary:

The JCS Mobility Requirement Study (MRS) defined overall Strategic Sealift requirements. The Acting ASN(RD&A) accepted the Navy Program Decision Memorandum (NPDM) of August 17, 1992 as the Milestone I Decision Meeting in his memorandum signed on June 9, 1993. The FY93 Defense Authorization Act established the National Defense Sealift Fund (NDSF). The Program was designated ACAT IC by USD(A) on March 5, 1993. Milestone II approval was granted for Conversions on July 30, 1993 and New Construction on August 30, 1993. The Acquisition Program Baseline (APB) was approved on July 20, 1993. MacGregor-NAVIRE (USA) was awarded a FFP/AF contract on March 29, 1993 for procurement of one shipset of Class Standard Equipment (CSE) with options for up to nineteen additional shipsets. On July 30, 1993 Newport News Shipbuilding (NNS) and National Steel and Shipbuilding Company (NASSCO) were awarded FPI contracts for detail design and conversion of a total of five foreign built ships (two at NNS and three at NASSCO). On September 2, 1993 Avondale Industries, Inc. (AII) and on September 15, 1993 NASSCO were awarded FPI contracts for detail design and construction of one ship each with options for five more ships each for a total of 12 new construction ships under contract. The remaining two hulls are planned to be solicited through limited competition between the two current new construction yards.

The calendar year 96 options were exercised on November 26, 1996 for one additional ship each at Avondale Industries, Inc. and NASSCO. The fourth option was exercised for two additional shipsets of CSE on November 26, 1996.

Under the NASSCO conversion contract, the USNS Yano (MSC assigned vehicle cargo ship TAKR 297) successfully completed Acceptance/INSURV (Board of Inspection & Survey) Trial during the week of December 16, 1996. NASSCO's unions entered a strike the evening of July 17, 1996. Although the labor dispute is essentially over; the assessment of strike impact is a January 31, 1997 delivery date for TAKR 297 vice November 30, 1996. The revised delivery date on the USNS Soderman (TAKR 299) is November 15, 1997 vice September 30, 1997. The revised delivery dates on new construction hulls will result in an extension of four weeks to the present delivery dates.

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7. Executive Summary (Cont'd):

Newport News has announced a schedule delay due to their inaccurate estimates in trade manning needs for TAKR 298. Based on revised manning, the estimated delivery date is May 23, 1997 vice March 31, 1997.

Avondale Industries' subcontractor for main propulsion diesel engines, Coltec Industries, was struck by its union on August 19, 1996 and the strike was settled on October 25, 1996. Due to a revised engine shipping schedule by Coltec, Avondale has requested that delivery of the USNS Fisher (TAKR 301) be delayed by eight weeks and TAKR 302 and 303 be delayed by ten weeks each. The Navy is currently evaluating the requested schedule delay.

A Program Deviation Request (PDR) is being prepared to address a 5.39% increase to the APB Baseline (base year dollars) which occurred after entering the new OMB indices. Note that the current then year end cost estimate of \$5932.5M has been submitted as part of the FY98 President's Budget. The breach occurred as a result of the change to the OMB indices when applied to and based on the FY98 President's Budget amount.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

A Program Deviation Request is being prepared to address a 5.39% increase to the APB Baseline (base year dollars) which occurred after entering the new OMB indices. Note that the current then year end cost estimate of \$5932.5M has been submitted as part of the FY98 President's Budget. The breach occurred as a result of the change to the OMB indices when applied to and based on the FY98 President's Budget amount.

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9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
NPDM	AUG 92	AUG 92	AUG 92	
Milestone I	SEP 92	SEP 92	AUG 92	
CSP/S-24 Conversion Engineering Design Award	OCT 92	OCT 92	OCT 92	
CSP/S-24 New Construction Engineering Design Award	NOV 92	NOV 92	NOV 92	
Class Standard Equipment Contract Award	MAR 93	MAR 93	MAR 93	
Milestone II Conversion	JUN 93	JUN 93	JUN 93	
CSP/S-24 Conversion Contract Award	JUL 93	JUL 93	JUL 93	
Milestone II New Construction	AUG 93	AUG 93	AUG 93	
CSP/S-24 New Construction Contract Award	SEP 93	SEP 93	SEP 93	
Conversion Acceptance Trials	NOV 94	FEB 96	APR 96	(Ch-1)
OT&E For Conversion	MAY 95	JUN 96	SEP 96	
Organic Support Capability (First Conversion Ship)	NOV 95	JUN 96	SEP 96	
New Construction Acceptance Trials	AUG 97	AUG 97	DEC 97	
IOC (New Construction First Ship Delivery)	OCT 97	OCT 97	JAN 98	
OT&E For New Construction	APR 98	APR 98	AUG 98	
Milestone III (Total Program)	AUG 98	AUG 98	AUG 98	
Organic Support Capability (First New Construction Ship)	AUG 98	AUG 98	AUG 98	
FOC (New Construction Ships)	JUL 00	JUL 00	JUL 00	
Service Depot Support (Total Program)	SEP 00	SEP 00	SEP 00	

Schedule reflects the requirement to complete OPEVAL prior to conducting Milestone III.

b. Current Change Explanations --

(CH-1) Actual date for the conversion acceptance trials.

10. Performance Characteristics:

a. Performance --	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
RO/RO CAPACITY				
Total Cargo:				
(After broken stow)				
(M sqft)				
PREPO	2	2 / 2	TBD	2
SURGE	2	3 / 3	TBD	3
Cargo capacity per ship (K sqft)				
Usable before broken stow)				
New Construction				

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10a. Performance Characteristics (Cont'd):

a. Performance --	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
SURGE	400	400 / 380	TBD	380
PREPO	350	350 / 300	TBD	300
Conversion				
SURGE	400	400 / 300	TBD	300
PREPO	350	350 / 225	TBD	225
Lift/Cargo Handling Capability				
Crane Sets	2	2 / 2	TBD	2
Stern Ramp	Slewing	Slewing / Slewing	TBD	Slewing
Side Port	2	2 / 2	TBD	2
Cargo Onload/Offload Times (hrs-not to exceed)				
Combined	N/A	96 / 96	TBD	96
Load/Offload at Pier				
Load at Pier	48	N/A / N/A	N/A	N/A
Offload at Pier	48	N/A / N/A	N/A	N/A
Sustained Speed (knots)	>24	>24 / 24	TBD	24
Range (nm)	17500	17500 / 12000	TBD	12000
Ship Size Limitation	<PANAMAX	<PANAMAX/ PANAMAX	TBD	PANAMAX

Nominal capacities, exact square footage and range varies per conversion/new construction design. In all cases the threshold value is not breached.

The USNS Shughart (TAKR 295) conducted Operational Test & Evaluation (OT&E) in September 1996. OPEVAL consisted of a full loadout of the ship as part of an Army SEDRE (Sea Emergency Deployment Readiness Exercise). The final report was signed out of OPTEVFOR on March 12, 1997 and distributed. The ship has been determined to be operationally effective and is recommended for continued fleet introduction.

b. Current Change Explanations -- None.

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11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	39.3	38.1	38.1
Procurement	5654.5	4781.8	5039.4
New Construction Prepo	(2882.7)		(2267.7)
New Construction Surge	(1133.4)		(1310.2)
Conversion	(1638.4)		(1461.5)
Total Sailaway	(5654.5)		(5039.4)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 92 Base-Year \$	5693.8	4819.9	5077.5
Escalation	894.6	905.2	894.9
Development (RDT&E)	(0.6)	(1.8)	(1.8)
Procurement	(894.0)	(903.4)	(893.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6588.4	5725.1	5972.4

The December 1996 SAR reflects the current control of \$5932.5 as reflected in the FY98 President's budget. The FY97 Appropriations Act provided an additional \$298.6M which will allow for the early procurement of one of two FY99 ships. A limited competition procurement strategy has been finalized and award is anticipated by the fourth quarter of FY97.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	20	19	19
Total	20	19	19

The quantity of 19 ships represents the procurement of 5 conversion and 14 new construction ships.

c. Foreign Military Sales --
NONE

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (SEP 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BY\$)	5077.5	4819.9	
(2) Quantity	19	19	
(3) Unit Cost	267.237	253.679	+5.34
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BY\$)	5039.4	4781.8	
(2) Quantity	19	19	
(3) Unit Cost	265.232	251.674	+5.39

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	39.9	6548.5	-	6588.4
Previous Changes:				
Economic	+1.2	+283.8	-	+285.0
Quantity	-	-351.5	-	-351.5
Schedule	-	+96.4	-	+96.4
Engineering	-	-	-	-
Estimating	-1.2	-806.2	-	-807.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.0	-777.5	-	-777.5
Current Changes:				
Economic	-	-38.2	-	-38.2
Quantity	-	-	-	-
Schedule	-	+164.0	-	+164.0
Engineering	-	-	-	-
Estimating	-	+35.7	-	+35.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+161.5	-	+161.5
Total Changes	+0.0	-616.0	-	-616.0
Current Estimate	39.9	5932.5	-	5972.4

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	39.3	5654.5	-	5693.8
Previous Changes:				
Quantity	-	-238.6	-	-238.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.2	-543.1	-	-544.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.2	-781.7	-	-782.9
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	+137.2	-	+137.2
Engineering	-	-	-	-
Estimating	-	+29.4	-	+29.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+166.6	-	+166.6
Total Changes	-1.2	-615.1	-	-616.3
Current Estimate	38.1	5039.4	-	5077.5

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-34.4
Economic adjustment for negative program change. (Economic)	N/A	-3.8
Cost savings from the acceleration in procurement of one new construction ship from FY99 to FY97. (Schedule)	0.0	-9.3
Increase to government liability for conversion ships due to schedule slips. (Schedule)	+137.2	+173.3
Adjustment for current and prior inflation. (Estimating)	+17.8	+21.1
Refinement of ship cost adjustment estimates. (Estimating)	+11.6	+14.6
Procurement Subtotal	+166.6	+161.5

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Dev Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
329.42	+12.99	-1.16	+13.71	--	-40.62	--	--	-15.08	314.34

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
329.42	+12.99	-1.16	+13.71	--	-40.62	--	--	-15.08	314.34

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Dev Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
327.43	+12.93	-1.27	+13.71	--	-40.55	--	--	-15.19	312.24

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
327.43	+12.93	-1.28	+13.71	--	-40.55	--	--	-15.19	312.24

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	MAY 93	SEP 92	N/A	SEP 92
Milestone II	JUN 93	JUL 93	N/A	JUL 93
Milestone III	AUG 98	AUG 98	N/A	AUG 98
FUE/IOC	OCT 97	OCT 97	N/A	JAN 98
Total Cost	6588.4	5725.1	N/A	5972.4
Total Quantity	20	19	N/A	19
Prog Acq Unit Cost	329.42	301.32	N/A	314.34

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15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --			Initial Contract Price		
<u>Class Standard Equip.:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MacGregor-NAVIRE (USA), Cranford NJ					
N00024-93-C-2220, FFP/AF			\$13.2	N/A	1
Award: March 29, 1993					
Definitized: March 29, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$165.0	N/A	16	\$164.5	\$165.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$2.0	\$-0.1	
Cumulative Variances To Date (10/31/96)			\$3.4	\$0.1	
Net Change			\$1.4	\$0.2	

Explanation of Change:

Nothing significant.

Contract Comments:

The fourth option for two additional shipsets of CSE was exercised on November 26, 1996. The settlement of an Engineering Change Proposal (ECP) for authorized/unpriced work in the amount of \$8.4M will revise the total contract value. Eight of the sixteen shipsets ordered have been delivered.

<u>CONVERSIONS:</u>			Initial Contract Price		
NASSCO, SAN DIEGO, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-93-C-2214, FPI 50/50 SHARE			\$632.1	\$761.1	3
Award: July 30, 1993					
Definitized: July 30, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$685.3	\$822.9	3	\$804.6	\$815.5	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-90.4	\$-70.6	
Cumulative Variances To Date (10/06/96)			\$-153.1	\$-26.4	
Net Change			\$-62.7	\$44.2	

Explanation of Change:

The net change for cost variance is due to inefficient production performance (structural/pipe mechanical) and material cost growth in steel and non-spec material (engineering job-shoppers). The net change in schedule variance is driven by continuous production inefficiencies and late Contractor (Vendor) furnished material and information on the TAKRS 297 and 299.

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15. Contract Information (Cont'd):

Contract Comments:

The TAKR 295 was delivered to the Military Sealift Command (MSC) on May 7, 1996. NASSCO's unions entered a strike in July 1996. Although the labor dispute is essentially over; the assessment of strike impact is a January 31, 1997 delivery date for the TAKR 297 vice November 30, 1996. The revised delivery date on TAKR 299 is November 15, 1997 vice September 30, 1997. During the reporting period the TAKR 297 and 299 reprogramming was incorporated into the CPR's. The reprogramming methodology was evaluated and found to be sound and in compliance with C/SCSC criteria.

<u>CONVERSIONS:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
NEWPORT NEWS SHIPBUILDING, NEWPORT NEWS VA					
N00024-93-C-2216, FPI 50/50 SHARE	\$423.5	\$478.8	2		
Award: July 30, 1993					
Definitized: July 30, 1993					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$561.0	N/A	2	\$561.0	\$561.0	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-131.7	\$-43.3
Cumulative Variances To Date (10/20/96)	\$-78.2	\$-23.0
Net Change	\$53.5	\$20.3

Explanation of Change:

The net change to cost variance is primarily due to continued inefficient production (shipboard/manufacturing) efforts. The net change to schedule variance is primarily driven by late material and production efforts. Schedule variance will decrease as the remaining ship nears delivery.

Contract Comments:

The Fixed-Price Incentive (FPI) 50/50 structure of the contract was changed to Firm-Fixed Price (FFP) on June 14, 1996. The TAKR 296 was delivered to the Military Sealift Command (MSC) on August 23, 1996. Newport News announced a schedule delay due to erroneous estimates in trade manning needs for TAKR 298. The estimated delivery date is May 97 vice March 97. The PM's current estimated cost of \$640.6M is based on extrapolating actual performance trends on TAKR 296 to remaining work on TAKR 298.

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SEALIFT, December 31, 1996

15. Contract Information (Cont'd):

NEW CONSTRUCTION:
 AVONDALE IND., INC., NEW ORLEANS LA
 N00024-93-C-2205, FPI 50/50 SHARE
 Award: September 2, 1993
 Definitized: September 2, 1993

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$262.0	\$303.0	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$920.0	\$1081.5	4

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$790.4	\$845.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.0	\$-14.9
Cumulative Variances To Date (10/31/96)	\$16.4	\$-16.6
Net Change	\$20.4	\$-1.7

Explanation of Change:

The calendar year 96 options were exercised on November 26, 1996 for the fourth ship. The cumulative positive cost variance is due to favorable material purchases on TAKRs 301 and 302 in the areas of steel, piping and machinery. The cumulative negative schedule variance is attributable to Avondale starting at different points than originally planned.

Contract Comments:

Avondale Industries' subcontractor for main propulsion diesel engines, Coltec Industries, was struck by its union on August 19, 1996 and the strike was settled on October 25, 1996. Due to a revised engine shipping schedule by Coltec, Avondale has requested that delivery of TAKR 301 be delayed by eight weeks and TAKR 302 and 303 be delayed by ten weeks each.

NEW CONSTRUCTION:
 NASSCO, SAN DIEGO, CA
 N00024-93-C-2203, FPI 50/50 share
 Award: September 15, 1993
 Definitized: February 1, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$267.1	\$315.8	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$943.6	\$1114.8	4

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$862.9	\$906.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.2	\$-2.8
Cumulative Variances To Date (10/06/96)	\$-3.5	\$-14.7
Net Change	\$-0.3	\$-11.9

Explanation of Change:

The variances as shown are of little predictive value due to the low percent complete of the first ship on which these variances are based. The

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15. Contract Information (Cont'd):

cost variance represents a progress payment made to General Electric (GE) for marine gas turbines for which there was no earned value (BCWP) in the CPR. The schedule variance is predominately in the areas of machinery, electrical and hull material purchased. The Contractor is scheduling more than he is able to purchase.

Contract Comments:

The calendar year 96 option was exercised on November 26, 1996 for the fourth ship. NASSCO, as negotiated in P00016, has replanned the work scope within the existing target cost into its C/SCSC system. This is complete and has resulted in a more reliable Cost Performance Report.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	39.9	-	-	-	39.9
Procurement	4797.2	812.9	322.4	-	5932.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4837.1	812.9	322.4	-	5972.4

b. Annual Summary -- SEALIFT

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY92 Dollars Nonrec</u>	<u>Flyaway FY92 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1992		38.1		38.1	39.9
Subtotal		38.1		38.1	39.9

Appropriation: 1611 Shipbuilding and Conversion, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY92 Dollars Nonrec</u>	<u>Flyaway FY92 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1993	9		2449.2	2199.7	2463.5
1994				249.5	288.8
1995	2		463.1	463.1	546.4
1996	2		494.9	494.9	596.1
1997	3		733.9	733.9	902.4
1998	2		647.2	647.2	812.9
1999	1		251.1	251.1	322.4

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16b. Program Funding Summary (Cont'd):

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	19		5039.4	5039.4	5932.5

The appropriation name in Section 16c. should reflect "4557 National Defense Sealift Fund (NDSF)" vice "1611 Shipbuilding and Conversion, Navy".

The FY97 Appropriations Act provided an additional \$298.6M which will allow for the early procurement of one of two FY99 ships above the requested amount of \$603.8. A limited competition procurement strategy has been finalized and the procurement package is being assembled with release of the CBD announcement on Jan 6, 1997, and award anticipated by the fourth quarter of FY97. The current total procurement profile is \$5,932.5M as reflected in the controls for the FY98 President's budget.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	19	38.1	5039.4	5077.5	5972.4

17. Delivery/Expenditure Information:

a. Deliveries To Date

Plan

Actual

RD&E

0

0

Procurement

2

2

Percent Total Program Quantities Delivered: 10.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2118.9

Percent Total Program Expended: 35.5%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

CSP-24. The CSP-24 is prepositioned with military cargo. In Prepositioning Mode, the ship will be deployed with cargo in the holds in a forward area. The cargo hold environmental control system will be used to maintain the cargo holds within the required temperature and humidity range. The ship will be maintained in Full Operating Status (FOS). The ship will participate in occasional fleet exercises. Port facilities may or may not have services such as shore power and steam. For calculating fuel consumption, the ship will not be on shore services and the summer environmental condition is assumed year round. The CSP-24 will operate 33 percent of the time underway and 67 percent

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18a. Operating and Support Costs (Cont'd):

of the time in port. While underway, 67 percent of the time the ship will operate at 15 knots and 33 percent of the time will operate at 24 knots.

CSS-24. The CSS-24 is maintained in Reduced Operating Status (ROS). In ROS, the CSS-24 will be maintained without cargo and can be activated within four days (ROS-4). Full crews will be kept on alert and a skeleton crew (approximately 9) will be aboard at all times. For calculating fuel consumption, the ship will be on shore services and the summer environmental condition is assumed 50 percent of the in port and underway periods and assumed to be in the winter environmental condition 50 percent of the in port and underway periods. The CSS-24 will operate 15 percent of the time underway and 85 percent of the time will be in port. While underway, 60 percent of the time will be at 15 knots and 40 percent of the time will be at 24 knots.

During a mobilization (such as, war, crisis, deployment, or redeployment), the CSP-24 and CSS-24 will operate as point-to-point ships. They will transit at maximum attainable speed from port of embarkation to port of debarkation.

The operating and support costs in section 18.b. were developed by the NAVSEA Cost and Estimating Office (SEA017) in June 1992.

b. Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CSP-24 Ship	Avg Annual Cost Per CSS-24 Ship
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	6.1	1.6
Intermediate Maintenance	4.0	1.6
Depot Maintenance	1.5	1.3
Contractor Support	0.2	0.1
Sustaining Support	0.1	0.1
Indirect Costs	0.9	1.3
Indirect Costs	0.9	1.3
Total	13.7	7.3

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A-21 SMART-T

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SMART-T

AS OF DATE: December 31, 1996

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SMART-T

1. Designation and Nomenclature (Popular Name): Secure Mobile Anti-Jam Reliable Tactical Terminal

2. DoD Component: Army

Joint Participants:

U.S. Air Force, U.S. Marine Corps, Joint Communications
Support Element

3. Responsible Office and Telephone Number:

Project Manager Milsatcom	COL Michael R. Mazzucchi
PEO C3 Systems	Assigned: June 30, 1995
ATTN: SFAE-C3S-MSA	DSN 992-9767, COMM (908) 532-9767
Fort Monmouth, NJ 07703-5508	MAZZUCCH@DOIM6.MONMOUTH.ARMY.MIL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0303142* (Shared)

PROCUREMENT:

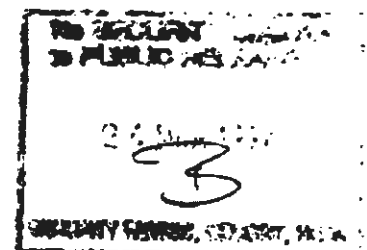
APPN 3080 ICN 21131F (Air Force) (Shared) **
APPN 2035 ICN 28612A (Army) (Shared) **
APPN 3080 ICN 33601F (Air Force)
APPN 1109 ICN 402700 (Navy) (Shared) USMC Terminal Buy
APPN 2035 ICN BC4002 (Army)
APPN 2035 ICN BS9720 (Army)
APPN 3080 ICN 33601F *** (Air Force)

*SMART-T FY92 and FY93 R&D funds were part of Project D455, which reflected funding for the four Army Milstar programs. Starting in FY94, SMART-T is funded under Project D384.

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4. Program Elements/Procurement Line Items (Cont'd):

**The Joint Communications Support Element (JCSE) requirements are funded with Army and Air Force funds managed by JCSE.

***Air Force ICN 33601F (shared) funds all Air Force Milstar terminal requirements.

5. References:

SAR Baseline (Development Estimate):

AAE Acquisition Program Baseline dated 22 May 1992.

ASARC ADM Approval for Milestone II dated 26 May 1992.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated May 22, 1992.

6. Mission and Description:

This program responds to Congressional direction to increase the tactical utility of the Milstar System. The SMART-T provides range extension capability to the Army's Mobile Subscriber Equipment (MSE). Specifically, it provides a satellite interface to permit uninterrupted voice/data communication as advancing forces move beyond the line-of-sight capability of MSE. This program supports Echelons Corps and Below (ECB) and special contingency operations. This equipment communicates at both low and medium data rates. It provides the security, mobility, and anti-jam capability required to defeat the threat and satisfy the critical need stated above. The SMART-T has inherent low probability of interception and low probability of detection (LPI/LPD) capability to avoid being targeted for destruction, jamming or eavesdropping. The prime mover is a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) which carries all electronics, power generation and a self-erectable antenna. The SMART-T program does not replace another; however, it operationally displaces the AN/TSC-85s and 93s (Ground Mobile Forces SHF terminals) at ECB. The GMF displaced terminals move to support Echelons Above Corps.

7. Executive Summary:

In the National Defense Authorization Act for FY90, Congress directed the restructure of Milstar to substantially reduce costs, increase utility for tactical users, and eliminate unnecessary protracted nuclear warfighting capabilities. This led to actions improving Force Projection for Command, Control, Communications, Computer and Intelligence (C4I) support, to include development and procurement of a new Medium Data Rate (MDR) Secure, Mobile, Anti-jam, Reliable, Tactical Terminal (SMART-T). Following a successful ASARC Milestone II Decision Review on 18 May 92, the program entered into Phase II, Engineering and Manufacturing Development (EMD). Dual development contracts were awarded on 9 Nov 92 to Raytheon Company (Marlborough, MA) and Rockwell International (Richardson, TX). Both contractors completed a comprehensive

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7. Executive Summary (Cont'd):

development test program as part of the development contract.

On 19 Jan 96, MG William Campbell, Program Executive Officer for Command, Control, and Communications (PEO C3S), approved initiation of SMART-T Low Rate Initial Production (LRIP). As required by the approved ADM, the Project Management Office demonstrated that the program met all Exit Criteria. An installation level Overarching Integrated Product Team (IPT) supported the review process leading to the approval, as well as assessments from both the US Army Materiel Systems Analysis Activity (AMSAA) and the US Army Operational Test & Evaluation Command (OPTEC). Project Manager Milstar (Army), together with the Communications-Electronics Command (CECOM) awarded a Firm Fixed Price Low Rate Initial Production (LRIP) contract with Full Rate Production (FRP) options to Raytheon Company (Marlborough, MA) on 7 Feb 96. The LRIP/FRP contract includes options for a total of 387 terminals supporting all services and special users. A total of 52 terminals (43 Army) will be procured during LRIP. In FY96, each of the participating services revalidated its operational requirement for SMART-T. As a result of this revalidation, the United States Marine Corps (USMC) reduced its SMART-T requirement from 48 to 25, and the US Air Force, DoD Special Users, and Navy deleted requirements for which funding was deferred beyond the Future Year Defense Plan (FYDP). The total joint service requirement for SMART-T is 313 terminals. To offset potential cost growth associated with this reduction in requirements, the US Army moved 12 FRP requirements from FY01 to FY00, and US Air Force moved 5 FRP requirements from FY01 to FY00. A contract modification will be negotiated prior to exercising the FY01 option, which is the only option year affected by the change in requirements.

On 1 Dec 96, Project Manager Milstar (Army) and Project Manager Satellite Communications (SATCOM) merged to form a new organization, PM Milsatcom.

A Milestone III Decision Review will be conducted prior to exercising the Full Rate Production option in FY99. Initial Operational Test & Evaluation (IOT&E) is scheduled for FY98.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

The PMO realized tremendous cost savings with the award of the SMART-T LRIP/FRP contract on 7 Feb 96. By maintaining competition during development and aggressively seeking innovative means of implementing acquisition reform and streamlining initiatives, the PMO awarded the SMART-T LRIP/FRP contract for less than 50% of the approved Acquisition Program Baseline (APB) estimate. Cost savings were realized in every year of the program, and a total of \$125M was made available for reinvestment in the President's Budget (PB) 98-03.

A portion of the contract cost savings was applied to offset critical RDTE funding deficiencies within the SMART-T program line. This realignment of funds from the SMART-T Other Procurement, Army (OPA) appropriation to the SMART-T RDTE appropriation resulted in a 20% deviation above the approved APB RDTE Objective (from \$206.2M to \$247.5M). There are no other breaches in the SMART-T program. In accordance with the requirements of DoD 5000.2-R, the PMO is submitting a Program Deviation Report (PDR) to effect an administrative change to the SMART-T APB. The PMO is requesting that the program be rebaselined to reflect the 33% decrease in the Production estimate, and the increase over the RDTE APB estimate.

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9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
MDR Study	FEB 91	FEB 91	FEB 91
Market Survey	SEP 91	SEP 91	SEP 91
LDR Technology Demonstrated (SCOTT Terminal Acceptance)	DEC 91	DEC 91	DEC 91
Milestone II ASARC Review	MAY 92	MAY 92	MAY 92
Development Contract Award	SEP 92	SEP 92	NOV 92
Preliminary Design Review	JUL 93	JUL 93	MAY 93
Critical Design Review	MAR 94	MAR 94	MAR 94
DT&E			
Start	JAN 95	JAN 95	SEP 94
Complete	OCT 95	OCT 95	DEC 95
EDM Deliveries	NOV 95	NOV 95	FEB 96
LRIP Decision	DEC 95	DEC 95	JAN 96
Low Rate Production Contract Award	JAN 96	JAN 96	FEB 96
FAT			
Start	AUG 97	AUG 97	SEP 97
Complete	JAN 98	JAN 98	JAN 98
LRIP First Delivery	JAN 98	JAN 98	JAN 98
LDR IOT&E			
Start	FEB 98	FEB 98	APR 98
Complete	MAY 98	MAY 98	JUL 98
Milestone III ASARC Review	SEP 98	SEP 98	OCT 98
Full Scale Production Award	NOV 98	NOV 98	NOV 98
MDR FOT&E			
Start	SEP 99	SEP 99	SEP 99
Complete	NOV 99	NOV 99	NOV 99
Terminal IOC 1/	DEC 99	DEC 99	DEC 99

ACRONYMS:

ASARC - Army Systems Acquisition Review Council
LDR - Low Data Rate
MDR - Medium Data Rate
SCOTT - Single Channel Objective Tactical Terminal
DT&E - Development Test and Evaluation
EDM - Engineering Development Model
LRIP - Low Rate Initial Production
FAT - First Article Test
IOT&E - Initial Operational Test and Evaluation
FOT&E - Follow-On Test and Evaluation
IOC - Initial Operational Capability

1/ Date when initial training and provisioning will be completed.

b. Current Change Explanations -- None.

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10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Set-up Benign Environment (min)	30	30 / 30	27	30
Set-up MOPP 4 Gear (min)	45	45 / 45	32	45
Tear-down Benign Environment (min)	30	30 / 30	15	30
Tear-down MOPP 4 Gear (min)	45	45 / 45	18	45
MTBF (hrs) (80%LCL)/ (Point estimate)	800	800 / 400	TBD	800
Aggregate Data Rate (kbps)	1544	1544 / 1024	1024	1544
Interface Capability	With MSE	With / With MSE / MSE	With MSE	With MSE
Configuration (Full System)	HMMWV	HMMWV / HMMWV	HMMWV	HMMWV
System Weight NTE(lbs) (Integrated on HMMWV)	3177	3177 / 3177	2486	3177
TRANSEC with Over the Air Rekey Capability	Required	Required/ Required	Demo'd	Required
Bit Error Rate (BER)	10 ^-5	10 ^-5 / 10 ^-3	10^-5	10 ^-5
Airlift				
Transportability				
System Only (By)	UH-60	UH-60 / UH-60	TBD	UH-60
System and HMMWV (By)	CH-47	CH-47 / CH-47	TBD	CH-47
Power Sources				
Prime (VDC)	28	28 / 28	28	28
Alternate AC Power (VAC) @ 50-60 Hz	110-220	110-220 / 110-220	110-220	110-220
Back-up (Vehicular) (Volts)	20-30	20-30 / 20-30	20-30	20-30

ACRONYMS:

HMMWV - High Mobility Multi-Purpose Wheeled Vehicle
 LCL - Lower Confidence Level
 min - Minutes
 MOPP - Mission Oriented Protective Posture
 MSE - Mobile Subscriber Equipment
 MTBF - Mean Time Between Failure
 NTE - Not To Exceed
 TRANSEC - Transmission Security

MTBF: A phased approach was approved to achieve the objective MTBF by FOT&E (ie, 400 hours [point estimate] MTBF by the end of LRIP, and 800 hours MTBF [80% LCL] by FOT&E).

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10a. Performance Characteristics (Cont'd):

AIRLIFT TRANSPORTABILITY: Airlift Transportability will be tested using the UH-60/CH-47 during First Article Test (FAT) in FY98.

b. Current Change Explanations -- None.

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	206.2	206.2	247.5
Procurement	598.2	598.2	345.4
Recurring Rollaway	(397.1)		(204.1)
Other Rollaway	(119.7)		(76.3)
Total Rollaway	(516.8)		(280.4)
Support Cost	(1.9)		(15.6)
Other System Cost	(30.2)		(31.9)
Total Other Wpn Sys	(32.1)		(47.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(49.3)		(17.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 92 Base-Year \$	804.4	804.4	592.9
Escalation	222.8	222.8	96.4
Development (RDT&E)	(19.2)	(19.2)	(25.2)
Procurement	(203.6)	(203.6)	(71.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1027.2	1027.2	689.3
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	364	364	313
Total	364	364	313

The unit of measure for SMART-T is terminals.

Note: Excludes 12 Engineering Manufacturing Development (EDM) terminals produced under the SMART-T Development contracts that will not be fielded.

Note: The LRIP quantities approved at Milestone II are 20 (1st year) and 32 (2nd year). The LRIP quantity exceeds 10% of the total planned buy to optimize the utilization of the Milstar MDR payload immediately upon launch in FY99.

c. Foreign Military Sales --
None.

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11d. Total Program Cost and Quantity (Cont'd):
 d. Nuclear Costs -- None.

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (MAY 92 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BY\$)	592.9	804.4	
(2) Quantity	313	364	
(3) Unit Cost	1.894	2.210	-14.30
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BY\$)	345.4	598.2	
(2) Quantity	313	364	
(3) Unit Cost	1.104	1.643	-32.81

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	225.4	801.8	-	1027.2
Previous Changes:				
Economic	-7.9	-73.5	-	-81.4
Quantity	-	+43.9	-	+43.9
Schedule	-	+17.6	-	+17.6
Engineering	+17.9	-	-	+17.9
Estimating	-0.9	-93.4	-	-94.3
Other	-	-	-	-
Support	-	+47.6	-	+47.6
Subtotal	+9.1	-57.8	-	-48.7
Current Changes:				
Economic	-0.3	+33.3	-	+33.0
Quantity	-	-96.6	-	-96.6
Schedule	-	+5.0	-	+5.0
Engineering	+6.2	+44.8	-	+51.0
Estimating	+32.3	-248.7	-	-216.4
Other	-	-	-	-
Support	-	-65.2	-	-65.2
Subtotal	+38.2	-327.4	-	-289.2
Total Changes	+47.3	-385.2	-	-337.9
Current Estimate	272.7	416.6	-	689.3

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	206.2	598.2	-	804.4
Previous Changes:				
Quantity	-	+32.4	-	+32.4
Schedule	-	-	-	-
Engineering	+15.1	-	-	+15.1
Estimating	-5.7	-56.6	-	-62.3
Other	-	-	-	-
Support	-	+31.1	-	+31.1
Subtotal	+9.4	+6.9	-	+16.3
Current Changes:				
Economic	-	-	-	-
Quantity	-	-67.0	-	-67.0
Schedule	-	+3.0	-	+3.0
Engineering	+4.9	+36.6	-	+41.5
Estimating	+27.0	-184.8	-	-157.8
Other	-	-	-	-
Support	-	-47.5	-	-47.5
Subtotal	+31.9	-259.7	-	-227.8
Total Changes	+41.3	-252.8	-	-211.5
Current Estimate	247.5	345.4	-	592.9

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.3
	Additional cost associated with development efforts related to payload specification changes (Engineering)	+4.9	+6.2
	Refinement of System Test & Evaluation costs due to streamlining and elimination of redundant testing (Estimating)	-1.1	-1.5
	Reprogramming of funds from SMART-T program to Automated Communications Management System (ACMS) program to support ACMS/SMART-T integration. (Estimating)	-5.6	-6.4
	Reprogramming from SMART-T procurement appropriation to fund critical development efforts (Estimating)	+33.7	+40.2
	RDT&E Subtotal	+31.9	+38.2
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-3.8
	Economic adjustment for negative program change. (Economic)	N/A	+37.1

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Total Quantity variance associated with decrease of 74 units (387 to 313); Air Force 115 to 73; Marine Corp 48 to 25; and Other DoD 15 to 6.	-57.8	-87.2
Quantity variance resulting from decrease of 74 units (Quantity)	-67.0	-96.6
Allocation of estimating costs associated with quantity decrease (Estimating)	+9.2	+9.4
Rephasing of annual procurement buy profile from FY01 to FY00. (Schedule)	+3.0	+5.0
Additional cost associated with adding Demand Assigned Multiple Access (DAMA) capability to the Low Rate Initial Production (LRIP) and Full Rate Production (FRP) terminals (Engineering)	+36.6	+44.8
Refinement of estimate for terminal costs based on actual contract award information (Estimating)	-148.0	-194.6
Reprogramming to SMART-T RDT&E appropriation to fund critical development efforts. (Estimating)	-33.7	-40.2
Change in estimating methodology of First Destination Transportation (FDT) and Total Package Fielding (TPF) (Estimating)	-6.0	-14.1
Refinement of rollaway estimate (Estimating)	-6.5	-9.4
Revised Initial Spares requirements based on quantity decrease and contract actuals (Support)	-65.6	-82.6
Revised Other Weapons System estimate per contract award (includes Material Fielding Support, Contractor Maintenance and Supply Support, and Program Support Service) (Support)	+24.7	+33.0
Refinement and adjustment for Other Support cost estimate (Support)	-6.6	-15.6
Procurement Subtotal	-259.7	-327.4

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.82	-0.15	+0.29	+0.07	+0.22	-0.99	--	-0.06	-0.62	2.20

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.20	-0.13	+0.20	+0.07	+0.14	-1.09	--	-0.06	-0.87	1.33

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	MAY 92	N/A	DEC 96
Milestone III	N/A	SEP 98	N/A	OCT 98
FUE/IOC	N/A	DEC 99	N/A	DEC 99
Total Cost	N/A	1027.2	N/A	689.3
Total Quantity	N/A	364	N/A	313
Prog Acq Unit Cost	N/A	2.82	N/A	2.2

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

SMART-T LRIP/FRP:

Raytheon Company, Marlborough, MA

DAAB07-96-C-A757, FFP

Award: February 7, 1996

Definitized: N/A

Initial Contract Price

Target	Ceiling	Qty
\$212.8	\$0.0	387

Current Contract Price

Target	Ceiling	Qty
\$212.8	\$0.0	387

Estimated Price At Completion

Contractor	Program Manager
\$212.8	\$212.8

Explanation of Change:

This is the first time this contract has been reported in the SAR. On 7 February 1996, Project Manager Milsatcom and the US Army Communications-Electronics Command (CECOM) awarded a Firm Fixed Price Low Rate Initial Production (LRIP) contract with Full Rate Production (FRP) options,

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15. Contract Information (Cont'd):

for a Joint Service requirement of 387 terminals (209 Army).

Contract Comments:

Cost/Schedule Variance information is not applicable as Cost Performance data was procured under the Firm Fixed Price contract.

In FY96, each of the participating services revalidated its operational requirement for SMART-T. As a result of this revalidation, the United States Marine Corps (USMC) reduced its SMART-T requirement from 48 to 25, and the US Air Force, DoD Special Users, and Navy deleted requirements for which funding was deferred beyond the Future Year Defense Plan (FYDP). The total joint service requirement for SMART-T is 313 terminals. To offset potential cost growth associated with this reduction in requirements, the US Army moved 12 FRP requirements from FY01 to FY00, and US Air Force moved 5 FRP requirements from FY01 to FY00. A contract modification will be negotiated prior to exercising the FY01 option, which is the only option year effected by the change in requirements.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-17)</u>	<u>Total</u>
RDT&E	188.1	22.0	24.7	37.9	272.7
Procurement	93.4	23.9	98.8	200.5	416.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	281.5	45.9	123.5	238.4	689.3

b. Annual Summary -- SMART-T

Appropriation: 2040 Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY92 Dollars Nonrec</u>	<u>Flyaway FY92 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1992				19.7	20.0
1993				42.6	44.3
1994				53.4	56.7
1995				27.8	30.1
1996				18.5	20.5
1997				14.6	16.5
1998				19.1	22.0
1999				21.0	24.7
2000				11.5	13.8

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16b. Program Funding Summary (Cont'd):

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2001				8.2	10.1
2002				6.0	7.5
2003				5.1	6.5
Subtotal				247.5	272.7

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	2	0.1	1.1	1.3	1.5
2000	2		1.0	1.1	1.3
2001	2		1.0	1.2	1.5
2002					
2003					
2004					
2005					
2006					
2007					
Subtotal	6	0.1	3.1	3.6	4.3

The 0300 Appropriation funds the JCSE requirements (6).

Appropriation: 1109 Procurement, Marine Corps

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	20	0.3	11.2	12.7	15.2
2000	1		0.4	0.5	0.6
2001		0.1		0.3	0.4
2002				0.2	0.2
2003				0.2	0.2
2004	4		2.0	2.2	2.9
Subtotal	25	0.4	13.6	16.1	19.5

The 1109 appropriation funds the U.S. Marine Corps (USMC) requirements.

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16b. Program Funding Summary (Cont'd):

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	20	8.9	26.1	45.8	51.4
1997	23	10.8	15.7	30.2	34.7
1998		14.0		20.3	23.8
1999	45	9.2	36.3	52.2	62.4
2000	77	9.5	38.9	54.0	66.0
2001	44	6.7	30.3	38.2	47.7
2002		9.5		14.8	18.9
2003		5.2		10.1	13.2
2004				0.8	1.1
2005				0.9	1.3
2006				0.7	1.0
2007				0.6	0.8
2008				0.4	0.6
2009				0.4	0.6
2010				0.4	0.6
2011				0.4	0.7
2012				0.4	0.7
2013				0.4	0.6
2014				0.3	0.5
2015				0.3	0.6
2016				0.2	0.4
2017				0.1	0.1
Subtotal	209	73.8	147.3	271.9	327.7

The 2035 appropriation for the U.S. Army reflects a total procurement buy of 209 terminals.

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	9	1.1	4.5	6.4	7.3
1998				0.1	0.1
1999	20	0.3	13.3	16.5	19.7
2000	26	0.3	13.1	17.8	21.7
2001	18	0.1	9.2	11.5	14.4
2002		0.1		0.7	0.9
2003		0.1		0.8	1.0
2004					
2005					
2006					
2007					

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16b. Program Funding Summary (Cont'd):

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	73	2.0	40.1	53.8	65.1

The 3080 appropriation funds the requirements for the U.S. Air Force(73).

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	209	73.8	147.3	519.4	600.4
OSD	6	0.1	3.1	3.6	4.3
Navy	25	0.4	13.6	16.1	19.5
USAF	73	2.0	40.1	53.8	65.1
Grand Total	313	76.3	204.1	592.9	689.3

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	0	0

Percent Total Program Quantities Delivered: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 281.5

Percent Total Program Expended: 40.8%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Based on the SMART-T Program Life Cycle Cost Estimate (PLCCE) dated January 1994, the following assumptions were determined: The conditions under which the SMART-T maintenance costs are calculated include using the annual operating hours per terminal of 2080 hours based on an 8 hour a day 5 day week per operation. Each terminal will require 60 man hours/year of DS/GS maintenance, and 120 man hours/year of Service Repairable Area (SRA). Each complete terminal will be overhauled at depot once during its lifetime. This effort will require 240 man hours of effort.

There is no antecedent system.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1992 Constant (Base-Year) Dollars in Thousands)

Cost Element	Average Annual SMART-T	Avg Annual Cost Per Terminal (Antecedent)
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	36.5	0.0
Intermediate Maintenance	19.7	0.0
Depot Maintenance	19.8	0.0
Contractor Support	6.6	0.0
Sustaining Support	6.7	0.0
Indirect Costs	N/A	N/A
Total	89.3	0.0

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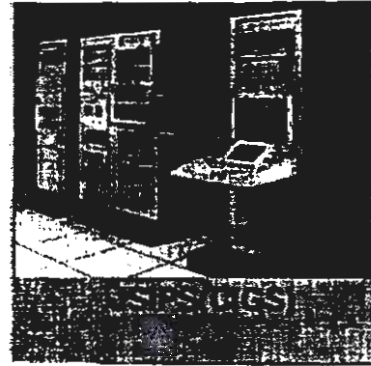
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: JSIPS

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Joint Service Imagery Processing System (JSIPS)
2. DoD Component: USAF
 Joint Participants:
 USMC, Army, and Navy
3. Responsible Office and Telephone Number:
 Electronic Systems Center/ICI Mr Richard Bleau
 Hanscom AFB Assigned: December 1, 1992
 Bedford, MA 01731-5000 DSN 478-1186 ext 8048; COMM 617-271-8048
4. Program Elements/Procurement Line Items:
 RDT&E:
 PE 0206625M
 PE 0207217F Project 3652
 PE 0305154D (Shared)
 PE 0603261N
 PE 0603730A
 PROCUREMENT:
 APFN 3080 ICN 456GC3453 (Air Force) (Shared)
 APFN 1810 ICN 461500 (Navy)
 APFN 2035 ICN BZ7320 (Army)
 APFN 0300 ICN DARO000001 (DCA/DNA) (Shared)

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5. References:

JSIPS

SAR Baseline (Development Estimate):

FY 94 Amended President's Budget dated 8 April 1993.

Approved Program:

Approved Acquisition Program Baseline (APB) dated August 15, 1996.

Navy TIS

SAR Baseline (Development Estimate):

FY94 Amended President's Budget dated 8 April 1993.

Approved Program:

Approved Acquisition Program Baseline (APB) dated August 15, 1996.

6. Mission and Description:

JSIPS' mission is to provide imagery-derived, time-sensitive, battle management information to the field commanders in near-real-time. JSIPS is the DOD common mobile ground station for processing and exploiting imagery received from a variety of sources. The system employs the following seven functional segments: National Input Segment (NIS), Tactical Input Segment (TIS), Softcopy Exploitation Segment (SES), Hardcopy Exploitation Segment (HES), Imagery Exploitation Support Segment (IESS), Communication Support Segment (CSS), and System Support Segment (SSS). The SES, ESS and CSS are "Core" segments required for basic system operation. The system, however, is modular in design so that the services (USAF, USMC, USA, and USN) can select the input and processing segments that they require based upon their mission. The Navy elected to use a Tactical Input Segment derivative, called the Navy TIS, to process ATARS imagery from the F/A-18. Other existing shipboard assets (i.e. Digital Imagery Workstation-afloat) were used to satisfy the overall Navy JSIPS requirements.

7. Executive Summary:

Office of the Secretary of Defense (OSD) instituted the Joint Service Imagery Processing System (JSIPS) program in 1986 to consolidate separate Army, Air Force, and Marine Corps imagery programs.

The Army system was deployed to Mainz-Finthen, Germany in October 1990 and approved for softcopy exploitation operations in October 1991. On 11 February 1993, the Defense Intelligence Agency granted full approval for Army JSIPS operations. Final acceptance and delivery of the first Army Joint Service Imagery Processing System was accomplished on 1 April 1993. In December 1993, the Army requested the Under Secretary of Defense for Acquisition and Technology (USDA&T) to support termination of the Army participation in the JSIPS Program. Starting in January 1994 the Defense Airborne Reconnaissance

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7. Executive Summary (Cont'd):

Office (DARO) conducted a "Red Team" review to develop a plan to migrate the Service's imagery systems to a Common Imagery Ground/Surface System (CIGSS) architecture. The Joint Requirement Oversight Committee (JROC) concurred with the Army's request to use the Modernized Imagery Exploitation System (MIES), in lieu of JSIPS. They also accepted a modified USMC Operation Concept which included a single (vice three) JSIPS for National Imagery Exploitation plus three Tactical Exploitation Groups (TEGs) that will provide a tactical capability. The Army defielded their JSIPS system in September 1994.

The Marine Corp system was deployed to Eglin AFB Fort Walton Beach, FL in July 1992 for Advanced Tactical Airborne Reconnaissance System (ATARS) developmental testing. This system was subsequently moved to Camp Pendleton, CA in February 1994. Final acceptance was signed during Nov 1994 and the system was turned over to the Marine Corps Imagery Support Unit (MCISU). This system is currently under contract for field refurbishment as part of the Low Rate Initial Production (LRIP) contract. This effort continues and is on schedule to complete during early 1997.

On 19 February 1993, the Air Force System Acquisition Review Council (AFSARC) authorized a LRIP contract to purchase the first Air Force production JSIPS. This contract was awarded on 23 Sep 1993. This system which was developed for the 9th Air Force was delivered to Shaw AFB at Sumter SC during April 1996. The system was integrated with a newly developed tri-band Satellite Communications (SATCOM) terminal. The 9th AF Commander has recommended system Initial Operational Capability (IOC) be declared. As part of the LRIP contract, the original Army System will be deployed to the 12th AF Davis-Monthan Tucson, AZ. This system is being upgraded to the current 9th AF System configuration. It is currently on schedule for delivery to the 12th AF during early 1997.

The Navy Tactical Input Segment (TIS) contract was awarded on 23 Sep 93. A prototype was delivered to the Naval Surface Warfare Center (NSWC) at Dahlgren, Va in March of 1995.

A Tactical Exploitation Group (TEG) prototype contract was awarded in January 1995. This prototype system was delivered to the Marine Corps 2nd Force Imagery Intelligence Unit at Cherry Point, NC during August 1996.

The JSIPS prime contractor submitted a series of Claims/Requests for Equitable Adjustment (REAs) totaling \$65.7M at price. An Integrated Product Team (IPT) was established in 1994 to evaluate and negotiate the Claims/REAs with the Contractor. The Contractor and Electronic Systems Center (ESC) signed an Alternative Disputes Resolution (ADR) Agreement on 29 February 1996. This agreement called for the temporary suspension of litigation and established a Joint Panel, consisting of members from both Raytheon and the Government. The panel addressed claims-related issues surrounding the 1991 restructure of the JSIPS Full Scale Development (FSD) contract with the goal of establishing a common foundation leading to final negotiations. After lengthy research, position and rebuttal papers and briefings were prepared and delivered to the Joint Panel for review. The Joint Panel completed its deliberations and issued recommendations on 5 December 1996.

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7. Executive Summary (Cont'd):

Reconnaissance/Intelligence Ground Stations (R/IGS) Products and Services contracts were competitively awarded to two vendors during December 1996. Future JSIPS Block Upgrades, TIS and TEG production systems, and other Product Group Manager (PGM) systems will be acquired under these contracts.

The Integrated Weapon System Management (IWSM) Concept of Operations (CONOPS) defining R/IGS Product Group Management organization was approved by the Electronic Systems Center Commander (ESC/CC) in April 1996.

8. Threshold Breaches:

JSIPS

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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8. Threshold Breaches (Cont'd):

Navy TIS

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

JSIPS

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I Decision	N/A	JUL 86	JUL 86
Dem/Val Contract Award	N/A	JUL 86	JUL 86
Milestone II Decision	N/A	AUG 87	AUG 87
EMD Contract Award	N/A	AUG 87	AUG 87
Critical Design Review Complete	N/A	MAR 89	MAR 89
Service Final DT&E (Start)	N/A	NOV 90	NOV 90
USAF LRIP (9th AF) System Decision	APR 93	APR 93	APR 93
USAF LRIP (9th AF) Contract Award	AUG 93	SEP 93	SEP 93
Army System Production Decision	JAN 94	N/A	N/A
USMC LRIP Approval	AUG 94	N/A	N/A
Service Final DT&E (Finish)	N/A	AUG 94	AUG 94
Initial Operational Capability	N/A	DEC 94	DEC 94
USAF LRIP Delivery (First Delivery)	OCT 95	N/A	N/A
USAF Full Rate Decision	JUL 96	N/A	N/A
Navy Subsystem Production Decision	JAN 96	N/A	N/A
USAF LRIP System Decision	N/A	N/A	APR 96
USMC TEG Prototype Start	N/A	APR 95	APR 95 (Ch-1)
USAF LRIP (12th AF) Contract Award	N/A	AUG 95	AUG 95 (Ch-1)
USMC TEG Prototype Delivery	N/A	OCT 96	DEC 96 (Ch-1)
USMC TEG Production Decision	N/A	OCT 96	JAN 97 (Ch-1)
USMC TEG Production Contract Award	N/A	OCT 96	APR 97 (Ch-1)
USAF LRIP (12th AF) Delivery	N/A	FEB 97	AUG 97 (Ch-1)

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9a. Schedule (Cont'd):
JSIPS

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
USMC TEG Production Delivery (Initial System)	N/A	JUN 98	DEC 98 (Ch-1)

A revised Acquisition Program Baseline was approved by SAF/AQ on August 15, 1996.

b. Current Change Explanations --
(Ch-1) These milestones were added as a result of the revised Acquisition Program Baseline approved by SAF/AQ on August 15, 1996. These milestones reflect the current status of the Tactical Exploitation Group (TEG).

Navy TIS

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I Decision	N/A	JUL 86	JUL 86
Milestone II Decision	N/A	AUG 87	AUG 87
Navy TIS Study	N/A	MAR 91	MAR 91
Navy TIS EMD Decision	N/A	APR 91	APR 91
Navy TIS EMD Contract Award	N/A	SEP 93	SEP 93
Navy TIS EMD Delivery	N/A	MAR 96	MAR 96
RPS Contract Award/2	N/A	NOV 96	DEC 96 (Ch-1)
TIS Delivery Order (Initial Production Units)	N/A	FEB 97	AUG 97 (Ch-1)
TIS Delivery (Initial Production Units)	N/A	JUN 98	DEC 98 (Ch-1)

A revised Acquisition Program Baseline was approved by SAF/AQ on August 15, 1996.

b. Current Change Explanations --
(Ch-1) These milestones were added as a result of the revised Acquisition Program Baseline approved by SAF/AQ on August 15, 1996. These milestones reflect the current status of the Tactical Input Segment (TIS).

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10. Performance Characteristics:
JSIPS

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Multiple Sensor Inputs (images/24hrs)					
National	120	120	/ 120	120	120
Tactical	N/A	240	/ 240	TBD	240
Combined	N/A	360	/ 360	Yes	N/A
ISO Shelters	N/A	Yes	/ Yes	95	Yes
Reliability, Maintainability (% Operational availability)	95	95	/ 95	Yes	95
Energy Management	Yes	Yes	/ Yes	Yes	Yes
Compatible with both commercial and organic power.					
Mobility/Deployability	Yes	N/A	/ N/A	Yes	Yes
- Modular, segmentable, and transportable					

A revised Acquisition Program Baseline was approved by SAF/AQ on August 15, 1996.

b. Current Change Explanations -- None.

Navy TIS

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>		<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Multiple Sensor Inputs (Tactical)	240	240	/ 240	TBD	Yes
Compatible with ATARS ICD (ICD-F/A-18-064)	N/A	Yes	/ Yes	TBD	TBD
Reliability, Maintainability (% Operational availability)	95	95	/ 90	TBD	Yes
Energy Management	Yes	Yes	/ Yes	TBD	Yes
Compatible with Shipboard power					
Shipboard Operations	N/A	Yes	/ Yes	TBD	TBD

b. Current Change Explanations -- None.

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11. Total Program Cost and Quantity (Dollars in Millions):
JSIPS

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	311.3	278.3	300.4
Procurement	190.9	168.2	155.4
Flyaway	(166.9)		(135.8)
Total Other Wpn Sys			(0.0)
Peculiar Support	(11.2)		(9.2)
Initial Spares	(12.8)		(10.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 86 Base-Year \$	502.2	446.5	455.8
Escalation	151.0	129.8	126.4
Development (RDT&E)	(58.8)	(56.6)	(65.7)
Procurement	(92.2)	(73.2)	(60.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	653.2	576.3	582.2

Total cost and quantity have been reduced to account for the DARO restructure.

b. Quantity --

Development (RDT&E)	3	1	1
Procurement	9	5	5
Total	12	6	6

Note: Excludes 1 RDTE prototypes from the SAR Baseline and 1 from the Current Estimate that are not considered fully configured.

The 6 JSIPS units are the following:

- 1 Development TEG
- 2 Refurbished units
- 2 Production TEGs
- 1 LRIP

NOTE: The Air Force System Acquisition Review Council (AFSARC) decision in Feb 1993 approved procurement of 1 LRIP System for JSIPS. At that time there were 9 follow-on production systems planned. Subsequent to that, with downsizing, affordability issues and the DARO restructure there are no more JSIPS purchases planned.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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11a. Total Program Cost and Quantity (Cont'd):

Navy TIS

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	10.7	6.2	6.4
Procurement	73.4	69.5	70.0
Flyaway	(64.3)		(61.2)
Total Other Wpn Sys			(0.0)
Peculiar Support	(4.3)		(4.1)
Initial Spares	(4.8)		(4.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 86 Base-Year \$	84.1	75.7	76.4
Escalation	25.3	35.8	35.1
Development (RDT&E)	(9.8)	(2.0)	(1.8)
Procurement	(15.5)	(33.8)	(33.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	109.4	111.5	111.5
b. Quantity --			
Development (RDT&E)	1	1	1
Procurement	14	28	28
Total	15	29	29

Note: Excludes 1 RDTE prototypes from the SAR Baseline and 1 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

JSIPS

	<u>Current Estimate (Dec 96 SAR)</u>	<u>UCR Baseline (AUG 96 APB)</u>	<u>Percent Change</u>
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 86 BY\$)	455.8	446.5	
(2) Quantity	6	6	
(3) Unit Cost	75.967	74.417	+2.08
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 86 BY\$)	155.4	168.2	
(2) Quantity	5	5	
(3) Unit Cost	31.080	33.640	-7.61

Navy TIS

	<u>Current Estimate (Dec 96 SAR)</u>	<u>UCR Baseline (AUG 96 APB)</u>	<u>Percent Change</u>
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 86 BY\$)	76.4	75.7	
(2) Quantity	29	29	
(3) Unit Cost	2.634	2.610	+0.92
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 86 BY\$)	70.0	69.5	
(2) Quantity	28	28	
(3) Unit Cost	2.500	2.482	+0.73

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13. Cost Variance Analysis:
JSIPS

a. Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	370.1	283.1	-	653.2
Previous Changes:				
Economic	-0.3	-0.5	-	-0.8
Quantity	-	-65.7	-	-65.7
Schedule	-	-	-	-
Engineering	-3.9	-	-	-3.9
Estimating	-8.9	-12.2	-	-21.1
Other	-	-	-	-
Support	-	-14.7	-	-14.7
Subtotal	-13.1	-93.1	-	-106.2
Current Changes:				
Economic	-0.2	-0.4	-	-0.6
Quantity	-	-	-	-
Schedule	-	+0.1	-	+0.1
Engineering	-	-	-	-
Estimating	+9.3	+23.6	-	+32.9
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+9.1	+26.1	-	+35.2
Total Changes	-4.0	-67.0	-	-71.0
Current Estimate	366.1	216.1	-	582.2

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13a. Cost Variance Analysis (Cont'd):
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Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	311.3	190.9	-	502.2
Previous Changes:				
Quantity	-	-42.6	-	-42.6
Schedule	-	-	-	-
Engineering	-3.0	-	-	-3.0
Estimating	-13.9	-3.5	-	-17.4
Other	-	-	-	-
Support	-	-6.4	-	-6.4
Subtotal	-16.9	-52.5	-	-69.4
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+6.0	+15.0	-	+21.0
Other	-	-	-	-
Support	-	+2.0	-	+2.0
Subtotal	+6.0	+17.0	-	+23.0
Total Changes	-10.9	-35.5	-	-46.4
Current Estimate	300.4	155.4	-	455.8

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.2
	Zero Base Transfer from Procurement to RDT&E for the development effort of the "Common Imagery Processor" (CIP) (Estimating)	+3.2	+4.5
	Cost reduction due to DARO realignment of costs from JSIPS to other DARO Defense-wide requirements (Estimating)	-3.8	-5.6
	Change in requirements for Block upgrades from 1998 to 1999 (Estimating)	-0.1	0.0
	Additional requirements for Block upgrades (Estimating)	+6.7	+10.4
	RDT&E Subtotal	+6.0	+9.1
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-0.5
	Economic adjustment for negative program change. (Economic)	N/A	+0.1
	Acceleration/Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.1

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13b. Cost Variance Analysis (Cont'd):

JSIPS

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Zero Base Transfer from Procurement to RDT&E to cover the cost of Common Imagery Processor (Estimating)	-3.2	-4.5
Additional requirements for Block upgrades, CLS spares, hardware and software upgrades (Estimating)	+18.0	+27.9
Additional initial spares requirements due to Block upgrades (Support)	+2.0	+2.8
Procurement Subtotal	+17.0	+26.1

Navy TIS

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	20.5	88.9	-	109.4
Previous Changes:				
Economic	+0.3	-2.3	-	-2.0
Quantity	-	-6.6	-	-6.6
Schedule	-	+1.8	-	+1.8
Engineering	-0.7	-	-	-0.7
Estimating	-11.9	+2.5	-	-9.4
Other	-	-	-	-
Support	-	+6.7	-	+6.7
Subtotal	-12.3	+2.1	-	-10.2
Current Changes:				
Economic	-	-0.2	-	-0.2
Quantity	-	+19.1	-	+19.1
Schedule	-	+1.4	-	+1.4
Engineering	-	-	-	-
Estimating	-	-9.4	-	-9.4
Other	-	-	-	-
Support	-	+1.4	-	+1.4
Subtotal	-	+12.3	-	+12.3
Total Changes	-12.3	+14.4	-	+2.1
Current Estimate	8.2	103.3	-	111.5

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13a. Cost Variance Analysis (Cont'd):

Navy TIS

Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	10.7	73.4	-	84.1
Previous Changes:				
Quantity	-	-6.0	-	-6.0
Schedule	-	-1.0	-	-1.0
Engineering	-0.5	-	-	-0.5
Estimating	-3.8	-4.8	-	-8.6
Other	-	-	-	-
Support	-	-1.3	-	-1.3
Subtotal	-4.3	-13.1	-	-17.4
Current Changes:				
Economic	-	-	-	-
Quantity	-	+12.6	-	+12.6
Schedule	-	+2.2	-	+2.2
Engineering	-	-	-	-
Estimating	-	-6.1	-	-6.1
Other	-	-	-	-
Support	-	+1.0	-	+1.0
Subtotal	-	+9.7	-	+9.7
Total Changes	-4.3	-3.4	-	-7.7
Current Estimate	6.4	70.0	-	76.4

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-0.5
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Quantity increase of 3 units. (Quantity)	+12.6	+19.1
Total Quantity variance associated with increase of 3 units.	+5.5	+8.3
Schedule variance resulting from Quantity Allocation. (Schedule)	+2.3	+3.3
Estimating variance resulting from Quantity Allocation. (Estimating)	-9.6	-14.1
Realignment of annual procurement buy profile based upon Navy's current requirements. (Schedule)	-0.1	-1.9
Adjustment for Current and Prior Inflation. (Estimating)	+1.1	+1.5
Additional funds provided by the Navy for the purchase of additional units (Estimating)	+2.4	+3.2
Adjustment for Current and Prior Inflation. (Support)	-1.1	-1.5

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13b. Cost Variance Analysis (Cont'd):
Navy TIS

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Change in Initial Spares due to increase in quantity. (Support)	+1.1	+1.5
Change in Peculiar Support due to increase in quantity. (Support)	+1.0	+1.4
Procurement Subtotal	+9.7	+12.3

14. Unit Cost and Other History (Then-Year Dollars in Millions):
JSIPS

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes									PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
54.43	-0.23	+43.47	+0.02	-0.65	+1.97	--	-1.98	+42.60		97.03

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes									PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total		
31.46	-0.18	+12.02	+0.02	--	+2.28	--	-2.38	+11.76		43.22

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JUL 86	JUL 86	N/A	JUL 86
Milestone II	AUG 87	AUG 87	N/A	AUG 87
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	N/A	DEC 94
Total Cost	762.6	653.2	N/A	582.2
Total Quantity	12	12	N/A	6
Prog Acq Unit Cost	63.55	54.43	N/A	97.03

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14a. Unit Cost and Other History (Cont'd):

Navy TIS

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.29	-0.08	-3.09	+0.11	-0.02	-0.65	--	+0.28	-3.45	3.84

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.35	-0.09	-2.72	+0.11	--	-0.25	--	+0.29	-2.66	3.69

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	JUL 86	N/A	JUL 86
Milestone II	N/A	AUG 87	N/A	AUG 87
Milestone III	N/A	APR 97	N/A	APR 97
FUE/IOC	N/A	JUL 96	N/A	JUL 96
Total Cost	N/A	111.5	N/A	111.5
Total Quantity	N/A	29	N/A	29
Prog Acq Unit Cost	N/A	3.84	N/A	3.84

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

LRIP:

E-Systems, Inc, Dallas, TX
F19628-93-C-0201, FPIF/80/20/FFP
Award: September 23, 1993
Definitized: September 23, 1993

Initial Contract Price		
Target	Ceiling	Qty
\$48.9	\$50.9	1

Current Contract Price		
Target	Ceiling	Qty
\$56.8	\$58.8	3

Estimated Price At Completion	
Contractor	Program Manager
\$57.2	\$57.6

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13a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2.6	\$-0.9
Cumulative Variances To Date (07/31/96)	\$-2.6	\$-0.9
Net Change	\$0.0	\$0.0

Explanation of Change:

The final Cost Schedule Status Report (C/SSR) was received as of July 1996. During April 1996 the first JSIPS System was delivered to the 9th Air Force at Shaw AFB, SC. This system has been turned over to the 9th AF and has been used for "real world" imagery needs. The 9th AF Commander has recommended that Initial Operational Capability (IOC) be declared. He is awaiting Commander Air Combat Command (COMACC) concurrence. This effort is more than 90% complete. Based upon this plus the fact that there are no significant deliverables remaining under the FPIF and Cost Plus portions of this contract, this is the last time we will be reporting on this contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

Total Program

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY86-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RDT&E	330.1	11.3	12.7	20.2	374.3
Procurement	172.6	49.4	34.0	63.4	319.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	502.7	60.7	46.7	83.6	693.7

JSIPS

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY86-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RDT&E	321.9	11.3	12.7	20.2	366.1
Procurement	160.3	24.9	6.0	24.9	216.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	482.2	36.2	18.7	45.1	582.2

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16a. Program Funding Summary (Cont'd):

Navy TIS

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY91-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00)</u>	<u>Total</u>
RDT&E	8.2	-	-	-	8.2
Procurement	12.3	24.5	28.0	38.5	103.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	20.5	24.5	28.0	38.5	111.5

b. Annual Summary -- JSIPS

Appropriation: 0400 RDT&E, Defense Agencies

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY86 Dollars Nonrec</u>	<u>Flyaway FY86 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1995				11.8	15.7
1996				9.8	13.3
1997				13.3	18.4
1998				8.0	11.3
1999				8.8	12.7
2000				3.3	4.9
2001				3.3	5.0
2002				3.3	5.1
2003				3.3	5.2
Subtotal				64.9	91.6

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY86 Dollars Nonrec</u>	<u>Flyaway FY86 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1988				12.5	13.6
1989				11.5	13.1
1990				7.0	8.2
1991				10.5	12.8
1992				11.0	13.8
1993				3.9	5.0
1994				4.2	5.5
Subtotal				60.6	72.0

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16b. Program Funding Summary (Cont'd):

JSIPS

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986				3.7	3.8
1987					
1988				20.8	22.7
1989				6.5	7.4
1990				16.5	19.4
1991				2.9	3.6
1992				7.5	9.4
1993				1.7	2.2
1994				6.5	8.5
Subtotal				66.1	77.0

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986				11.0	11.2
1987				13.5	14.3
1988				13.1	14.3
1989				13.8	15.8
1990				28.9	34.1
1991				12.2	14.9
1992				4.8	6.0
1993				6.7	8.6
1994				4.8	6.3
Subtotal	1			108.8	125.5

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	2	3.7	14.7	20.9	28.4
1996	1	2.2	19.8	25.3	35.1
1997	1	2.2	19.5	24.7	35.1
1998		15.0		17.2	24.9
1999		3.5		4.1	6.0
2000		5.2		5.9	8.9
2001		2.8		3.2	5.0
2002		3.1		3.6	5.7
2003		2.9		3.3	5.3

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16b. Program Funding Summary (Cont'd):

JSIPS

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	4	40.6	54.0	108.2	154.4

Appropriation: 3080 Other Procurement, Air Force

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992	1	6.7	26.9	20.7	26.6
1993				17.8	23.3
1994					
1995		7.6		8.7	11.8
Subtotal	1	14.3	26.9	47.2	61.7

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	4	40.6	54.0	173.1	246.0
Navy				60.6	72.0
Army				66.1	77.0
USAF	2	14.3	26.9	156.0	187.2
Grand Total	6	54.9	80.9	455.8	582.2

b. Annual Summary -- Navy TIS

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995					
1996					
1997					
1998					
Subtotal					

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16b. Program Funding Summary (Cont'd):

Navy TIS

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991				0.9	1.1
1992				1.7	2.2
1993				1.6	2.0
1994				2.2	2.9
Subtotal	1			6.4	8.2

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	1	0.3	3.0	3.8	5.3
1997	1	0.4	3.9	4.9	7.0
1998	7	1.5	13.3	16.9	24.5
1999	8	1.7	14.9	18.9	28.0
2000	11	2.2	20.0	25.5	38.5
Subtotal	28	6.1	55.1	70.0	103.3

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	28	6.1	55.1	70.0	103.3
Navy	1			6.4	8.2
Grand Total	29	6.1	55.1	76.4	111.5

17. Delivery/Expenditure Information:

JSIPS

a. Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	1	1

Percent Total Program Quantities Delivered: 33.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 394.2

Percent Total Program Expended: 67.7%

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17b. Delivery/Expenditure Information (Cont'd):
Navy TIS

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	1	1
Procurement	0	0

Percent Total Program Quantities Delivered: 3.4%

b. Total Expenditures To Date (In Millions of Dollars): \$ 8.2

Percent Total Program Expended: 7.4%

18. Operating and Support Costs:
JSIPS

a. Assumptions and Ground Rules --

The O&S cost estimate was completed in October 1993 and has been updated annually. Reliability and Maintainability (R&M) are primary JSIPS design parameters. To achieve our high R&M objectives, the maintenance concept is focused on modularity and inherent fault isolation capabilities through Built-in-Test (BIT) and Built-in-Test-Equipment (BITE) features. A three level maintenance concept is planned with the bulk of system maintenance being accomplished at the organization and depot levels. The operating tempo for the system is different for each service. USAF is 21 hours a day, 365 days per year and the USMC is 8 hours per day, 5 days per week. The personnel cost is a summary cost of pay and allowances for officer, enlisted, and civilian personnel required to operate, maintain, and support the system. The consumption cost is a summary cost of fuel and energy resources: operations, maintenance and support materials consumed at the unit level; stock fund reimbursements for depot-level repairables; transportation in support of system operation and maintenance, temporary additional duty/temporary duty, and other unit-level consumption costs, such as purchased services for equipment lease and service contracts. The depot maintenance cost is a summary cost of labor, material, and overhead incurred in performing major overhauls or maintenance on the system, its components, and associated support equipment at centralized repair depots, contractor repair facilities, or on site by depot teams. The Contractor support cost is a summary of contractor labor, materials, and overhead incurred in providing all or part of the logistics support required by the system. The sustaining support cost is a summary cost of replacement support equipment, modification kits, sustaining engineering, and software maintenance support. The indirect support cost is a summary of personnel support for specialty training, permanent changes of station and medical care. There is no antecedent program.

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JSIPS, December 31, 1996

18b. Operating and Support Costs (Cont'd):
JSIPS

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per System	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.3	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.3	0.0
Contractor Support	0.8	0.0
Sustaining Support	0.6	0.0
Indirect Costs	0.3	0.0
O & S Consumables	0.0	0.0
Direct Depot Maintenance	0.0	0.0
Sustaining Investment	0.0	0.0
Mission Personnel	1.5	0.0
Indirect Costs	N/A	N/A
Total	3.8	0.0

Navy TIS

a. Assumptions and Ground Rules --

The O&S cost estimate was completed in October 1993 and has been updated annually. Reliability and Maintainability (R&M) are primary N-TIS design parameters. To achieve our high R&M objectives, the maintenance concept is focused on modularity and inherent fault isolation capabilities through Built-in-Test (BIT) and Built-in-Test-Equipment (BITE) features. A three level maintenance concept is planned with the bulk of system maintenance being accomplished at the organization and depot levels. The operating tempo for the USN is 8 hours per day for 335 days and 30 days at 24 hours per day. The personnel cost is a summary of pay and allowances for officer, enlisted, and civilian personnel required to operate, maintain, and support the system. The consumption cost is a summary cost of fuel and energy resources: operations, maintenance and support materials consumed at the unit level; stock fund reimbursements for depot-level repairables; transportation in support of system operation and maintenance, temporary additional duty/temporary duty, and other unit-level consumption costs, such as purchased services for equipment lease and service contracts. The depot maintenance cost is a summary of labor, material, and overhead incurred in performing major overhauls or maintenance on the system, its components, and associated support equipment at centralized repair depots, contractor repair facilities, or on site by depot teams. The Contractor support cost is a summary of contractor labor, materials, and overhead incurred in providing all or part of the logistics support required by the system. The sustaining support cost is a summary cost of replacement support equipment, modification kits, sustaining engineering, and software maintenance support. The indirect support cost is a summary of personnel support for specialty training, permanent changes of station and medical care. There is no antecedent program.

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18b. Operating and Support Costs (Cont'd):
Navy TIS

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per N-TIS System	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	0.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.1	N/A
Contractor Support	0.1	N/A
Sustaining Support	0.1	N/A
Indirect Costs	0.1	N/A
Unit Level Consumption	N/A	N/A
Direct Depot Maintenance	0.0	0.0
Sustaining Investment	0.0	0.0
Mission Personnel	0.1	0.0
Total	0.5	0.0

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A-1 ABRAMS UPGRADE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: ABRAMS Upgrade

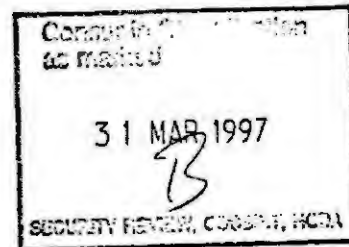
AS OF DATE: December 31, 1996

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- (U) Designation and Nomenclature (Popular Name): Tank, Combat, Full Tracked, M1A2 (M1A2 Abrams Tank)
- (U) DoD Component: Army
- (U) Responsible Office and Telephone Number:
U.S. Army Tank-Automotive Command COL CHRISTOPHE R V. CARDINE
ATTN: SFAE-ASM-AB Assigned: July 18, 1994
Warren, MI 48397-5000 DSN 786-6885; COMM (810) 574-6885
- (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 23735 (Shared) For M1A2 Development Project D330 (Shared)
(U) PE 23758 (Shared) For M1A2 SEP/FLIR Project D374 (Shared)
(U) PE 63639 (Shared) For M1A2 Armament Project DC315
PROCUREMENT:
(U) APPN 2033 ICN G82917 (Army)
(U) APPN 2033 ICN GA0151 (Army)
(U) APPN 2033 ICN GA0750 (Army)
(U) APPN 2033 ICN GA0755 (Army)
(U) APPN 2033 ICN GB1302 (Army)
(U) APPN 2033 ICN GC0161 (Army)
(U) APPN 2033 ICN GE0161 (Army)
O&M:
(U) PE 118207 (Shared) M1 Overhaul



~~Classified by: Multiple Sources~~

~~Downgrade instructions: Regarded UNCLASSIFIED when reported from the following sources: [illegible]~~

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ABRAMS Upgrade, December 31, 1996

5. (U) References:

SAR Baseline (Production Estimate):

(U) AAE Approved Acquisition Program Baseline dated January 15, 1995.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated January 15, 1995.

6. (U) Mission and Description:

(U) The mission of the M1A2 Abrams tank is to close with and destroy enemy forces on the integrated battlefield using firepower, maneuver, and shock effect. The M1A2 has completed low rate production and production continues on the M1A2 Upgrade Program. Selected M1 tanks are being overhauled and replaced with M1A2 tanks in order to make them more survivable, fightable, and lethal. Improvements include the combat proven M1A1 features [the 120mm main gun; Nuclear, Biological, and Chemical (NBC) protection; and heavy armor] and the new enhancements linked by the digital distributed data and power architecture of the M1A2. The Inter-vehicular Information System (IVIS) and Position Navigation (POS/NAV) equipment provide improved battlefield command, control, and communications over the M1A1. The new Commander's Independent Thermal Viewer (CITV) also speeds up the target acquisition process so that the gunner may engage more targets in a shorter time interval. The M1A2 Abrams tank replaces the M1A1 tank in the CONUS Contingency Force.

7. (U) Executive Summary:

(U) The M1A2 Abrams tank program is the successor to the M1 and M1A1 tank acquisition programs. Ten M1A2 prototypes were delivered to Army test sites in 1991. An Early User Test & Evaluation (EUT&E), using five of these prototypes, was conducted from June through December 1991. The other prototypes were used to assess ballistic and nuclear vulnerability, system reliability, and logistic supportability. The first of five M1A2 pilot production vehicles was delivered in March 1992. Based on the results of a special ASARC held on March 21, 1992, the Army Acquisition Executive (AAE) decided to proceed with low rate initial production (LRIP) of 62 M1A2 tanks. The Congress then directed the Defense Department to proceed with a program to upgrade the M1 tank to the M1A2 configuration.

An Acquisition Decision Memorandum (ADM), signed on December 18, 1992 by the Deputy to the USD(A), approved the Army's first Acquisition Program Baseline for the Abrams Upgrade Program. M1A2 Live Fire Testing, New Equipment Training, the Initial Operational Test and Evaluation (IOT&E), and the Production Qualification Test (PQT) were completed during 1993 and 1994. The last of the 62 low rate initial production M1A2 tanks was delivered in March 1994. The M1A2 Milestone III Army System Acquisition Review Council (ASARC) was held on April 8, 1994. The resultant Acquisition Decision Memorandum (ADM), approving the M1A2 for full scale production and deployment, was signed by the Army Acquisition Executive (AAE) on April 20, 1994.

The M1A2 underwent its Initial Operational Test & Evaluation (IOT&E) during the period from September to December 1993. The Army Operational Test and Evaluation Command (OPTEC) and the Operational Evaluation Command's independent evaluator

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7. (U) Executive Summary (Cont'd):

found the vehicle to be operationally suitable and operationally effective; however, the Director, Operational Test and Evaluation (DOT&E) evaluation of the operational testing found that the vehicle was operationally effective but not operationally suitable and there were several safety shortcomings.

The first production M1A2 upgraded from the M1 configuration was delivered in October 1994. The First Unit Equipped (FUE) milestone was reached on October 21 1995. The new Acquisition Program Baseline reflecting the Milestone III ASARC decision was approved by the AAE on January 15 1995. The Defense Acquisition Executive (DAE) recertified the Abrams Upgrade Program on May 7, 1995. A contract for the System Enhancement Package (SEP) (battlefield digitization) development and the 2nd Generation Forward Looking Infra-Red (FLIR) integration was awarded on August 18, 1995.

The first year of the 5 year Multi Year Procurement (MYP) contract for M1A2 production was awarded on July 10, 1996 with definitization occurring on September 25, 1996. The M1A2 Follow-On Production Test (FPT) on two M1A2 Army Upgrade Tanks (AUT) at Aberdeen Proving Ground (APG) was completed in July 1996. The Follow-On Test and Evaluation (FOT&E) began in September 1995 and was suspended in October 1995 due to uncommanded gun/turret motion. Corrective actions were developed, tested and applied prior to a FOT&E test restart in July 1996. The FOT&E was successfully completed in July 1996. The final results, briefed to Operational Evaluation Command on September 27, 1996, concluded that all identified IOTE deficiencies were corrected, and recommended that the M1A2 receive a full materiel release and that DOT&E revise their evaluation to operationally suitable and supportable. DOT&E still has not released their assessment, but the final report is expected in May 1997. As of December 31, 1996 296 M1A2's have been delivered to the U.S. Army.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

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8. (U) Threshold Breaches (Cont'd):

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Block II ASARC Approval	FEB 85	FEB 85	FEB 85
Award Block II Preliminary System Development Contract	JUL 85	JUL 85	JUL 85
Award ICWS/SE #3 Preliminary Engineering Development Contract	SEP 86	SEP 86	SEP 86
Award CO2 LRF Preliminary Engineering Development Contract	SEP 86	SEP 86	SEP 86
Award Block II Advanced System Development Contract	DEC 87	DEC 87	DEC 87
MLA2 Milestone II Decision Review	DEC 88	DEC 88	DEC 88
Award Block II FSD Contract	DEC 88	DEC 88	DEC 88
DAB Program Review	AUG 89	AUG 89	AUG 89
Special MLA2 ASARC	MAR 90	MAR 90	MAR 90
First Prototype Delivery (FSED)	JAN 91	JAN 91	JAN 91
Technical Test			
Start	JAN 91	JAN 91	JAN 91
Complete	MAR 92	MAR 92	MAR 92
User Test			
Start	JUN 91	JUN 91	JUN 91
Complete	DEC 91	DEC 91	DEC 91
LRIP Decision (62 Tanks)	MAR 92	MAR 92	MAR 92
Mod FY91 MLA1 Production Contract (Incorporating Block II Changes)	MAY 92	MAY 92	MAY 92
First MLA2 Production Delivery	NOV 92	NOV 92	NOV 92
Live Fire Test			
Start	JAN 93	JAN 93	JAN 93
Complete	JUL 93	JUL 93	OCT 93
Production Qualification Test			
Start	FEB 93	FEB 93	FEB 93
Complete	AUG 94	AUG 94	DEC 94
IOC (Training Base)	FEB 93	FEB 93	FEB 93
Initial Operational Test and Evaluation			
Start	SEP 93	SEP 93	SEP 93
Complete	DEC 93	DEC 93	DEC 93
First Upgrade Pilot Delivery	MAR 94	MAR 94	MAR 94
MLA2 MS III Decision	APR 94	APR 94	APR 94
First Unit Equipped (CONUS)	JUN 95	JUN 95	OCT 95
Depot Support Established	SEP 97	SEP 97	SEP 97

b. Current Change Explanations -- None.

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10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Maximum Width (inches)	144	144 / 144	144	144
Maximum Height (inches) (grnd to center of turret roof)	96	96 / 96	96	96
Maximum Combat Weight (tons)	68.5	68.5 / 69.5	68.5	68.7
Minimum Range (miles)				
Paved Roads				
With NBC	257	257 / 243	290	243
Without NBC	270	270 / 256	305	256
Maximum Speed (mph)				
Paved Roads	41.5	41.5 / 41.5	42.5	41.5
(0% slope)				
Cross Country	30	30 / 30	30	30
Acceleration (0-20 mph) (sec)				
Paved Roads (0% slope)				
With NBC	7.5	7.5 / 9.0	7.0	7.5
Without NBC	7.2	7.2 / 9.0	6.9	7.2
Combat Mission	360	360 / 320	449	360
Reliability (MMBF)				
System Maintainability (Maintenance Ratio)	1.04	1.04 / 1.40	0.95	1.25
Track Life (miles)	2000	2000 / 1000	1509	1509
Air Transportability	C5A, C17	C5A, C17 / C5A, C17	C5A	C5A, C17
Fightability-Improved	40	40 / 25	25	25
Commander's Weapon Station Visibility over MIA1 (%)				
Location Determination (% of distance traveled)	+/-2	+/-2 / +/-3	+/-0.6	+/- 3
Heading error (after 1 hr) (deg-RMS)	+/-1	+/-1 / +/-3	+/-0.88	+/- 3
Testability (BIT) (%)				
On-Board System	95	95 / 95	99	95
Level Detection Capability				
LRU Fault Isolation	95	95 / 90	96	90
Maximum False Alarm Rate	5	5 / 10	9.6	10

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

Average 1st Round Hit Probabilities (Round/ Condition/Range)	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
--	--	---	--	-----------------------------------

(b)(1)



(U) The values for the 1st Round Hit Probabilities for the moving tank/moving target (M-M) scenario have been replaced by "TBD" until the completion of the official evaluation of the Follow-On Production Testing (FPT) at the Aberdeen Proving Ground (APG). It is expected that the final test report will be completed by May 1997, however, live round check fire has already demonstrated outstanding performance.

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10b. (U) Performance Characteristics (Cont'd):

b. Current Change Explanations -- None.

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	755.4	755.4	837.4
Procurement	6028.6	6028.6	5807.3
Rollaway	(4968.9)		(4774.3)
Other Wpn System	(791.1)		(767.2)
Peculiar Support	(108.5)		(139.5)
Initial Spares	(160.1)		(126.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	207.9	207.9	84.8
Total FY 95 Base-Year \$	6991.9	6991.9	6729.5
Escalation	970.0	970.0	552.1
Development (RDT&E)	(-84.8)	(-84.8)	(-69.3)
Procurement	(1020.8)	(1020.8)	(619.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(34.0)	(34.0)	(2.2)
Total Then Year \$	7961.9	7961.9	7281.6

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	1060	1060	1060
Total	1060	1060	1060

Note: Excludes 10 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

(U) Also excluded are an additional 5 production pilots and 4 upgrade pilots that are not considered fully configured end items. The total procurement quantity of 1060 M1A2 tanks includes 62 Low Rate Initial Production (LRIP) new production M1A2 tanks, which were all delivered in FY93, and 998 M1A2 tanks upgraded from M1 tanks.

c. (U) Foreign Military Sales --

□

COUNTRY	QUANTITY/MODEL	CASE VALUE
Saudi Arabia	315/M1A2 Abrams Tanks	\$2.7 Billion
Kuwait	218/M1A2 Abrams Tanks	\$1.9 Billion

d. Nuclear Costs -- None.

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ABRAMS Upgrade, December 31, 1996

12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JAN 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	6729.5	6991.9	
(2) Quantity	1060	1060	
(3) Unit Cost	6.349	6.596	-3.74
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	5807.3	6028.6	
(2) Quantity	1060	1060	
(3) Unit Cost	5.479	5.687	-3.66

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	O&M	TOTAL
Production Estimate	670.6	7049.4	-	241.9	7961.9
Previous Changes:					
Economic	+8.2	-197.1	-	-5.7	-194.6
Quantity	-	-	-	-	-
Schedule	-	-167.4	-	-10.5	-177.9
Engineering	-	-	-	-	-
Estimating	+76.6	-573.9	-	-11.4	-508.7
Other	-	-	-	-	-
Support	-	-386.5	-	-	-386.5
Subtotal	+84.8	-1324.9	-	-27.6	-1267.7
Current Changes:					
Economic	-0.4	-19.9	-	+4.9	-15.4
Quantity	-	-	-	-	-
Schedule	-	+22.2	-	-	+22.2
Engineering	-	-	-	-	-
Estimating	+13.1	+353.8	-	-132.2	+234.7
Other	-	-	-	-	-
Support	-	+345.9	-	-	+345.9
Subtotal	+12.7	+702.0	-	-127.3	+587.4
Total Changes	+97.5	-622.9	-	-154.9	-680.3
Current Estimate	768.1	6426.5	-	87.0	7281.6

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ABRAMS Upgrade, December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	O&M	TOTAL
Production Estimate	755.4	6028.6	-	207.9	6991.9
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+69.6	-481.3	-	-12.2	-423.9
Other	-	-	-	-	-
Support	-	-299.9	-	-	-299.9
Subtotal	+69.6	-781.2	-	-12.2	-723.8
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+12.4	+286.7	-	-110.9	+188.2
Other	-	-	-	-	-
Support	-	+273.2	-	-	+273.2
Subtotal	+12.4	+559.9	-	-110.9	+461.4
Total Changes	+82.0	-221.3	-	-123.1	-262.4
Current Estimate	837.4	5807.3	-	84.8	6729.5

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Revised estimates for the system enhancement package (SEP)/2nd generation forward looking infra-red (FLIR) sight program. (Estimating)	+12.3	+13.0
RD&E Subtotal	+12.4	+12.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-19.9
Stretchout of annual procurement buy profile. 90 tanks moved from FY 2001-2002 to FY 2003-2005. (Schedule)	0.0	+22.2
Adjustment for Current and Prior Inflation. (Estimating)	+2.7	+2.9
Revised hardware price estimates due to decreased production rates in FY 2003-FY 2005. (Estimating)	+169.0	+214.5
Funding for M1 overhauls starting in FY98 moved from OMA to WTCV appropriation (Estimating)	+115.0	+136.4

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ABRAMS Upgrade, December 31, 1996

13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment for Current and Prior Inflation. (Support)	+0.5	+0.5
Revised Initial Spares associated with reduced requirements and lengthened schedule. (Support)	+7.8	+15.2
Increase in Peculiar Support due to lengthened schedule. (Support)	+42.3	+53.0
Increase in Other Wpn System due to lengthened schedule. (Support)	+222.6	+277.2
Procurement Subtotal	+559.9	+702.0

(3) O&M

Revised escalation indices. (Economic)	N/A	-1.0
Economic adjustment for negative program change. (Economic)	N/A	+5.9
Revised M1 Overhaul Cost (Estimating)	+4.1	+4.2
Funding for M1 overhauls starting in FY98 moved from OMA to WTCV appropriation (Estimating)	-115.0	-136.4
O&M Subtotal	-110.9	-127.3

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.51	-0.20	+0.01	-0.15	--	-0.26	--	-0.04	-0.64	6.87

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.65	-0.20	--	-0.14	--	-0.21	--	-0.04	-0.59	6.06

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ABRAMS Upgrade, December 31, 1996

14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	DEC 88	DEC 88
Milestone III	N/A	N/A	APR 94	APR 94
FUE/IOC	N/A	N/A	JUN 95	OCT 95
Total Cost	N/A	N/A	7961.9	7281.6
Total Quantity	N/A	N/A	1060	1060
Prog Acq Unit Cost	N/A	N/A	7.51	6.87

15. (U) Contract Information (Then-Year Dollars in Millions):

(U) ☐

Contract DAAE07-93-C-A003, FFP, Awarded: August 18, 1993, and Definitized September 30, 1994, is 90% complete and no longer will be reported.

a. RDT&E --

(U) ABRAMS Upgrade:

General Dynamics Corp., Warren, MI

DAAE07-95-C-0292, FFP

Award: March 10, 1995

Definitized: September 25, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$1324.0	\$0.0	600

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1324.0	\$0.0	600	\$1324.0	\$1324.0

Explanation of Change:

None.

(U) Contract Comments:

☐

This contract was converted from the Long Lead Materiel (LLM) funding contract to a 5 year Multiyear production contract starting in FY96. Since this is an FFP contract, cost and schedule variance information is not required.

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ABRAMS Upgrade, December 31, 1996

15. (U) Contract Information (Cont'd):

(U) M1A2 SEP Dev/FLIR Integ:
General Dynamics Corp., Warren, MI
DAAE07-94-C-0727, CPFF
Award: August 18, 1995
Definitized: August 18, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$0.0	\$115.2	0

Current Contract Price		
Target	Ceiling	Qty
\$0.0	\$114.8	0

Estimated Price At Completion	
Contractor	Program Manager
\$125.7	\$135.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.4	\$-3.3
Cumulative Variances To Date (12/31/96)	\$-1.8	\$-8.0
Net Change	\$-1.4	\$-4.7

Explanation of Change:

(U) ☐

Phase I of the SEP/Gen II FLIR program (\$7M), concept and trade study phase, was complete in August 1995. Current contract price for Phase II of the SEP/Gen II FLIR program is \$107.8M.

GDLS schedule variance increased to -\$8.0M. We have discussed this with the contractor and they agree that the SEP development contract is about two months behind schedule and for the most part, this schedule cannot be made up. Design of the SEP components namely the Commander's Display Unit (CDU) and the Mission Processor Unit (MPU) have proceeded slower than planned. Problems with design of the common power supply, bezel switch assembly, and vehicle harness have caused delays in the schedule. These problems have now been overcome and we are moving ahead with the SEP component design and fabrication. Because of the growth in our estimated price at completion, we were looking for ways to reduce the contract cost. We issued two stop work orders, one for the Under-Armor Auxiliary Power Unit (UAAPU) and one for the Thermal Management System (TMS), while we sorted out our options. Subsequently, we have removed TMS, Remote Display Unit, and Embedded Technical Manuals scope from the contract which enabled us to lift the UAAPU stop work order. These stop work actions have in part caused an additional schedule delay, primarily in the Allison Mobile Power (UAAPU) subcontract. We have therefore officially moved the SEP cut-in date two months to the right. GDLS has moved some of their design functions from Sterling Heights, Michigan to Tallahassee, Florida. There have been delays in schedule due to startup problems and data transfer of detail CAD drawings from Florida to Michigan for vehicle design integration.

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ABRAMS Upgrade, December 31, 1996

15b. (U) Contract Information (Cont'd):

b. Procurement --
 (U) Transmission Upgrade:
 Allison Transmission Div, Indianapolis IN
 DAAE07-94-C-A016, FFP
 Award: April 29, 1994
 Definitized: April 29, 1994

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$84.2	\$0.0	397

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$88.2	\$0.0	397	\$88.2	\$88.2

Explanation of Change:

None.

(U) CITV Multiyear (FY96-98):
 Texas Instruments Inc., Dallas, TX
 DAAE07-95-C-0421, FFP
 Award: September 26, 1995
 Definitized: September 26, 1995

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$64.1	\$0.0	285

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$64.1	\$0.0	285	\$64.1	\$64.1

Explanation of Change:

None.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY85-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-05)	<u>Total</u>
RDT&E	728.4	33.3	6.4	-	768.1
Procurement	2565.3	622.2	715.0	2524.0	6426.5
MILCON	-	-	-	-	-
O&M	87.0	-	-	-	87.0
Total	3380.7	655.5	721.4	2524.0	7281.6

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ABRAMS Upgrade, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- ABRAMS Upgrade

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985				47.9	36.2
1986				29.2	22.7
1987				30.6	24.5
1988				89.3	74.4
1989				142.9	123.9
1990				84.2	75.8
1991				126.3	117.9
1992				76.2	72.8
1993				8.0	7.8
1994				32.9	32.8
1995				16.6	16.9
1996				49.6	51.5
1997				67.1	71.2
1998				30.8	33.3
1999				5.8	6.4
2000					
2001					
2002					
2003					
2004					
2005					
Subtotal				837.4	768.1

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986		6.3		6.3	5.1
1987		0.7		0.7	0.6
1988					
1989					
1990		107.3		196.1	182.3
1991	62	91.8	258.0	496.4	475.3
1992				238.9	233.7
1993				163.1	162.8
1994	172	34.4	587.2	130.8	133.1
1995	34		101.1	288.2	299.4
1996	100		334.2	552.9	587.3
1997	120		421.3	448.4	485.7
1998	120		480.2	562.7	622.2
1999	120		542.3	633.1	715.0
2000	120		517.6	597.6	689.5
2001	92		458.7	447.6	527.8

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ABRAMS Upgrade, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	30		287.2	268.2	323.8
2003	30		183.0	314.4	389.4
2004	30		181.4	263.8	335.2
2005	30		181.6	198.1	258.3
Subtotal	1060	240.5	4533.8	5807.3	6426.5

Appropriation: 2020 Operation & Maintenance, Army

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				2.2	2.1
1994				17.3	17.2
1995				21.8	22.1
1996				20.0	20.7
1997				23.5	24.9
1998					
1999					
2000					
2001					
2002					
2003					
Subtotal				84.8	87.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1060	240.5	4533.8	6729.5	7281.6

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	10	10
Procurement	296	296

(U) Percent Total Program Quantities Delivered: 28.9%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2174.2

(U) Percent Total Program Expended: 29.9%

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ABRAMS Upgrade, December 31, 1996

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The O&S costs shown below are derived from the Program Office Estimate (POE) for the M1A2 Upgrade program, dated January 25, 1994. A conversion quantity of 998 tanks was used in this study. The total O&S cost projected in the study is based on a mix of M1s, M1A1s, and M1A2s operating for 20 years in active units, reserve units, and in the training base. Tanks in the active units are assumed to be driven for 800 miles per year, while tanks in the reserve units and training base are assumed to be driven 288 miles per year. Four dedicated crew members are assumed for each active vehicle. The depot maintenance costs are based on a minimal vehicle overhaul program supplemented by the Inspect and Repair Only as Necessary (IRON) program.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per M1A2 in an Active Army Battalion	Avg Annual Cost Per M1A1 in an Active Army Battalion
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	102.1	78.9
Intermediate Maintenance	21.3	18.0
Depot Maintenance	4.1	4.1
Contractor Support	67.8	67.8
Sustaining Support	29.2	18.4
Indirect Costs	126.1	126.1
Maintenance Personnel-PA	28.0	37.7
Indirect Support Personnn	100.1	105.7
Training (OPA, MPA, OMA)	108.3	105.1
War Reserve Ammo	0.0	0.0
Modification Kits	27.4	8.2
Other MPA, OMA; DBOF	6.6	2.6
Total	621.0	572.6

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A-12 FAAD C2I

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: FAAD C2I

AS OF DATE: December 31, 1996

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FAADC2I

1. Designation and Nomenclature (Popular Name): Forward Area Air Defense Command, Control and Intelligence
2. DoD Component: Army
3. Responsible Office and Telephone Number:
AIR DEFENSE COMMAND & CONTROL SYS COL THOMAS L. HALLER
ATTN: SFAE-C3S-AD Assigned: February 15, 1996
REDSTONE ARS, AL 35898-5600 DSN 788-3441; COMM 205-895-3441
4. Program Elements/Procurement Line Items:
RDT&E:
PE 64741 Project D126, D2JT
PE 64817 Project D356, D494
PE 64820 Project 2IT, E10
PROCUREMENT:
APPN 2035 ICN AD 5051 (Army)
APPN 2035 ICN AD5050 (Army)
APPN 2035 ICN BA9702 (Army)
APPN 2035 ICN BA9732 (Army)
APPN 2035 ICN WK5053 (Army)

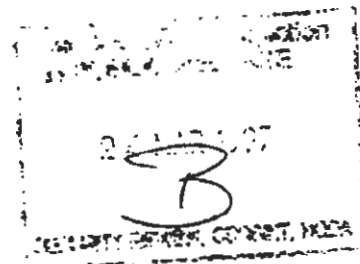
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FAAD C2I, December 31, 1996

5. References:

Block I

SAR Baseline (Development Estimate):
SDDM, August 14, 1986

Approved Program:
AAE Approved Acquisition Program Baseline (APB) dated June 2, 1995.

Blocks II/III/IV

SAR Baseline (Production Estimate):
SDDM, August 14, 1986; ROC July 19, 1986; NCTR-1 Development Specification FAAD, Electronic Support Measures (ESM) NCTR System dated October 1990; NCTR-2 Development Specification FAAD, Non-Imaging Sensor, NCTR system dated May 1989.

Approved Program:
AAE Approved Acquisition Program Baseline (APB) dated June 2, 1995.

6. Mission and Description:

As the air defense node of the Army Tactical Command and Control System (ATCCS), the Forward Area Air Defense Command, Control, and Intelligence (FAAD C2I) System provides critical short range (formerly forward area) air defense information to support the command and control decision process at various levels of command. The FAAD C2I System ties weapons together by a C2I network and integrates the Forward Area Air Defense System (FAADS) into the Army Battle Command System (ABCS) architecture. The C2I initiative incorporates a family of sensors and identification equipment (ground and aerial, active and passive) with automated data processing distribution capability. The missions will be accomplished through collection, digital processing and dissemination of target information, air threat warning, and command and control information. The FAAD C2I System will also provide target data processing and display capabilities at the Air Battle Management Operations Center (ABMOC), the Army Airspace Command and Control (A2C2) element, Sensor/Command and Control (C2) node, Battery (BTRY), Platoon/Section (PLT/SEC), and Fire Unit (FU) levels. The FAAD C2I System integrates weapons, sensors, communications, and command, control and intelligence (C2I) architecture to counter the entire spectrum of the air threat to the divisional forward area through the 90s. The acquisition strategy relies heavily on non-developmental items (NDI) and evolutionary software development to rapidly overcome our current air defense command, control, and intelligence deficiencies and to keep pace with the advancing technologies.

The FAAD C2I Block I provides an early air defense command and control capability for light and special divisions. The FAAD C2 System will perform the overall FAAD C2I mission via the development of unique engagement operations software and the integration of: (1) ATCCS Common Hardware/Software (CHS) processors, displays and associated peripherals; (2) Army Data Distribution system (ADDS) JTIDS; (3) combat net radios Single Channel Ground and Airborne Radio System (SINCGARS); (4) LSDIS; (5) Airborne Warning and Control System (AWACS); (6) FAAD weapon systems; and (7) High

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FAAD C2I, December 31, 1996

6. Mission and Description (Cont'd):

Frequency Radios (Voice).

The FAAD C2I Block II provides an air defense command and control capability for heavy divisions. The FAAD C2 System will perform the overall FAAD C2I mission via the development of unique engagement operations software and the integration of: (1) ATCCS Common Hardware/Software (CHS-1) processors, displays and associated peripherals; (2) ADDS EPLRS/JTIDS; (3) combat net radios (SINCGARS); (4) Sentinel; (5) Airborne Warning and Control System (AWACS); (6) FAAD weapon systems; (7) combined arms interface; and (8) HIMAD interface.

The FAAD C2I Block III provides the objective air defense command and control capability for all active and selective reserve component air defense units. The FAAD C2 System will perform the overall FAAD C2I mission via the development of unique engagement operations (EO) software (air battle management), Force Operations (FO) software (Air and Missile Defense Workstations (AMDWS)), system hardware/software enhancements, and the integration of: (1) ATCCS CHS-2 processors, displays and associated peripherals; (2) Army Data Distribution System (EPLRS/JTIDS); (3) combat net radios (SINCGARS); (4) Mobile Subscriber Equipment (MSE); (5) AWACS; (6) FAAD weapon systems; (7) Sentinel; (8) Force XXI Battle Command Brigade & Below (FBCB2-Applique').

Block IV provides horizontal and vertical (EO and FO) pre-planned product improvements (P3I) to existing Block III capabilities to ensure compliance with Army Technical Architecture (ATA) guidance. Command and control on the move, commensurate with the supported force is planned for the Battalion Command Post, A2C2 and Battery Command Post through the utilization of improved CHS. Increased capabilities for the horizontal (Army and Joint) interoperability are planned by interfacing the air defense mission planner with other existing battlefield mission planners (i.e., Aviation, Intelligence, Marine Corps). Increased capabilities to access intelligence data includes: incorporating interfaces to the Joint Intelligence Net (Commander's Tactical Terminal-Hybrid (CTTH)), establishing data links to the Air Force (AWACS, JSTARS), and enhanced A2C2 interoperability. FAAD C2I incorporates the capability to automatically receive, process, and display elements of the Airspace Coordination Order (ACO) as issued by the Air Force.

7. Executive Summary:

The Short Range Air Defense Command and Control (SHORAD C2) system was presented to the Army Systems Acquisition Review Council (ASARC) Milestone Decision Review (MDR) II on March 26, 1985. On September 3, 1985, the ASARC program was approved by the Vice Chief of Staff of the Army (VCSA). On January 3 and 4, 1986, an ASARC-level review directed that SHORAD C2 become a subsystem of the FAAD System and that SHORAD C2 be re-designated Forward Area Air Defense Command, Control and Intelligence (FAAD C2) System. On July 29, 1986, the Joint Requirements and Management Board (JRMB), a forerunner of the Defense Acquisition Board (DAB), approved the concept for execution of the overall FAAD program as a system of systems and approved the following segments of FAAD C2I:

- (1) Full scale development (beginning with a Build I demonstration) of the FAAD C2I objective software.
- (2) A ground based sensor (GBS) Non Development Item (NDI) acquisition strategy to procure four test articles to support other FAAD developmental and operational

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FAAD C2I, December 31, 1996

7. Executive Summary (Cont'd):

testing, and 13 Low Rate Initial Production (LRIP) for operational test and evaluation, production verification, and initial training.

A March 1989 Secretary of Defense Decision Memorandum (SDDM) approved the restructure of the FAAD C2 program to field an initial capability to perform air defense engagements and essential force control interfaces within the divisions, followed by development/fielding of the objective system. The May 1990 Army Acquisition Executive Acquisition Decision Memorandum approved development of a tailored FAAD C2I for early fielding to light and special divisions, followed by development of the objective system to be fielded to all Army division. Sensors, communications equipment, and identification devices will be incorporated in FAAD C2I as they become available.

Following successful completion of FAAD C2 Block I software/hardware technical, developmental and operational (Limited User Test) testing in February 1993, an In-Process Review was conducted at Fort Monmouth, NJ in May 1993. Authority was granted to proceed into Low Rate Initial Production (LRIP) to procure Block I software and hardware, and sufficient test articles for Block II Initial Operational Test and Evaluation (IOTE).

The FAAD C2I Block I First Unit Equipped (FUE) for light division, using SINGARS, JTIDS, and LSDIS, took place September 30, 1993, when the 101st Airborne (Air Assault) Division, Fort Campbell, KY, formally accepted the Block I FAAD C2I System. Block I was material released to the 5-5 ADA Battalion, 2d Infantry Division, Camp Stanley, Korea in September 1995 and to 3-62 ADA Battalion, 10th Mountain Division, Fort Drum, NY in September 1995. Based on one hundred percent deliveries and expenditures, it is anticipated that this will be the final Selected Acquisition Report for FAAD C2I Block I.

The FAAD C2I Block II system successfully completed FUE to the 3rd (Mechanized) Infantry Division (formerly 24th Infantry Division) for heavy divisions, using EPLRS, JTIDS, High to Medium Altitude Air Defense (HIMAD), and Sentinel (formerly Ground Based Sensor (GBS)), and was material released to 1-5 ADA Battalion, 3rd Mechanized Infantry Division, Fort Stewart, GA in September 1995.

Following the Milestone II ASARC in April 1995, the Army Acquisition Executive (AAE) approved and released the Milestone III Acquisition Decision Memorandum (ADM) for the FAAD C2I System April 24, 1995. The FAAD C2I Operational Requirements Document (ORD) for Block III was certified by the Joint Requirements Oversight Council (JROC), June 22, 1995; Exit Criteria was completed; and Army Acquisition Executive approval for FAAD C2I full rate production was granted August 7, 1995.

The following contracts have been awarded: FAAD C2 Software development in September 1986, modified in July 1990 to provide the Block I initial air defense command and control capability for light/special divisions, completed on schedule and under cost in September 1993. GBS development (NDI) in February 1992. FAAD C2 Block II software development in December 1992 to provide air defense command and control capability, and the FAAD C2 Block III development contract was awarded in September 1994. The FAAD C2 Integration/Fielding contract was awarded in February 1994. The Sentinel Firm Fixed Price Contract was awarded January 1995. The first option was exercised for 10 sensors in FY 95, and the second option was for 24 sensors in FY 96.

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FAAD C2I, December 31, 1996

7. Executive Summary (Cont'd):

FAAD C2I participated in the following tests/demonstrations since the last SAR submission: Bradley STINGER Fighting Vehicle-Enhanced (BSFV-E) Initial Operational Test and Evaluation, Oro Grande Range, NM. System Regression Testing, Fort Monmouth, NJ.; Operational Test Update, 1st Cavalry Division, Fort Hood, TX.; MCS/P) V12.01 Software System Acceptance Test, March 1996; Air Picture Interface Field Assistance support Team Bilateral Formal test (February/March 1996); The Army Tactical Command and Control Systems/Support Confidence Demonstration V1 Test August 5-9, 1996, Fort Lewis, WA.; The Production Verification Test (PVT) Performance Test (Electronic Countermeasure/Electronic Counter-Countermeasure testing and Identification Friend or Foe (IFF) demonstration) at White Sands Missile Range (WSMR) and the Logistics Demonstration at Redstone Arsenal, AL (RSA); The TF XXI SW was successfully demonstrated to the U.S. Army Chief of Staff at the Digitization Integration Laboratory, Fort Monmouth, NJ, during April 1996; The TF XXI FAAD C2 Software (SW) was successfully installed and demonstrated at the General Officer TF XXI In Process Review, Central Technical Facility, Fort Hood, TX, May 30, 1996; The FAAD C2 System successfully participated in the 4th Infantry Division, Fort Hood, TX, BCTP Warfighter exercise, January 11-18, 1996. Air surveillance support for the U.S. Customs and Department of Defense Special Events Organization at the summer Olympics held in Atlanta, GA. The All-Service Combat Identification Evaluation Team (ASCIET 96) joint exercise on August 26 - September 6, 1996, Camp Shelby, MS. An operational sensor-to-shooter system laydown (consisting of the SENTINEL, LINEBACKER, and AVENGER Air Defense Weapons Systems) was demonstrated with FAAD C2 during the 4th Infantry Division TF XXI Update to the Secretary of Defense, October 30, 1996, at Fort Hood, TX.

The following International Programs exist: A Memorandum of Understanding amendment for future participating nations between the U.S. and Germany for the Low Level Air Picture Interface/FAST Program. The Office of Defense Cooperation Turkey (ODC-T) forwarded a Letter of Request for two Sentinel Systems to be procured in the FY 96 procurement.

The AN/MPQ-64 Ground Based Sensor, was officially designated the Sentinel radar system by Headquarters, Department of the Army, on October 3, 1996.

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FAAD C2I, December 31, 1996

8. Threshold Breaches:

Block I

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

Blocks II/III/IV

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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FAAD C2I, December 31, 1996

9. Schedule:

Block I

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
BLOCK I (Light Division)			
Required OP Capability (ROC) Approved	N/A	OCT 85	OCT 85
Milestone II DAB	AUG 86	JUL 86	JUL 86
Contract Award	SEP 86	SEP 86	SEP 86
ROC Amended (USAADASCH, Ft Bliss)	N/A	APR 92	APR 92
Block I DT	N/A	NOV 92	NOV 92
Block I Limited User Test (LUT)			
Start	N/A	JAN 93	JAN 93
Complete	N/A	FEB 93	FEB 93
AAE LRIP Decision	N/A	MAY 93	MAY 93
First Unit Equipped	JUN 91	SEP 93	SEP 93
Organic Support Capability	N/A	SEP 93	SEP 93
LSDIS Enhancement	N/A	OCT 93	OCT 93
Initial Operational Capability	N/A	SEP 94	SEP 94
Depot Support Capability	N/A	OCT 94	OCT 94
C2I/Fire Unit Tech Test			
Start	SEP 90	N/A	N/A
Complete	JUN 91	N/A	N/A

b. Current Change Explanations -- None.

Blocks II/III/IV

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
BLOCK II (Heavy Div.)			
Milestone II	JUL 86	JUL 86	JUL 86
Contract Award	AUG 92	AUG 92	AUG 92
CDR Complete	JUN 93	JUN 93	JUN 93
Block II DT			
Start	JUN 94	JUN 94	JUN 94
Complete	JUL 94	JUL 94	JUL 94
IOT&E			
Start	OCT 94	OCT 94	OCT 94
Complete	NOV 94	NOV 94	NOV 94
Milestone III (Full Rate Production)	MAR 95	MAR 95	MAR 95
First Unit Equipped	AUG 95	AUG 95	OCT 95
First Production Delivery	JUN 96	JUN 96	JUL 96
Initial Operational Capability	AUG 96	AUG 96	SEP 96
Organic Support Capability	OCT 94	OCT 94	OCT 94
Depot Support Capability	OCT 94	OCT 94	OCT 94
GBS Enhancement	AUG 95	AUG 95	OCT 95
BLOCK III (Objective)			
S/W Development Contract Award	SEP 94	SEP 94	SEP 94
CDR Complete	NOV 96	NOV 96	AUG 96 (Ch-1)

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FAAD C2I, December 31, 1996

9a. Schedule (Cont'd):

Blocks II/III/IV

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
System Certification Test	JUL 98	JUL 98	JUL 98
Block III IPR	MAR 99	MAR 99	MAR 99
FUE	JUN 99	JUN 99	JUN 99
IOC	JUN 00	JUN 00	JUN 00
Organic Support Capability	JUN 00	JUN 00	JUN 00
Depot Support Capability	JUN 00	JUN 00	JUN 00
BLOCK IV (P3I)			
Contract Award	SEP 99	SEP 99	SEP 99
CDR Complete	OCT 00	OCT 00	OCT 00
System Certification Test	AUG 01	AUG 01	AUG 03
FUE	MAY 02	MAY 02	MAY 04
IOC	AUG 02	AUG 02	AUG 05
Organic Support Capability	SEP 07	SEP 07	SEP 05
Depot Support Capability	SEP 07	SEP 07	SEP 05

b. Current Change Explanations --

Ch-1 The CDR IV was re-scheduled earlier than planned from Nov 96 to Aug 96.

10. Performance Characteristics:

Block I

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
BLOCK I (Light Div.)				
Target	N/A	1340- / 1340-	2041	1340-
(non-maneuvering)		3800 / 3800		3800
positional		(x,y) / (x,y)		(x,y)
accuracy reported				
to a Fire Unit				
(FU) with range				
of air defense				
sensor inputs				
(Path=Sensor->				
C2->FU) (m) w/l				
sigma				
Initial track report	N/A	15.0 / 15.0	15.0	15.0
delivery time to FU				
(sec)				
Battle Management	N/A	30 / 30	30	30
Information				
delivery speed to				
weapon system				
(sec)				

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FAAD C2I, December 31, 1996

10a. Performance Characteristics (Cont'd):

Block I

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Shelterized	30	30 / 30	30	30
subsystem march				
order and emplace-				
ment 90% of time				
non-remoted equip				
(less SINGARS				
remote antenna				
and JTIDS mast				
antenna)				
(min)				
MTBOMF (hrs)				
LSDIS	125	N/A / N/A	N/A	N/A
Generator	425	N/A / N/A	N/A	N/A
Ao (Operational	N/A	0.7 / 0.6	.6	.6
Availability)				

b. Current Change Explanations -- None.

Blocks II/III/IV

a. Performance --

	Production <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
BLOCK II (Heavy Div.)				
Target	158-390	158-390 / 204-449	117-178	158-390
(non-maneuvering)	(x,y)	(x,y) / (x,y)	(x,y)	(x,y)
positional accuracy	165-559	165-559 / 257-4000	132-149	165-559
reported to a Fire	(z)	(z) / (z)	(z)	(z)
Unit (FU) with				
range of air				
defense sensor				
inputs				
(Path=Sensor->				
C2-> FU) (m) w/1				
sigma)				
Initial track report	6.0	6.0 / 6.0	<=1.5	6.0
delivery time to				
FU (sec)				
Battle Management				
Information				
delivery speed				
to weapon system				
(sec)				
Air Defense	30	30 / 30	<=7.5	30
Warning				

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10a. Performance Characteristics (Cont'd):
Blocks II/III/IV

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Weapons Control Order	30	30 / 30	<=7.5	30
Sensor Management	30	30 / 30	<=7.5	30
Probability of correct target ID passed to FU	.90	.90 / .90	>=.91	.90
Shelterized subsystem march order and emplacement 90% of time, non-remoted equip (less EPLRS and JTIDS mast antenna) (min)	30	30 / 30	<=30	30
Identification Friend or Foe Methods	AWACS Proced- ural Mark XII 210	AWACS / AWACS Proced- / Proced- ural / ural Mark / Mark XII XII / 210 / 110	MET 210	AWACS Proced- ural Mark XII 210
Simultaneous Air Vehicle Track & Display @ ABMOC				
BLOCK III (Objective)				
Target (Non-maneuvering)	158-390 (x,y)	158-390 / 204-449 (x,y)	TBD	158-390 (x,y)
positional accuracy reported to a Fire Unit (FU) with range of air defense sensor inputs (Path=Sensor->C2->FU) (m) w/1 sigma	165-559 (z)	165-559 / 257-4000 (z)		165-559 (z)
Initial Track Report delivery time to FU (sec)	6.0	6.0 / 6.0	TBD	6.0
Battle Management Information delivery speed to weapon system (sec)				
Air Defense Warning	30	30 / 30	TBD	30
Weapons Control Order	30	30 / 30	TBD	30
Sensor Management	30	30 / 30	TBD	30

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10a. Performance Characteristics (Cont'd):

Blocks II/III/IV

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Probability of Correct Target ID	.9	.9 / .9	TBD	.9
Identification Friend or Foe methods	AWACS Preced- ural Mark XII 210	AWACS / AWACS Preced- / Preced- ural / ural Mark / Mark XII / XII 210 / 100	TBD	AWACS Preced- ural Mark XII 210
Simultaneous Air Vehicle track and display @ ABMOC				
BLOCK IV (P3I)				
Target (non-maneuvering) position accuracy reported to a Fire Unit (FU) with range of air defense sensor inputs (Path=Sensor-> C2I->FU) (m) w/1 sigma	158-390 (x,y) 165-559 (z)	158-390 / 204-449 (x,y) / (x,y) 165-559 / 257-4000 (z) / (z)	TBD	158-30- (x,y) 165-559 (z)
Initial track report delivery time to FU (sec)	6.0	6.0 / 6.0	TBD	6.0
Battle Management Information delivery speed to weapon system (sec)				
Air Defense Warning	30	30 / 30	TBD	30
Weapons Control Order	30	30 / 30	TBD	30
Sensor Management	30	30 / 30	TBD	30
Probability of providing correct target ID to FU	.9	.9 / .9	TBD	.9
Identification Friend or Foe Methods	AWACS Preced- ural Mark XII 210	AWACS / AWACS Preced- / Preced- ural / ural Mark / Mark XII / XII 210 / 100	TBD	AWACS Preced- ural Mark XII 210
Simultaneous Air Vehicle track and display @ ABMOC				

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10b. Performance Characteristics (Cont'd):

Blocks II/III/IV

b. Current Change Explanations -- None.

11. Total Program Cost and Quantity (Dollars in Millions):

Block I

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	388.8	501.7	491.8
Procurement	45.7	14.0	13.9
Flyaway	(25.0)		(12.2)
Other Weapons System Cost	(19.4)		(0.2)
Peculiar Support	(1.3)		(0.0)
Initial Spares	(0.0)		(1.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	434.5	515.7	505.7
 Escalation	-84.8	-98.3	-88.3
Development (RDT&E)	(-79.9)	(-98.4)	(-88.4)
Procurement	(-4.9)	(0.1)	(0.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then Year \$	349.7	417.4	417.4

PM-SICPS controlled costs for Standard Integrated Command Post System (SICPS), which is Government Furnished Equipment (GFE) for the FAAD C2I program, are included in both Block I and Block II current estimate.

b. Quantity --

Development (RDT&E)	0	1	1
Procurement	<u>0</u>	<u>3</u>	<u>3</u>
Total	0	4	4

Low Rate Initial Production Decision Memorandum; 28 May 1993 granted authority for three Block I procurement units and a training base.

FAAD C2I units are defined as air defense organizational units. FAAD C2I Block I units vary in size and cost based on specific mission requirements of the organizational unit.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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11a. Total Program Cost and Quantity (Cont'd):
Blocks II/III/IV

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	466.2	466.2	494.6
Procurement	593.6	593.6	605.4
Flyaway	(481.3)		(513.1)
Other Weapon System Costs	(74.5)		(70.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(37.8)		(22.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	1059.8	1059.8	1100.0
 Escalation	67.4	67.4	48.9
Development (RDT&E)	(-8.5)	(-8.5)	(-6.1)
Procurement	(75.9)	(75.9)	(55.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1127.2	1127.2	1148.9

There are no LRIP quantities involved in Block II.

FAAD C2I units are defined as organizational units. FAAD C2I Block II units equate to air defense units and vary in size and cost based on specific mission requirements of the type of units.

b. Quantity --

Development (RDT&E)	1	1	1
Procurement	14	14	14
Total	15	15	15

Note: Excludes 1 RDTE prototypes from the SAR Baseline and 1 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales --

International Cooperative Program -- Project Low Level Air Picture Integration (LLAPI), an Army chief of Staff initiated cooperative effort between the U.S. (FAAD C2I) and Germany (Army Air Defense Surveillance and Control System) to develop, test and field (FY 93 thru FY 97) an automated means of sharing the low level air picture among adjacent allied armies. Nunn funds received in FY 93-96 - \$3.79M.

The FAAD Sensors Product Office signed a Letter of Agreement (LOA), FMS case number TK-B-UXV, with the Government of Turkey on December 20, 1993 for \$11.3M. This LOA included the GBS system, Light and Special Division Interim Sensor (LSDIS) system, data processing equipment, spares, support equipment, training, and U.S. Government and contractor technical support. This case was successfully completed, meeting all LOA requirements, in December 1994.

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11c. Total Program Cost and Quantity (Cont'd):

Blocks II/III/IV

The Office of Defense Cooperation Turkey (ODC-T) forwarded a Letter of Request for two Sentinel Systems to be procured in the FY 96 procurement.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

Block I

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUN 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	505.7	515.7	
(2) Quantity	4	4	
(3) Unit Cost	126.425	128.925	-1.94
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	13.9	14.0	
(2) Quantity	3	3	
(3) Unit Cost	4.633	4.667	-0.73

Blocks II/III/IV

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUN 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	1100.0	1059.8	
(2) Quantity	15	15	
(3) Unit Cost	73.333	70.653	+3.79
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	605.4	593.6	
(2) Quantity	14	14	
(3) Unit Cost	43.243	42.400	+1.99

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13. Cost Variance Analysis:

Block I

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	308.9	40.8	-	349.7
Previous Changes:				
Economic	-5.9	+2.0	-	-3.9
Quantity	-	-	-	-
Schedule	-1.6	-	-	-1.6
Engineering	-	-	-	-
Estimating	+102.0	-12.7	-	+89.3
Other	-	-	-	-
Support	-	-16.1	-	-16.1
Subtotal	+94.5	-26.8	-	+67.7
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	+94.5	-26.8	-	+67.7
Current Estimate	403.4	14.0	-	417.4

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13a. Cost Variance Analysis (Cont'd):

Block I

Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	388.8	45.7	-	434.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-2.4	-	-	-2.4
Engineering	-	-	-	-
Estimating	+105.4	-12.8	-	+92.6
Other	-	-	-	-
Support	-	-19.0	-	-19.0
Subtotal	+103.0	-31.8	-	+71.2
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	+103.0	-31.8	-	+71.2
Current Estimate	491.8	13.9	-	505.7

b. Current Change Explanations -- None

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13. Cost Variance Analysis (Cont'd):
Blocks II/III/IV

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	457.7	669.5	-	1127.2
Previous Changes:				
Economic	-2.4	-18.4	-	-20.8
Quantity	-	-	-	-
Schedule	-	-40.0	-	-40.0
Engineering	-	-	-	-
Estimating	-5.4	+14.3	-	+8.9
Other	-	-	-	-
Support	-	+10.4	-	+10.4
Subtotal	-7.8	-33.7	-	-41.5
Current Changes:				
Economic	-0.5	+1.1	-	+0.6
Quantity	-	-	-	-
Schedule	-	-5.7	-	-5.7
Engineering	-	+6.0	-	+6.0
Estimating	+39.1	+60.5	-	+99.6
Other	-	-	-	-
Support	-	-37.3	-	-37.3
Subtotal	+38.6	+24.6	-	+63.2
Total Changes	+30.8	-9.1	-	+21.7
Current Estimate	488.5	660.4	-	1148.9

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13a. Cost Variance Analysis (Cont'd):
Blocks II/III/IV

Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	466.2	593.6	-	1059.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-30.8	-	-30.8
Engineering	-	-	-	-
Estimating	-6.9	+11.4	-	+4.5
Other	-	-	-	-
Support	-	+10.4	-	+10.4
Subtotal	-6.9	-9.0	-	-15.9
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+5.2	-	+5.2
Estimating	+35.3	+46.0	-	+81.3
Other	-	-	-	-
Support	-	-30.4	-	-30.4
Subtotal	+35.3	+20.8	-	+56.1
Total Changes	+28.4	+11.8	-	+40.2
Current Estimate	494.6	605.4	-	1100.0

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.5
Revised estimate to include Army Technical Architectural Migration Support (Estimating)	+9.1	+9.9
Reprogrammed funding plus-up for Air Defense Tactical Operations Centers (Estimating)	+3.2	+3.7
Increased estimate to include Sentinel P3I funding. (Estimating)	+23.0	+25.5
RDT&E Subtotal	+35.3	+38.6
(2) <u>Procurement</u>		
Correction to the Dec 95 SAR to reconcile flyaway and support. (Estimating)	-1.4	-1.4
(Support)	+1.4	+1.4
Revised escalation indices. (Economic)	N/A	-2.7
Economic adjustment for negative program change for the Sentinel Product Office. (Economic)	N/A	+3.8

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13b. Cost Variance Analysis (Cont'd):

Blocks II/III/IV

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Acceleration of annual procurement buy profile for Sentinel to support fielding synchronizations with FAAD C2 (Schedule)	0.0	-5.7
Engineering change on Major Subordinate Command/Liason Officer (MSC/LNO) workstation requirement (Engineering)	+5.2	+6.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.6
FAAD C2 plus-up to support Task Force XXI (Estimating)	+2.4	+3.7
Funding increase for Sentinel P3I procurement (Estimating)	+44.4	+57.6
Adjustment made for a decrease in Initial Spares funding projection. (Support)	-9.2	-10.9
Adjustment made in Other Weapons Support cost based on Sentinel P3I funding. (Support)	-22.6	-27.8
Procurement Subtotal	+20.8	+24.6

14. Unit Cost and Other History (Then-Year Dollars in Millions):

Block I

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	104.35

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	4.67

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14c. Unit Cost and Other History (Cont'd):

Block I

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	AUG 86	N/A	JUL 86
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	JUN 91	N/A	SEP 93
Total Cost	N/A	349.7	N/A	417.4
Total Quantity	N/A	N/A	N/A	4
Prog Acq Unit Cost	N/A	N/A	N/A	104.35

SAR Development estimate was in FY87 Constant dollars, and the current estimate is in FY96 Constant dollars.

Blocks II/III/IV

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
75.15	-1.35	--	-3.05	+0.40	+7.23	--	-1.79	+1.44	76.59

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
47.82	-1.24	--	-3.26	+0.43	+5.34	--	-1.92	-0.65	47.17

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	AUG 86	AUG 92	AUG 92
Milestone III	N/A	MAR 95	MAR 95	MAR 95
FUE/IOC	N/A	AUG 95	AUG 95	OCT 95
Total Cost	N/A	1313.9	1059.8	1100
Total Quantity	N/A	N/A	15	15
Prog Acq Unit Cost	N/A	N/A	70.65	73.33

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15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

<u>FAAD C2I (f/Blk III):</u>			<u>Initial Contract Price</u>		
TRW Defense Systems Group, Redondo Beach CA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAAH01-94-C-S199, CPIF	\$43.9	N/A	0		
Award: September 8, 1994					
Definitized: August 29, 1995					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$47.8	N/A	0	\$47.8	\$47.7	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$-0.5
Cumulative Variances To Date (02/12/97)	<u>\$0.1</u>	<u>\$-0.6</u>
Net Change	\$0.1	\$-0.1

Explanation of Change:

Further schedule slippage due to late government furnished equipment.

b. Procurement --

<u>Sentinel:</u>			<u>Initial Contract Price</u>		
Hughes Aircraft Company, Fullerton CA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAAH01-91-C-0002, FFP	\$99.4	N/A	34		
Award: January 31, 1995					
Definitized: January 31, 1995					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$99.4	N/A	34	\$99.4	\$99.4	

Explanation of Change:

(U) Cost and schedule variance data is not required for this FFP contract.

(U) The current contract price reflects the options awarded to date using procurement dollars for the DAAH01-91-C-0092.

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

Total Program

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY80-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	748.5	18.4	6.7	118.3	891.9
Procurement	341.1	70.6	54.7	208.0	674.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1089.6	89.0	61.4	326.3	1566.3

Block I

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY80-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	403.4	-	-	-	403.4
Procurement	14.0	-	-	-	14.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	417.4	-	-	-	417.4

Blocks II/III/IV

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY87-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	345.1	18.4	6.7	118.3	488.5
Procurement	327.1	70.6	54.7	208.0	660.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	672.2	89.0	61.4	326.3	1148.9

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16b. Program Funding Summary (Cont'd):

b. Annual Summary -- Block I

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1980				5.2	3.0
1981				15.9	10.0
1982				19.8	13.2
1983				1.4	1.0
1984				43.5	31.2
1985				24.4	18.1
1986				26.4	20.1
1987				47.4	37.2
1988				67.6	55.2
1989				78.0	66.3
1990				52.5	46.3
1991				61.0	55.8
1992				33.5	31.4
1993				14.1	13.5
1994				1.1	1.1
Subtotal	1			491.8	403.4

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994	2		7.8	9.3	9.3
1995	1		4.4	4.6	4.7
Subtotal	3		12.2	13.9	14.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	4		12.2	505.7	417.4

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FAAD C2I, December 31, 1996

16b. Program Funding Summary (Cont'd):

b. Annual Summary -- Blocks II/III/IV

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				5.7	4.5
1988				40.1	32.8
1989				45.3	38.5
1990				25.2	22.2
1991				9.0	8.2
1992				60.0	56.2
1993				59.3	56.9
1994				43.1	42.1
1995				41.5	41.4
1996				21.9	22.3
1997				19.2	20.0
1998				17.3	18.4
1999				6.2	6.7
2000				12.4	13.7
2001				16.0	18.1
2002				27.2	31.4
2003				16.2	19.2
2004				14.1	17.1
2005				5.8	7.2
2006				9.1	11.6
Subtotal	1			494.6	488.5

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990		0.5		0.5	0.5
1991					
1992					
1993					
1994			7.6	16.1	16.0
1995	1	0.8	59.3	78.2	79.8
1996	4	0.6	94.6	108.6	112.4
1997	4	1.2	97.6	111.9	118.4
1998	3		52.0	65.5	70.6
1999	2		39.9	49.7	54.7
2000			27.7	30.5	34.3
2001			41.7	44.9	51.6
2002			11.6	14.2	16.7
2003			33.0	35.2	42.5
2004			27.1	30.6	37.9

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FAAD C2I, December 31, 1996

16b. Program Funding Summary (Cont'd):

Blocks II/III/IV

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005			11.7	13.3	16.9
2006			3.1	3.1	4.0
2007			3.1	3.1	4.1
Subtotal	14	3.1	510.0	605.4	660.4

Recurring dollars in FY00-06 are for Sentinel (sensors) and FAAD C2 (Block III Workstations).

PM-SICPS controlled costs for Standard Integrated Command Post System (SICPS), which is Government Furnished Equipment (GFE) for FAAD C2I program, are included in both Block I and Block II current estimate.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	15	3.1	510.0	1100.0	1148.9

17. Delivery/Expenditure Information:

Block I

a. Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	3	3

Percent Total Program Quantities Delivered: 100.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 417.4

Percent Total Program Expended: 100.0%

Blocks II/III/IV

a. Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	2	2

Percent Total Program Quantities Delivered: 20.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 406.2

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FAAD C2I, December 31, 1996

17b. Delivery/Expenditure Information (Cont'd):
Blocks II/III/IV

Percent Total Program Expended: 35.4%

18. Operating and Support Costs:
Block I

a. Assumptions and Ground Rules -- None.

b. Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Blk I	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	0.2	0.0
Unit Level Consumption	0.1	0.0
Intermediate Maintenance	0.1	0.0
Depot Maintenance	0.2	0.0
Contractor Support	0.2	0.0
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	0.8	0.0

Blocks II/III/IV

a. Assumptions and Ground Rules -- None.

b. Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Blk II	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	0.2	N/A
Unit Level Consumption	0.2	0.0
Intermediate Maintenance	0.1	0.0
Depot Maintenance	0.3	0.0
Contractor Support	0.3	0.0
Sustaining Support	0.3	0.0
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Total	1.4	0.0

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: AIM-9X

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): AIM-9X/Short Range Air-to-Air Missile

2. (U) DoD Component: Navy

Joint Participants:
Air Force

3. (U) Responsible Office and Telephone Number:

PEO(T)-PMA259	CAPT Thomas MacKenzie
Arlington, VA 22243-1259	Assigned: January 31, 1995
	DSN 664-2100 X5501
	COMM (703)604-2100 X5501

4. (U) Program Elements/Procurement Line Items:

RD&E:

(U)	PE 0207161F	Project 4132
(U)	PE 0207161N	Project 0457
(U)	PE 0603715D	Project W0456

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97C-0159
MacKenzie

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

~~Security Classification of 2/22/94~~
~~Declassify on: NO~~

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5. (U) References:

SAR Baseline (Planning Estimate):

(U) USD(A&T) AIM-9X Acquisition Decision Memorandum dated December 16, 1994.

Approved Program / Development Estimate (DE):

(U) DAE Approved Acquisition Program Baseline (APB) dated January 15, 1997.

6. (U) Mission and Description:

(U) The AIM-9 Sidewinder short-range air-to-air (SRM) is a launch and leave, air combat munition that uses passive infrared (IR) energy for acquisition and tracking and complements the Advanced Medium Range Air-to-Air Missile. Air superiority in the SRM arena is essential and includes first shot, first kill opportunity against an enemy employing IR countermeasures. The AIM-9X is a long-term evolution to the AIM-9 family, a fielded system, qualifying this as a research category operational systems development. Improvements in missile seeker and kinematics allow the operational requirements to be met and defeat the threat. This AIM-9X design allows the use of existing components (rocket motor, warhead and fuse) which provides the needed performance at an affordable price.

7. (U) Executive Summary:

(U) Demonstration/Validation contracts were awarded December 20, 1994 to Raytheon Company and Hughes Aircraft Company and completed June 30, 1996. Management System Reviews (IBR) were accomplished in March 1995 for both contractors. Ground-to-Air (GTA) tests 1, 2 and 3 were conducted at NAWC, China Lake in June, August and October 1995 and were successful. Captive Flight Testing (CFT) was initiated in December 1995 at NAWC, China Lake. This started after being granted conditional approval of the Test Readiness Review (TRR). An Early Operational Assessment has also been started using GTA test data from the TRR and the limited captive flights. Design-to-Cost contract modifications were executed in response to the Acquisition Decision Memorandum. The contractors and the Government converged on a Average Unit Production Cost while incorporating producibility parameters.

The Acquisition Decision Memorandum (ADM) dated December 3, 1996 approved the program entry into Engineering and Manufacturing Development (E&MD). A contract with Hughes Aircraft Company for E&MD was awarded December 13, 1996. The Acquisition Program Baseline (APB) is being staffed in accordance with direction from the ADM that the cost and schedule sections be revised after the contract was awarded.

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8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. (U) Schedule:

a. Milestones --

	Planning Estimate (SAR)	Approved Program;DE	Current Estimate
Milestone IV/I	DEC 94	DEC 94	DEC 94
DEM/VAL Contract Award	DEC 94	DEC 94	DEC 94
Early Operational Assessment			
Start	FEB 95	FEB 95	MAR 95
Complete	FEB 96	FEB 96	MAY 96
Milestone II	OCT 96	OCT 96	DEC 96
EMD Contract Award	JAN 97	JAN 97	DEC 96 (Ch-1)
Preliminary Design Review	AUG 97	N/A	JUL 97 (Ch-1)
Critical Design Review	MAR 98	JUL 98	JUL 98 (Ch-1)
TECHEVAL			
Start	MAR 00	N/A	JAN 00 (Ch-1)
Complete (Report)	DEC 00	N/A	FEB 01 (Ch-1)
IOT&E			
Start	APR 01	N/A	JAN 01 (Ch-1)
Complete	APR 02	AUG 01	AUG 01 (Ch-1)
LRIP Contract Option Exercised	AUG 01	N/A	APR 00 (Ch-1)
LRIP DAB Decision	N/A	APR 00	APR 00 (Ch-1)
LRIP First Delivery	JUL 02	N/A	NOV 01 (Ch-1)
Milestone III	SEP 02	N/A	MAR 02 (Ch-1)
Milestone III SAE Review	N/A	MAR 02	MAR 02
Full Rate Production Contract Award	SEP 02	N/A	MAR 02 (Ch-1)

(b)(1)

b. (U) Current Change Explanations --

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9b. (U) Schedule (Cont'd):

(Ch-1) Approved Program Baseline for Milestone II deleted some of the original schedule milestones included in the Milestone I baseline and added two new milestones. The new schedule milestones measure design maturity, test results and production readiness.

10. (U) Performance Characteristics:

a. Performance --

Day/Night Capability	Planning	Approved	Demon-	Current
	Estimate (SAR)	Program;DE	strated	Estimate
	Yes	Obj/Threshold	Perf	Yes
(b)(1)	Yes	Yes / Yes	TBD	Yes

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10a. (U) Performance Characteristics (Cont'd):

	<u>Planning</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program;DE</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Cueing/Verification	Compat- ible with cueing systems	Inter- / Inter- face to / face all / with current / current/ and / planned planned / aircraft aircraft/ radar systems / systems which / and provide / planned accurate/ Helmet Line of / Mounted Site to / Cueing	TBD	Inter- (Ch-1) face to all current and planned aircraft systems which provide accurate Line of Site to

(b)(1)

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10a. (U) Performance Characteristics (Cont'd):

	Planning Estimate (SAR)	Approved Program;DE Obi/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

b. (U) Current Change Explanations --

(Ch-1) Approved Program Baseline for Milestone II revised the performance characteristics.

(Ch-2) The Approved Program Baseline for Milestone II added four new performance characteristics.

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AIM-9X, December 31, 1996

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Planning Estimate (SAR)	Approved Program/DE	Current Estimate
Development (RDT&E)	632.5	531.4	531.4
Procurement	0.0	1932.6	1932.7
Flyaway			(1677.2)
Other Wpn System Costs			(138.3)
Peculiar Support	(0.0)		(78.1)
Initial Spares	(0.0)		(39.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 97 Base-Year \$	632.5	2464.0	2464.1
Escalation	62.5	768.9	768.8
Development (RDT&E)	(62.5)	(22.1)	(22.1)
Procurement	(0.0)	(746.8)	(746.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	695.0	3232.9	3232.9

(U) Base Year Program revised from FY 1992 to FY 1997. The factor used for this inflation was 1.1116.

Note: The LRIP quantities approved at Milestone II are 150 (1st year) and 250 (2nd year).

Funding for Seek Eagle is sent to Eglin and managed there.

b. (U) Quantity --

Development (RDT&E)	62	49	49
Procurement	N/A	10000	10000
Total	62	10049	10049

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (DEC 96 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 97 BY\$)	2464.1	2464.0	
(2) Quantity	10049	10049	
(3) Unit Cost	0.245	0.245	0.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 97 BY\$)	1932.7	1932.6	
(2) Quantity	10000	10000	
(3) Unit Cost	0.193	0.193	0.00

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Planning Estimate	695.0	-	-	695.0
Previous Changes:				
Economic	-29.1	-	-	-29.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+16.4	-	-	+16.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-12.7	-	-	-12.7
Current Changes:				
Economic	+12.5	-	-	+12.5
Quantity	-31.0	-	-	-31.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-110.3	-	-	-110.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-128.8	-	-	-128.8
Total Changes	-141.5	-	-	-141.5
Adjustments	-	+2679.4	-	+2679.4
Current Estimate	553.5	2679.4	-	3232.9

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	632.5	-	-	632.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+17.7	-	-	+17.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+17.7	-	-	+17.7
Current Changes:				
Economic	-	-	-	-
Quantity	-23.0	-	-	-23.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-95.8	+0.1	-	-95.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-118.8	+0.1	-	-118.7
Total Changes	-101.1	+0.1	-	-101.0
Adjustments	-	+1932.6	-	+1932.6
Current Estimate	531.4	1932.7	-	2464.1

(U) Approved Program Baseline revised the base year from FY 1992 to FY 1997. The factor used was 1.1116.

b. (U) Current Change Explanations --

(1)	RDT&E	(Dollars in Millions)	
		Base-Year	Then-Year
	Revised escalation indices. (Economic)	N/A	-2.3
	Economic adjustment for negative program change. (Economic)	N/A	+14.8
	Quantity variance associated with decrease of 5 units (Navy). (Quantity)	-8.8	-11.8
	Quantity variance associated with decrease of 8 units (Air Force). (Quantity)	-14.2	-19.2
	Rebaselined to recognize test program efficiencies and acquisition reform related contract savings (Navy) (Estimating)	-44.5	-43.5
	Adjustment for Current and Prior Inflation (Estimating)	+23.2	+25.6

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year
Rebaselined to recognize test program
efficiencies and acquisition reform related
contract savings (Air Force) (Estimating)

RDT&E Subtotal -118.8 -128.8

(2) Procurement.

Adjusted to agree with the APB (Estimating) +0.1 0.0

Procurement Subtotal +0.1 0.0

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Plan Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	-10.89	0.32

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Plan Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
N/A	--	--	--	--	--	--	--	--	0.27

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	DEC 94	DEC 94	N/A	DEC 94
Milestone II	OCT 96	OCT 96	N/A	DEC 96
Milestone III	SEP 02	MAR 02	N/A	MAR 02
(b)(1)				
Total Cost	695	3232.9	N/A	3232.9
Total Quantity	0	10049	N/A	10049
Prog Acq Unit Cost	0	0.32	N/A	0.32

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15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --
(U) AIM-9X:
HUGHES AIRCRAFT COMPANY, TUCSON AZ
N00019-95-C-0089, CPIF
Award: December 20, 1994
Definitized: December 20, 1994

Current Contract Price			Initial Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$22.6	N/A	0	\$22.1	N/A	\$25.1	\$25.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-2.4	\$-0.5
Cumulative Variances To Date (12/31/96)	\$-3.5	\$0.0
Net Change	\$-1.1	\$0.5

Explanation of Change:

(U) The majority of the variances were associated with Hughes' decision to maintain schedule while making flight test improvements. Of the total cost variance 61.7% was associated with the Guidance area. This was the area where the Government felt Hughes had the most uncertainty/risk. It is now believed that the uncertainty has been removed and the risk greatly reduced.

(U) Contract Comments:

The DEMVAL contract with Hughes is complete. This contract will be deleted in the next SAR.

(U) AIM-9X:
RAYTHEON COMPANY, BEDFORD, MA
N00019-95-C-0090, CPIF
Award: December 20, 1994
Definitized: December 20, 1994

Current Contract Price			Initial Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$24.9	N/A	0	\$24.9	N/A	\$27.8	\$28.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.4	\$-1.3
Cumulative Variances To Date (12/31/95)	\$-3.4	\$0.0
Net Change	\$-2.0	\$1.3

Explanation of Change:

(U) The majority of the Raytheon cost variances were attributed to additional support provided to the SDR and DTC efforts, airframe analysis and thermal environment modifications.

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15. (U) Contract Information (Cont'd):

(U) Contract Comments:

The Raytheon DEMVAL contract is complete. This contract will be deleted in the next SAR.

(U) AIM-9X:
Hughes Aircraft Co., Tuscon, AZ
N00019-97-C-0027, CPIF/AF
Award: December 13, 1996
Definitized: December 13, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$169.2	\$0.0	49

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$169.2	\$0.0	49

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$169.2	\$169.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

None.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY95-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-17)	<u>Total</u>
RDT&E	180.7	113.3	120.0	139.5	553.5
Procurement	-	-	-	2679.4	2679.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	180.7	113.3	120.0	2818.9	3232.9

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16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- AIM9X

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY97 Dollars Nonrec	Flyaway FY97 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				50.6	49.3
Subtotal				50.6	49.3

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY97 Dollars Nonrec	Flyaway FY97 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				28.3	28.1
1997				51.7	52.5
1998				58.0	60.1
1999				62.4	66.0
2000				39.7	42.9
2001				18.6	20.9
2002				7.9	8.9
2003				4.4	5.1
Subtotal	26			271.0	284.1

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY97 Dollars Nonrec	Flyaway FY97 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				19.1	19.0
1997				31.3	31.8
1998				51.3	53.2
1999				51.0	54.0
2000				38.7	41.8
2001				15.9	17.5
2002				2.5	2.8
Subtotal	23			209.8	220.1

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY97 Dollars Nonrec	Flyaway FY97 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	75	7.8	21.9	32.8	36.2
2001	125	6.3	26.9	37.8	42.7

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY97 Dollars Nonrec	Flyaway FY97 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	300	5.6	47.6	60.7	70.1
2003	300	4.0	48.3	59.8	70.8
2004	300	2.2	47.2	56.8	69.0
2005	300	2.1	46.6	56.0	69.8
2006	300	2.2	46.1	55.0	70.3
2007	300	2.1	45.7	54.5	71.5
2008	300	2.2	45.2	54.1	72.8
2009	300	2.1	44.9	53.7	74.2
2010	300	2.2	44.6	53.3	75.6
2011	300	2.1	44.9	54.2	78.9
2012	300	2.2	46.2	57.1	85.2
2013	300	2.1	46.2	56.8	86.9
2014	300	2.2	45.5	56.3	88.5
2015	300	2.1	45.4	56.2	90.5
2016	300	2.2	45.7	55.9	92.4
2017	300	2.2	45.8	55.6	94.4
Subtotal	5000	53.9	784.7	966.6	1339.8

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY97 Dollars Nonrec	Flyaway FY97 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	75	7.8	22.0	32.8	36.2
2001	125	6.3	26.9	37.7	42.6
2002	300	5.7	47.5	60.6	70.0
2003	300	4.0	48.3	59.6	70.6
2004	300	2.1	47.2	56.7	68.9
2005	300	2.2	46.7	56.0	69.8
2006	300	2.1	46.1	55.0	70.4
2007	300	2.2	45.6	54.5	71.5
2008	300	2.1	45.3	54.1	72.8
2009	300	2.2	44.9	53.7	74.2
2010	300	2.1	44.5	53.4	75.7
2011	300	2.2	44.9	54.2	78.9
2012	300	2.1	46.2	57.0	85.1
2013	300	2.2	46.2	56.8	87.0
2014	300	2.1	45.6	56.4	88.6
2015	300	2.2	45.3	56.1	90.4
2016	300	2.2	45.8	55.9	92.5
2017	300	2.1	45.7	55.6	94.4
Subtotal	5000	53.9	784.7	966.1	1339.6

(U) Funding for the Seek Eagle Program is budgeted outside of the Program

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AIM-9X, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):

Office for the weapon. Procurement funds do not include Seek Eagle funding of \$15.1M (FY00 - \$6.3M and FY 03 - \$8.8M).

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				50.6	49.3
Navy	5026	53.9	784.7	1237.6	1623.9
USAF	5023	53.9	784.7	1175.9	1559.7
Grand Total	10049	107.8	1569.4	2464.1	3232.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 81.5

(U) Percent Total Program Expended: 2.5%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The AIM-9X is a long-term evolution to the AIM-9 family, a fielded system. The estimate for these costs are as of the APB date of January 15, 1997. The costs are the direct costs to support the direct primary personnel and to operate this dual service air-to-air missile (excluding base operating support personnel). The system is procured with a warranty of 2000 hours or 120 months, whichever comes first, on all contractor furnished equipment (CFE). The AOTD, engine and warhead are to be provided as government furnished equipment (GFE). This estimate considers a fifteen (15) year service life and spans a thirty-three (33) year time period. Mission personnel costs address both Air Force and Navy squadrons (62 and 54 respectively). Unit consumption primarily relates to continual, annual training firings and depot maintenance includes system overhaul and component repair for out of warranty equipment and GFE. The sustaining support consists of replenishment spares and repair parts, support equipment replacement, sustaining program engineering staff and software maintenance. Contractor support covers the continuing interface requirement. Intermediate maintenance and indirect costs are as noted.

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18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

Cost Element	AIM-9X NAVY	AIM-9X AIR FORCE
Mission Pay & Allowances	0.6	1.0
Unit Level Consumption	0.4	1.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	1.2	0.3
Contractor Support	0.3	0.0
Sustaining Support	5.3	9.7
Indirect Costs	N/A	N/A
Total	7.8	12.0

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N-6 CEC

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: CEC

AS OF DATE: December 31, 1996

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CEC

1. (U) Designation and Nomenclature (Popular Name): Cooperative Engagement Capability

2. (U) DoD Component: Navy

Joint Participants:
None

3. (U) Responsible Office and Telephone Number:

Program Executive Officer (Theater Air Defense) Cooperative Engagement 2531 Jefferson Davis Highway
Arlington, VA 22242-5170
Mr. Michael J. O'Donnell
Assigned: December 1, 1996
DSN 332-7413; COMM (703) 602-7413

4. (U) Program Elements/Procurement Line Items:

RDT&E:

- (U) PE 0204152N (Shared) Project E0463 (Shared)
- (U) PE 0603755N (Shared) Project U2039
- (U) PE 0603658N Project U2039

PROCUREMENT:

- (U) APPN 1611 ICN 2300000000 (Navy) (Shared)
 - (U) APPN 1810 ICN 2606000000 (Navy)
 - (U) APPN 1506 ICN 3300000000 (Navy) (Shared)
- O&M:
- (U) PE 0708017N (Shared)

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DEPARTMENT OF DEFENSE

97-C-0156
M. O'Donnell
Director of Defense
Department of Defense

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97-C-0592

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5. (U) References:

SAR Baseline (Development Estimate):

(U) NAE Approved Acquisition Program Baseline dated July 10, 1995.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated July 10, 1995.

6. (U) Mission and Description:

(U) CEC significantly improves Battle Group (BG) Anti-Air Warfare (AAW) capability by coordinating all Battle Force AAW sensors into a single, real-time, composite track picture having fire control quality. CEC distributes sensor data from each ship and aircraft, or cooperating unit (CU) to all other CUs in the battle force through a real-time, line of sight, high data rate sensor and engagement data distribution network. CEC is highly resistant to jamming and provides accurate gridlocking between CUs. Each CU independently employs high capacity, parallel processing and advanced algorithms to combine all distributed sensor data into a fire control quality track picture which is the same for all CUs. CEC will significantly improve our Battle Force defense in depth, including both local area and ship defense capabilities against current and future AAW threats. Moreover, CEC can provide critical connectivity and integration of over-land air defense systems capable of countering emerging air threats, including land attack cruise missiles, in a complex littoral environment.

CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP) and Combat Systems modifications. The DDS encodes and distributes ownship sensor and engagement, is a high capacity, jam resistant, directive system providing a precision gridlocking and high throughput of data. The CEP is a high capacity distributed processor which is able to process force levels of data in a timely manner that allows its output to be considered real-time fire control data. This data is passed to the ship's combat system a fire control quality data for which the ship can cue its onboard sensors or use the data to engage targets without actually tracking them.

7. (U) Executive Summary:

(U) In January 1996, the Navy demonstrated advanced, experimental capabilities in Cruise Missile Defense. The demonstration, known as Mountain Top, employed an extended horizon engagement concept and included live missile firings from an AEGIS cruiser to intercept cruise missiles well beyond the ship's radar horizon. A Marine Corps HAWK battery also participated in the demonstration and successfully engaged several targets based on cueing of fire control illuminators by the AEGIS SPY radar via CEC. The technical objective of the demonstration was development of a network architecture to allow various sea and airborne radars and weapon systems to operate as an integrated composite air defense system. The integrated network was successfully demonstrated and was made possible by CEC. Efforts are underway to fully integrate CEC as part of the Marine Corps Air Defense Forces. The Army and Air Force have begun modeling and simulation of CEC in a distributed simulation environment, and

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7. (U) Executive Summary (Cont'd):

systems engineering is proceeding on the integration of CEC into the Air Force's Airborne Warning and Control System (AWACS) aircraft.

A software Preliminary Design Review (PDR) was conducted for the Data Distribution System (DDS) in April 1996 and for Power-Up Built-in Test/Maintenance Built in Test (PBIT/MBIT) in June 1996. In July 1996, a Preliminary Design Review (PDR) was conducted for the Common Equipment Set (CES) (AN/USG-2).

In early September 1996, CEC participated in ASCIET-96 (All Service Combat Integration Evaluation Team) exercises with joint forces. CEC equipped ships and aircraft completed their successful participation by providing improved track accuracy and continuity. On September 11, 1996, missile firing exercises employing CEC were successfully conducted off the Virginia Capes. During this exercise, target drones were successfully intercepted utilizing CEC cueing and engage-on-remote capability.

Initial Operational Capability (IOC) was achieved on September 30, 1996.

In October 1996, a System Design Review (SDR) was conducted for CEC/AEGIS Baseline 6, Theater Ballistic Missile Defense (TBMD) Tactical. In December 1996, a Critical Design Review (CDR) was conducted for the Common Equipment Set (CES) (AN/USG-2).

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	Yes
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

An updated Acquisition Program Baseline will be submitted within 30 days for approval. The RDT&E deviation is due to Congressional plus ups for additional

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8c. (U) Threshold Breaches (Cont'd):

scope and two additional years added to the program. The Production deviation was due to 21 additional units added to the program, restructuring of the units, and additional support costs.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone II	MAY 95	MAY 95	MAY 95
Development Contract Modification	MAY 95	MAY 95	JUN 95
Preliminary Design Review Complete	FEB 96	FEB 96	JUL 96
Critical Design Review Complete	AUG 96	AUG 96	NOV 96
Baseline System Initial Operational Capability	SEP 96	SEP 96	SEP 96
IOT&E (DT-IIB/OT-IIA)			
Start	MAY 97	MAY 97	MAY 97
Complete	JUL 97	JUL 97	JUL 97
LRIP Decision	DEC 97	DEC 97	DEC 97
Low Rate Production Contract Award	JAN 98	JAN 98	JAN 98
Service Final DT&E			
Start	MAR 98	MAR 98	MAR 98
Complete	APR 98	APR 98	APR 98
IOT&E - OPEVAL (OT-IIB)			
Start	MAY 98	MAY 98	APR 98 (Ch-1)
Complete	MAY 98	MAY 98	AUG 98 (Ch-1)
Milestone III	OCT 98	OCT 98	OCT 98
Full Rate Production Contract Award	NOV 98	NOV 98	NOV 98
Organic Support Date	JUL 00	JUL 00	JUL 00
Service Depot Support Date	JUL 00	JUL 00	JUL 00
Full Operational Capability	JUL 00	JUL 00	JUL 00

b. (U) Current Change Explanations --

(Ch - 1) The PM's Current Estimate has been adjusted due to ship/battlegroup scheduling. Start up has been advanced one month, completion delayed three months.

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10. (U) Performance Characteristics:

(b)(1)



b. (U) Current Change Explanations --
None.



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11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1030.4	1030.4	1202.0
Procurement	1150.3	1150.3	1394.1
Rollaway	(677.3)		(843.9)
Other Weapon Systems Cost	(473.0)		(550.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	41.2	41.2	47.3
Total FY 95 Base-Year \$	2221.9	2221.9	2643.4
Escalation	351.2	351.2	425.7
Development (RDT&E)	(57.8)	(57.8)	(68.1)
Procurement	(280.3)	(280.3)	(347.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(13.1)	(13.1)	(9.9)
Total Then Year \$	2573.1	2573.1	3069.1
b. (U) Quantity --			
Development (RDT&E)	9	9	11
Procurement	174	174	195
Total	183	183	206

(U) CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP) and Combat System modifications. The DDS encodes and distributes ownship sensor data and receives and decodes sensor data from other CUs. The CEP is a high capacity distributed processor that processes ownship and other CU data in a timely manner such that its output is considered real time fire control data. This data is then passed to the ship's combat system as fire control data which is used to cue onboard sensors or engage targets.

The major cost increase was due to the Q-70's requirement not previously budgeted, the restructuring of the initial production buy for LRIP, the addition of two RDT&E units (USG-2) and twenty-one production units, and Congressional Plus-ups for additional effort.

There are two SCN LRIP units. Procurement year for both is FY98.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JUL 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	2643.4	2221.9	
(2) Quantity	206	183	
(3) Unit Cost	12.832	12.142	+5.68
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	1394.1	1150.3	
(2) Quantity	195	174	
(3) Unit Cost	7.149	6.611	+8.14

(U) The PAUC/APUC cost increased for two main reasons:

- The Navy Comptroller action eliminated FY98 funds for the initial production buy for LRIP and the FY99 funds for the installation of equipment.
- CEC was directed to install color work stations (Q-70's) which were not previously budgeted to support the accelerated program.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	1088.2	1430.6	-	54.3	2573.1
Previous Changes:					
Economic	-5.5	-35.3	-	-3.3	-44.1
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+54.0	-	-	-	+54.0
Estimating	+1.3	+157.7	-	-	+159.0
Other	-	-	-	-	-
Support	-	-154.2	-	-	-154.2
Subtotal	+49.8	-31.8	-	-3.3	+14.7
Current Changes:					
Economic	-1.4	+7.3	-	+0.2	+6.1
Quantity	+8.0	+95.1	-	-	+103.1
Schedule	-	+33.0	-	-	+33.0
Engineering	+15.0	-	-	-	+15.0
Estimating	+110.5	-64.3	-	+6.0	+52.2
Other	-	-	-	-	-
Support	-	+271.9	-	-	+271.9
Subtotal	+132.1	+343.0	-	+6.2	+481.3
Total Changes	+181.9	+311.2	-	+2.9	+496.0
Current Estimate	1270.1	1741.8	-	57.2	3069.1

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	1030.4	1150.3	-	41.2	2221.9
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+52.9	-	-	-	+52.9
Estimating	+2.4	+149.3	-	-	+151.7
Other	-	-	-	-	-
Support	-	-145.8	-	-	-145.8
Subtotal	+55.3	+3.5	-	-	+58.8
Current Changes:					
Economic	-	-	-	-	-
Quantity	+7.7	+70.0	-	-	+77.7
Schedule	-	-	-	-	-
Engineering	+14.2	-	-	-	+14.2
Estimating	+94.4	-52.7	-	+6.1	+47.8
Other	-	-	-	-	-
Support	-	+223.0	-	-	+223.0
Subtotal	+116.3	+240.3	-	+6.1	+362.7
Total Changes	+171.6	+243.8	-	+6.1	+421.5
Current Estimate	1202.0	1394.1	-	47.3	2643.4

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.4
Development of Low Cost Common Equipment Set (LCCES)) Increase due to FY 1997 Congressional appropriations direction to accelerate "miniaturization" efforts. (Engineering)	+14.2	+15.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.3
Congressional and DOD Budget Adjustments (Estimating)	+94.6	+110.3
Refinement of prior estimate. (Estimating)	-0.4	-0.1
Quantity increase of 2 units, from 9 to 11. (Quantity)	+7.7	+8.0
RDT&E Subtotal	+116.3	+132.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+7.3
Quantity increase of 22 units, from 94 to 116 (OPN). (Quantity)	+73.3	+98.9

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Quantity decrease of 1 unit, from 50 to 49. (APN) (Quantity)	-3.3	-3.8
Restructuring of procurement buy profile. (Schedule)	0.0	+33.0
Additional support required for additional units (All). (Support)	+172.4	+207.6
Refinement of prior estimation. (Estimating)	-2.1	0.0
Correction to Reconcile Flyaway and Support Costs.	0.0	0.0
(Estimating)	-50.6	-64.3
(Support)	+50.6	+64.3
Procurement Subtotal	+240.3	+343.0

(3) O&M

Revised escalation indices. (Economic)	N/A	+0.2
To support additional units. (Estimating)	+5.0	+6.0
Refinement of prior estimate. (Estimating)	+1.1	0.0
O&M Subtotal	+6.1	+6.2

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
14.06	-0.18	-1.07	+0.16	+0.33	+1.03	--	+0.57	+0.84	14.90

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.22	-0.14	-0.40	+0.17	--	+0.48	--	+0.60	+0.71	8.93

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14c. (U) Unit Cost and Other History (Cont'd):

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	JUL 95	N/A	JUL 95
Milestone II	N/A	JUL 95	N/A	JUL 95
Milestone III	N/A	OCT 98	N/A	OCT 98
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	2573.1	N/A	3069.1
Total Quantity	N/A	183	N/A	206
Prog Acq Unit Cost	N/A	14.06	N/A	14.9

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

(U) DDS Design/Fabrication:
 E-Systems (ECI Division), St. Petersburg FL
 N00024-92-C-5230, CPAF/FF
 Award: June 1, 1992
 Definitized: January 31, 1996

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$429.6	\$0.0	22	\$368.8	\$397.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-10.4	\$-8.1
Cumulative Variances To Date (12/31/96)	\$-12.5	\$-14.4
Net Change	\$-2.1	\$-6.3

Explanation of Change:

(U) E-Systems unfavorable cost variance is due to T/R Modules effort in testing, production and vendor selection. Additional engineering effort in software design 2.1.2 was due to problems in algorithms and Circuit Card Assembly (CCA) design complexities. The unfavorable schedule variance is due to design complexities caused by late material ordering and manufacturing slips in the areas of TR Modules and in software design and testing. The schedule variance has had no impact to the critical path of the program. IOC was successfully completed on schedule September 1996. The delivery for the AN/USG-2 system is expected for February 1997 and IOT&E is scheduled to meet milestone dates.

(U) Contract Comments:

The number of units purchased is eleven USG-1 and an increase from nine to eleven USG-2 units.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-09)</u>	<u>Total</u>
RDT&E	842.5	144.3	87.6	195.7	1270.1
Procurement	0.5	47.4	76.9	1617.0	1741.8
MILCON	-	-	-	-	-
O&M	-	-	4.5	52.7	57.2
Total	843.0	191.7	169.0	1865.4	3069.1

b. Annual Summary -- CEC

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY95 Dollars Nonrec</u>	<u>Flyaway FY95 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994				203.3	202.2
1995				151.6	153.8
1996				252.8	261.7
1997				212.7	224.8
1998				133.7	144.3
1999				79.5	87.6
2000				41.1	46.2
2001				42.5	48.8
2002				42.4	49.8
2003				42.4	50.9
Subtotal	11			1202.0	1270.1

Appropriation: 1506 Aircraft Procurement, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY95 Dollars Nonrec</u>	<u>Flyaway FY95 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1997				0.5	0.5
1998				4.8	5.3
1999	1		5.7	9.8	11.0
2000	3		12.8	13.5	15.3
2001	1		4.3	6.1	7.1
2002	9		38.3	41.5	49.8
2003	6		25.5	36.7	45.1
2004	6		24.8	35.4	44.7
2005	6		24.2	35.5	46.0
2006	6		23.6	35.7	47.4
2007	6		23.0	35.8	48.8

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16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2008	5		18.7	29.1	40.7
2009				10.0	14.3
Subtotal	49		200.9	294.4	376.2

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996					
1997					
1998	2		27.8	37.4	42.1
1999	1		5.4	7.3	8.4
2000	1		4.8	6.5	7.6
2001	3		15.2	20.5	24.6
2002	5		22.2	29.9	36.9
2003	5		21.5	29.0	36.7
2004	4		18.9	25.4	33.0
2005	4		16.5	22.2	29.6
2006	4		17.6	23.9	32.6
2007	1		7.7	9.9	13.9
Subtotal	30		157.6	212.0	265.4

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998					
1999	9		38.5	51.5	57.5
2000	11		60.7	94.6	107.9
2001	9		59.8	89.9	104.8
2002	14		49.0	93.5	111.5
2003	15		50.1	89.8	109.7
2004	21		87.0	138.2	173.3
2005	18		65.7	123.1	158.3
2006	17		69.1	119.5	157.7
2007	2		5.5	61.0	82.6
2008				26.6	36.9
Subtotal	116		485.4	887.7	1100.2

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CEC, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 1804 Operation and Maintenance, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998					
1999				4.1	4.5
2000				4.6	5.2
2001				5.0	5.7
2002				5.5	6.4
2003				5.4	6.5
2004				5.6	6.6
2005				5.5	6.9
2006				4.8	6.2
2007				3.5	4.6
2008				2.4	3.2
2009				0.9	1.2
Subtotal				47.3	57.2

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	206		843.9	2643.4	3069.1

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	11	11
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 5.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 593.7

(U) Percent Total Program Expended: 19.3%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The CEC O&S costs include applicable costs in accordance with CAIG Operating & Support Cost Estimating Guide of May 1992.

1. MISSION PERSONNEL: The costs of maintenance personnel defined in the CEC Navy Training Plan of December 1993 are included. The costs of operations personnel and other mission personnel are excluded since CEC requires no system specific operators or support personnel.

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18a. (U) Operating and Support Costs (Cont'd):

2. O, I, & D MAINTENANCE: Costs for labor, overhead, material, and repair parts projected to be performed at O, I and D-level maintenance activities have been included.

3. CONTRACTOR SUPPORT: Costs for interim contractor Integrated Logistics Support (ILS) pending establishment of organic Navy capabilities are included.

4. SUSTAINING SUPPORT: The costs of continuing engineering support and software maintenance projected for Navy in-house facilities have been included. Also included are costs to provide, operate and maintain CEC training equipment at projected training sites. Costs for support equipment, and modification kit procurement/installation have not been included since there are no unique support equipment requirements and there are no currently planned modifications to CEC equipment.

5. PERSONNEL SUPPORT: Costs for initial training, permanent change of station (PCS) and medical support have been included. Training course costs for maintenance personnel are also included. There are no specific training course requirements for CEC operator personnel.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CEC Systems	Avg Annual Cost Per Antecedent System
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.2	0.0
Intermediate Maintenance	0.7	0.0
Depot Maintenance	0.1	0.0
Contractor Support	6.9	0.0
Sustaining Support	0.3	0.0
Indirect Costs	N/A	N/A
Total	8.2	0.0

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AF-5 B-1 CMUP - JDAM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)

PROGRAM: B-1 CMUP-JDAM

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): B-1 Conventional Mission Upgrade Program - JDAM (CMUP-JDAM)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

ASC/YD B-1B System Program Office	Col Robert H. Matthews
2275 D ST STE 16 MS 16	Assigned: May 1, 1994
WPAFB, OH 45433-7233	DSN 785-3281; COMM (937) 255-3281

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604226F

PROCUREMENT:

APPN 3010 ICN 0101126F (Air Force)

5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated January 25, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated January 25, 1995.

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

SAF/PAS

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B-1 CMUP-JDAM, December 31, 1996

6. Mission and Description:

The Air Force has established the requirement to enhance the capability of the B-1B Lancer to perform near precision attacks against all but heavily defended targets deep in enemy airspace during conventional operations. The requirement is satisfied with a material solution to provide the B-1B with improved lethality through the integration of near precision conventional weapons such as the Joint Direct Attack Munition (JDAM). As part of the advanced munitions integration, implementation of MIL-STD-1760 (1760) electrical interconnect system, communication upgrades and the Global Positioning System (GPS) is included. The B-1B CMUP is a modification program integrating predominantly non-developmental items to enhance aircraft conventional mission capabilities. After the JDAM incorporation (Block D), the B-1 will operate in only the conventional role. However, with some software development, the aircraft will be able to be rerolled to a nuclear platform should the need arise. For greater economy and efficiency, the B-1B program has chosen to pursue integrated "block" updates of software which combine development activities for capability upgrades and sustainment activities for deficiency corrections and increased reliability and maintainability. Once the content of a block is defined, it becomes an integrated effort, with activities dependent on each other. Therefore, the Acquisition O&M funds are included to capture the dependency of the development upgrades upon the sustainment activities. With the enhanced conventional capabilities available through the CMUP effort, the B-1 will maintain its role as the backbone of the Air Force's bomber fleet.

7. Executive Summary:

The December 31, 1995 SAR for the B-1B CMUP-JDAM included performance, schedule and cost parameters for the JDAM 1760/GPS/Communications integration efforts as well as the Computer Upgrade portion of the B-1B CMUP program. The B-1B CMUP-Computer was recently added to the Major Defense Acquisition Program (MDAP) List as a separate program. The B-1B System Program Office is currently staffing two new APBs to formally split this program. This SAR reflects only the JDAM portion of the B-1B CMUP even though the approved program reflects both the JDAM and computer portions of the B-1B CMUP. The B-1 Computer program parameters are now in a new stand-alone SAR entitled B-1B CMUP-Computer. The two separate SARs will align the B-1B programs as reported in the MDAP list.

Initial B-1 safe separation flight test of the JDAM weapon was completed on February 14, 1996. Block D B-1 CMUP-JDAM System Critical Design Review was successfully completed on May 15, 1996. All technical performance metrics are within expected ranges. All thresholds are being met, and several objectives are expected to be met. The priced options for the GPS/Comm and JDAM/1760 kit proof kits were exercised in May and June 1996, respectively, and are on track for kit deliveries in November 1997 and April 1998. The Acquisition Strategy Panel for the Block D production program was held June 3, 1996 and chaired by SAF/AQ. Congressional budget cycle added FY97 3010 to the program for the purposes of accelerating precision guided munitions onto the B-1B. A series of decision briefings was taken through the Air Force and OSD staffs on alternative program changes. The Air Force decision was to accelerate the fielding of JDAM with Towed Decoy onto the B-1. OSD concurred with this approach on November 13, 1996. This was accomplished by adding a Low Rate Initial Production (LRIP) for six kits to the GPS/Comm and Towed Decoy; and, a second LRIP for 18 kits to the JDAM/1760 production programs. The total number of kits did not change; only

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B-1 CMUP-JDAM, December 31, 1996

7. Executive Summary (Cont'd):

the buy profile changes. Funds were released into the FY97 3010 accounts for the B-1B CMUP-JDAM effort and issued to the B-1B System Program Office December 20, 1996. Undefined contract actions will be issued to authorize the contractor to proceed with the accelerated Block D LRIP and Towed Decoy kit procurements. Efforts were still in work on potentially authorizing one additional kit procurement using reprogrammed FY96 3600 funds. The initial weapons Integrated Product Team (IPT) meeting was held on December 16, 1996 to kick off the activity to proceed to the July 1, 1997 Milestone III decision for the GPS/Comm full-rate production portion of the B-1B CMUP-JDAM program. Modification of the first flight test aircraft began on September 17, 1996 followed by the second aircraft on December 16, 1996. Both modification efforts are on schedule to complete on July 30, 1997 and September 1, 1997 respectively.

An undefinitized contract action (UCA) modification was issued to the contractor January 24, 1997 to commence kit build for the B-1B CMUP-JDAM (Block D) acceleration efforts. This will result in an accelerated Initial Operational Capability (IOC) Required Assets Available (RAA) date of December 1998 (11 months/30 months early) for both the GPS/Comm and JDAM/1760 portions of the Block D program.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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B-1 CMUP-JDAM, December 31, 1996

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Milestone I	APR 93	APR 93	APR 93	
Milestone II	JAN 95	JAN 95	JAN 95	
Development Contract Award				
JDAM/1760	FEB 95	FEB 95	MAR 95	
GPS/Communications	FEB 95	FEB 95	MAR 95	
Computer	N/A	JAN 96	N/A	(Ch-1)
Critical Design Review Complete				
JDAM/1760	APR 96	APR 96	MAY 96	
GPS/Communications	APR 96	APR 96	MAY 96	
Computer	N/A	JUN 98	N/A	(Ch-1)
Service Final DT&E				
JDAM/1760				
Start	AUG 97	AUG 97	AUG 97	
Complete	JUN 98	JUN 98	JUN 98	
GPS Communications				
Start	AUG 97	AUG 97	AUG 97	
Complete	JUN 98	JUN 98	JUN 98	
Computer				
Start	N/A	JAN 00	N/A	(Ch-1)
Complete	N/A	SEP 00	N/A	(Ch-1)
Low Rate Production Contract				
Award				
JDAM/1760	DEC 96	DEC 96	JUN 96	
GPS/Communications	FEB 96	FEB 96	MAY 96	(Ch-2)
Computer	N/A	JAN 00	N/A	(Ch-1)
Low Rate Initial Production				
First Delivery				
JDAM/1760	SEP 98	SEP 98	APR 98	
GPS/Communications	NOV 97	NOV 97	NOV 97	
Computer	N/A	JUL 01	N/A	(Ch-1)
IOT&E				
JDAM/1760				
Start	AUG 97	AUG 97	AUG 97	
Complete	JUN 98	JUN 98	SEP 98	(Ch-3)
GPS/Communications				
Start	AUG 97	AUG 97	AUG 97	
Complete	JUN 98	JUN 98	SEP 98	(Ch-3)
Computer				
Start	N/A	SEP 00	N/A	(Ch-1)
Complete	N/A	JAN 01	N/A	(Ch-1)
Milestone III-JDAM/1760	JAN 99	JAN 99	DEC 98	(Ch-4)
Milestone III	JAN 97	JAN 97	JUL 97	(Ch-5)
-GPS/Communications				
Milestone III-Computer	N/A	JAN 01	N/A	(Ch-1)
Full Rate Production Contract				
Award				
JDAM/1760	JAN 99	JAN 99	DEC 98	(Ch-4)

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B-1 CMUP-JDAM, December 31, 1996

9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
GPS/Communications	JAN 97	JAN 97	JUL 97	(Ch-5)
Computer	N/A	JAN 01	N/A	(Ch-1)
Organic Support Capability				
Date				
JDAM/1760	JUL 01	JUL 01	MAY 00	
GPS/Communications	NOV 99	NOV 99	NOV 99	
Computer	N/A	DEC 02	N/A	(Ch-1)
Service Depot Support Date				
JDAM/1760	JUL 01	JUL 01	MAY 00	
GPS/Communications	NOV 99	NOV 99	NOV 99	
Computer	N/A	MAR 03	N/A	(Ch-1)
Initial Operational				
Capability (IOC)				
JDAM/1760	JUL 01	JUL 01	DEC 98	(Ch-6)
GPS/Communications	NOV 99	NOV 99	DEC 98	(Ch-6)
Computer	N/A	JAN 03	N/A	
Computer	JAN 03	JAN 03		

Footnotes:

Milestone I is considered to have occurred upon issuance of USD(A) memo to SECAF, April 30, 1993, B-1B Program Decision.

Low Rate Production Contract Award is defined as the contract award for the kit proof upgrade kit.

Low Rate Initial Production First Delivery is defined as the delivery of the first kit proof upgrade kit.

Full Rate Production Contract Award is defined as the production contract award for follow-on upgrade kits.

Organic Support Capability Date is the date O&I level maintenance is in place at main operating base.

Depot Support Date is the date organic depot support is declared or contract depot support is in place.

Initial Operational Capability is agreed to by HQ/Air Combat Command (ACC) as the Required Assets Available (RAA) date.

RAA is defined as the date assets consisting of three modified aircraft, a total of three modified module/launchers, associated O-level support equipment, O-level spares, verified O-level maintenance and flight manuals, and source data to support training systems, programs and courses are delivered to the using command.

b. Current Change Explanations --

(Ch 1) - All schedule categories applicable to Computer were changed to reflect "N/A" in the "Current Estimate" pursuant with the transition of the Computer

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B-1 CMUP-JDAM, December 31, 1996

9b. Schedule (Cont'd):

program to separate APB and SAR reporting. This corresponds with the way the B-1B is reflected on the MDAP list. New APBs for both Computer and JDAM are in coordination/approval process.

(Ch 2) - The GPS/Comm contract award date was updated to reflect actual issue date of the contract modification for the kit proof kit. No impact to the baseline program.

(Ch 3) - The IOT&E completion dates for the JDAM/1760 and Global Positioning System/Communications (GPS/Comm) were updated to reflect the completion date of Air Force Operational Test and Evaluation Center (AFOTEC) dedicated Initial Operational Test and Evaluation (IOT&E) flight test activities. Previous date reflected completion of Combined Test Force (CTF)/AFOTEC combined Development Test and Evaluation (DT&E)/IOT&E flight test activities.

(Ch 4) - The Joint Direct Attack Munition/MIL-STD-1760 Electrical Interface (JDAM/1760) Milestone III and Full Rate Production Contract Award dates reflect the revised estimate in completing flight test data analysis in support of the Avionics Flight Software and System Functional Configuration Audit activities. Revised dates are still within the APB threshold date and does not impact the JDAM/1760 production program.

(Ch 5) - The GPS/Comm Milestone III and Full Rate Production Contract Award dates changed to reflect originally planned authorization dates. Previous reported dates (January 1997) reflected Government Furnished Property (GFP) authorization for GPS/Comm in advance of Milestone III (accomplished on schedule). The current estimate (same as threshold date) reflects actual plan for this milestone. No impact to meeting GPS 2000 mandate.

(Ch 6) - The Initial Operations Capability dates for both JDAM/1760 and GPS/Comm were moved to reflect the acceleration of the Block D program.

10. Performance Characteristics:

a. Performance --

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Accurate GPS-Aided Munition	Capabil- ity to airborne retarget GPS- aided munition (intent JDAM)	Capabil-/ ity to / airborne/ retarget/ GPS- / aided / munition/ (intent / JDAM) /	TBD	Capabil- ity to airborne retarget GPS- aided munition (intent JDAM)
Mission Capable (MC) Rate (%)	75	75 / 65	TBD	65

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B-1 CMUP-JDAM, December 31, 1996

10a. Performance Characteristics (Cont'd):

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Supportability				
CWIU MTBF (hrs)	3000	3000 / 1000	TBD	1600

Note (For information only): Basic performance factors for the B-1B (speed, weight, range, terrain following/avoidance performance) will not be significantly affected by the CMUP-JDAM integration effort.

1. Mission Capable (MC) Rate as expressed applies to the overall fleet aircraft wartime mission capable rate. The integration of the weapons upgrade modifications will not cause the fleet MC rate to degrade below the threshold value. For information only - the following reliability and maintainability parameters are specified in the weapons upgrade contract specifications: mean time between critical failure, mean time between unscheduled maintenance, maintenance manhours per flight hour, and max/mean repair time on equipment. These parameters will be used to support MC rate calculations.

2. OSD/WSIG requested the addition of a supportability parameter that measures and tracks the weapon system upgrade reliability. The agreed to parameter is the mean time between failure (MTBF) of the Conventional Weapons Interface Unit (CWIU). This parameter was selected because this line replacable unit (LRU) is the only conventional system carriage modification item that requires development. The specified values for the threshold and objectives are for system maturity. System maturity for the CMUP weapons upgrade occurs at IOC plus 15,000 operating flight hours.

b. Current Change Explanations -- None.

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B-1 CMUP-JDAM, December 31, 1996

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	405.1	565.0	342.6
Procurement	199.0	373.5	208.4
Recurring Flyaway	(178.5)		(187.6)
Nonrecurring Flyaway	(4.1)		(1.4)
Total Flyaway	(182.6)		(189.0)
Total Other Wpn Sys			(0.0)
Peculiar Support	(3.0)		(8.3)
Initial Spares	(13.4)		(11.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	246.3
Total FY 95 Base-Year \$	604.1	938.5	797.3
Escalation	68.8	149.3	53.8
Development (RDT&E)	(30.6)	(53.8)	(16.6)
Procurement	(38.2)	(95.5)	(26.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(10.9)
Total Then Year \$	672.9	1087.8	851.1

The Acquisition O&M is included here in the Current Estimate to capture the integrated nature of B-1B software updates. For greater economy and efficiency, the B-1B program has chosen to pursue integrated "block" updates of software which combine development activities for capability upgrades and sustainment activities for deficiency corrections and increased reliability and maintainability. Once the content of a block is defined, it becomes an integrated effort, with activities dependent on each other. Therefore, the Acquisition O&M funds are included to capture the dependency of the development upgrades upon the sustainment activities. The Acquisition O&M funds will be included in the updated APB as an administrative change.

The Current Estimate and the Development Estimate have deleted the Computer Upgrade program included in previous CMUP-JDAM SARs. A separate CMUP-Computer SAR has been accomplished for the December 31, 1996 submittal. Separate APBs are in the coordination/approval process. APB for CMUP-JDAM will be updated again at Milestone III which is scheduled for December 1998.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	95	95	95
Total	95	95	95

The procurement quantity of 95 in 11b. represents the number of operational aircraft being modified under the B-1 CMUP-JDAM program; however, as this is a modification program, the quantities specified in section 16b. represent procured modification kit quantities.

In the APB, Low Rate Production Contract Award is defined as the contract award for the kit proof upgrade kit. The Low Rate Initial Production First Delivery is

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B-1 CMUP-JDAM, December 31, 1996

11b. Total Program Cost and Quantity (Cont'd):

defined in the APB as delivery of the first kit proof upgrade kit. The kit proof upgrade kit quantities are 1 for GPS and 3 for JDAM.

c. Foreign Military Sales --
None

d. Nuclear Costs --
None

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (JAN 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	937.4	938.5	
(2) Quantity	95	95	
(3) Unit Cost	9.867	9.879	-0.12
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	362.1	373.5	
(2) Quantity	95	95	
(3) Unit Cost	3.812	3.932	-3.05

The UCR Baseline above reflects the current approved Acquisition Program Baseline (APB) dated January 25, 1995, which includes the CMUP Computer Upgrade program. Therefore, in order to make a valid comparison for Nunn McCurdy unit cost purposes, the Current Estimate column above also includes the CMUP Computer Upgrade program.

A separate CMUP Computer Upgrade SAR has been submitted for the December 1996 reporting period. Separate APBs are in coordination/approval process, and separate Nunn McCurdy unit cost reporting will be done in subsequent SarS.

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B-1 CMUP-JDAM, December 31, 1996

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	435.7	237.2	-	-	672.9
Previous Changes:					
Economic	-8.8	-11.2	-	-	-20.0
Quantity	-	-	-	-	-
Schedule	-	-0.3	-	-	-0.3
Engineering	+3.6	-	-	-	+3.6
Estimating	-56.4	-3.4	-	-	-59.8
Other	-	-	-	-	-
Support	-	+4.1	-	-	+4.1
Subtotal	-61.6	-10.8	-	-	-72.4
Current Changes:					
Economic	-0.9	-1.2	-	-	-2.1
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-14.0	+9.6	-	+257.2	+252.8
Other	-	-	-	-	-
Support	-	-0.1	-	-	-0.1
Subtotal	-14.9	+8.3	-	+257.2	+250.6
Total Changes	-76.5	-2.5	-	+257.2	+178.2
Current Estimate	359.2	234.7	-	257.2	851.1

Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	405.1	199.0	-	-	604.1
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+3.5	-	-	-	+3.5
Estimating	-52.3	-3.1	-	-	-55.4
Other	-	-	-	-	-
Support	-	+3.0	-	-	+3.0
Subtotal	-48.8	-0.1	-	-	-48.9
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-13.7	+9.5	-	+246.3	+242.1
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-13.7	+9.5	-	+246.3	+242.1
Total Changes	-62.5	+9.4	-	+246.3	+193.2
Current Estimate	342.6	208.4	-	246.3	797.3

The Acquisition O&M is included here to capture the integrated nature of B-1B

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B-1 CMUP-JDAM, December 31, 1996

13a. Cost Variance Analysis (Cont'd):

software updates. For greater economy and efficiency, the B-1B program has chosen to pursue integrated "block" updates of software which combine development activities for capability upgrades and sustainment activities for deficiency corrections and increased reliability and maintainability. Once the content of a block is defined, it becomes an integrated effort, with activities dependent on each other. Therefore, the Acquisition O&M funds are included to capture the dependency of the development upgrades upon the sustainment activities. The Acquisition O&M funds will be included in the updated APB as an administrative change.

The Current Estimate has deleted the Computer Upgrade program included in previous CMUP-JDAM SARs. A separate CMUP-Computer SAR has been accomplished for the December 31, 1996 submittal. Separate APBs are in the coordination/approval process. APB for CMUP-JDAM will be updated again at Milestone III which is scheduled for December 1998.

b. Current Change Explanations --

		(Dollars in Millions)	
		<u>Base-Year</u>	<u>Then-Year</u>
(1)	<u>RDT&E</u>		
	Revised escalation indices (Economic)	N/A	-0.9
	Adjustment for current and prior year inflation (Estimating)	+0.5	+0.5
	Revised estimate for test program (Estimating)	-14.2	-15.0
	RDT&E Subtotal	<u>-13.7</u>	<u>-15.4</u>
(2)	<u>Procurement</u>		
	Revised escalation indices (Economic)	N/A	-1.2
	Adjustment for current and prior year inflation (Estimating)	0.0	+0.1
	Adjustment of estimate to reflect JDAM Acceleration (Estimating)	+9.5	+9.5
	Change in support equipment and spares estimates to reflect JDAM Acceleration (Support)	0.0	-0.1
	Procurement Subtotal	<u>+9.5</u>	<u>+8.3</u>
(3)	<u>O&M</u>		
	Acquisition related costs not previously reported. (Estimating)	+246.3	+257.2
	O&M Subtotal	<u>+246.3</u>	<u>+257.2</u>

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B-1 CMUP-JDAM, December 31, 1996

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.08	-0.23	--	--	+0.04	+2.03	--	+0.04	+1.88	8.96

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.50	-0.13	-0.01	--	--	+0.07	--	+0.04	-0.03	2.47

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	APR 93	N/A	APR 93
Milestone II	N/A	JAN 95	N/A	JAN 95
Milestone III	N/A	JAN 99	N/A	DEC 98
FUE/IOC	N/A	JUL 01	N/A	DEC 98
Total Cost	N/A	672.9	N/A	851.1
Total Quantity	N/A	95	N/A	95
Prog Acq Unit Cost	N/A	7.08	N/A	8.96

The Acquisition O&M is included here to capture the integrated nature of B-1B software updates. For greater economy and efficiency, the B-1B program has chosen to pursue integrated "block" updates of software which combine development activities for capability upgrades and sustainment activities for deficiency corrections and increased reliability and maintainability. Once the content of a block is defined, it becomes an integrated effort, with activities dependent on each other. Therefore, the Acquisition O&M funds are included to capture the dependency of the development upgrades upon the sustainment activities. The Acquisition O&M funds will be included in the updated APB as an administrative change.

The Current Estimate and the SAR Development Estimate have deleted the Computer Upgrade program included in previous CMUP-JDAM SARs. A separate CMUP-Computer SAR has been accomplished for the December 31, 1996 submittal. Separate APBs are in the coordination/approval process. APB for CMUP-JDAM will be updated again at Milestone III which is scheduled for December 1998.

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B-1 CMUP-JDAM, December 31, 1996

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --			Initial Contract Price		
<u>CMUP EMD:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Rockwell International, Seal Beach CA					
F33657-94-C-0001, CPAF			\$261.7	N/A	0
Award: March 16, 1995					
Definitized: March 16, 1995					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$275.0	N/A	0	\$273.0	\$273.0	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.3	\$-0.2
Cumulative Variances To Date (11/01/96)	<u>\$-1.5</u>	<u>\$-1.8</u>
Net Change	\$-1.8	\$-1.6

Explanation of Change:

The cost and schedule variances are based on data from the program's Cost Performance Report (CPR) of November 1, 1996 and have deleted the Computer Upgrade portion being reported in a separate SAR. The small cost and schedule variances have no impact to the contract or program.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-04)</u>	<u>Total</u>
RDT&E	281.3	76.0	1.9	-	359.2
Procurement	52.0	62.6	60.9	59.2	234.7
MILCON	-	-	-	-	-
O&M	206.7	50.1	0.4	-	257.2
Total	540.0	188.7	63.2	59.2	851.1

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B-1 CMUP-JDAM, December 31, 1996

16b. Program Funding Summary (Cont'd):

b. Annual Summary -- B-1 CMUP-JDAM

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994			1.1	1.1	1.1
1995			53.2	53.1	54.0
1996			121.9	121.9	126.3
1997			94.4	94.4	99.9
1998			70.3	70.4	76.0
1999			1.7	1.7	1.9
Subtotal			342.6	342.6	359.2

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	4	0.5	4.2	7.5	8.0
1997	46	0.9	37.0	40.4	44.0
1998	87		54.7	56.3	62.6
1999	66		51.1	53.4	60.9
2000	18		40.6	44.8	52.0
2001				2.8	3.3
2002				2.0	2.4
2003				1.0	1.2
2004				0.2	0.3
Subtotal	221	1.4	187.6	208.4	234.7

The B-1 CMUP-JDAM program consists of a Global Positioning System (GPS) with a Communication upgrade (Comm) and a Mil-Std 1760 Weapon Interface Unit (1760) with rotary launcher modifications for JDAM carriage. The quantities in Sec 16b. table are the kit quantities (e.g. FY96 procures 3 JDAM/1760 launcher kits and 1 GPS/Comm kit). The GPS/Comm kit buy schedule (FY96-FY98) is 1,28,66 with installations (FY98-FY00) of 7,22,66 to comply with the GPS 2000 mandate. Installation funding is provided in the year install occurs. The 1760/JDAM buy schedule (FY96-FY00) 3,18,21,66,18 procures 126 rotary launcher kits and is an organizational/intermediate level installation. In FY01-FY04 there are no quantity buys as funding is for support and spares only.

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B-1 CMUP-JDAM, December 31, 1996

16b. Program Funding Summary (Cont'd):

Appropriation: 3400 Operation & Maintenance, Air Force

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995				76.8	78.0
1996				51.0	52.8
1997				71.7	75.9
1998				46.4	50.1
1999				0.4	0.4
Subtotal				246.3	257.2

The Acquisition O&M is included here to capture the integrated nature of B-1B software updates. For greater economy and efficiency, the B-1B program has chosen to pursue integrated "block" updates of software which combine development activities for capability upgrades and sustainment activities for deficiency corrections and increased reliability and maintainability. Once the content of a block is defined, it becomes an integrated effort, with activities dependent on each other. Therefore, the Acquisition O&M funds are included to capture the dependency of the development upgrades upon the sustainment activities. The Acquisition O&M funds will be included in the updated APB as an administrative change.

The December 31, 1995 SAR included the B-1B CMUP-Computer funding which is being reported in a separate SAR beginning with this December 31, 1996 submittal.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	221	1.4	530.2	797.3	851.1

17. Delivery/Expenditure Information:

a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 325.9

Percent Total Program Expended: 38.3%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

This estimate was prepared by ASC/YDF as part of the Current Estimate.

The B-1 CMUP-JDAM/GPS/Comm Cost Analysis Requirements Description and Service Cost Position estimate were used as the basis for this estimate. The HQ ACC/XPM Manpower Estimate Report was used with a "beddown" O&S Phase In of FY98-FY01 and

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B-1 CMUP-JDAM, December 31, 1996

18a. Operating and Support Costs (Cont'd):

Steady State FY02-FY26. A 1.48 Utilization Factor (Equip Op Hrs per Flying Hour) was used for 95 aircraft at 374/FH/Acft/Yr.

Per CAIG direction, O&S costs do not include software maintenance.

There is no antecedent system.

b. Costs -- (FY 1997 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 95 B-1 Aircraft CMUP Modifications	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	52.1	0.0
Unit Level Consumption	30.5	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	32.7	0.0
Indirect Costs	5.9	0.0
Total	121.2	0.0

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A-8 BRADLEY FVS UPGRADE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: BFVS A3 Upgrade

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): Bradley Fighting Vehicle Systems
(BFVS) A3 Upgrade

2. DoD Component: Army

3. Responsible Office and Telephone Number:

U.S. Army Tank-Automotive Command COL Joseph L Yakovac (P)
PM, Bradley Fighting Vehicle Systems Assigned: August 22, 1994
ATTN: SFAE-GCSS-W-BV. DSN 786-5630; COMM (810) 574-5630
Warren, MI 48397-5000

4. Program Elements/Procurement Line Items:

RDT&E:

PE 23735 Project 332, 371, 2TT

PROCUREMENT:

APPN 2033 ICN G20900 (Army) (Shared)

APPN 2033 ICN G80717 (Army)

5. References:

SAR Baseline (Development Estimate):

AAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated October 4, 1996.

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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BFVS A3 Upgrade, December 31, 1996

6. Mission and Description:

The upgraded Bradley Fighting Vehicle (BFV), M2A3 Infantry Fighting Vehicle (IFV) and M3A3 Cavalry Fighting Vehicle (CFV) will facilitate enhanced command and control, provide greater lethality, provide mobile protected transport of an infantry squad to critical points on the battlefield and perform cavalry scout and other claimant (Bradley equipped Fire Support and Stinger Teams) missions in the 21st century. Upgrades in this program include advanced technology in the areas of command and control, lethality, survivability, mobility, and sustainability required to defeat current and future threat forces while remaining operationally compatible with the main battle tank. The M2A3/M3A3 will provide overwatching fires to support the dismounted infantry, and suppress/defeat enemy tanks, reconnaissance vehicles, IFV, armored personnel carriers, bunkers, dismounted infantry, and attack helicopters. The infantry version (M2A3) of the A3BFV is used most often to close with the enemy by means of fire and maneuver. The primary tasks performed by the cavalry version (M3A3) as part of a troop and/or squadron are reconnaissance, security, and flank guard missions. The Bradley Fire Support Team vehicle (BFIST) variant acquires targets and coordinates all indirect fire support assets. The Stinger claimant version provides close in air defense from aerial attack, missile attack, and surveillance.

7. Executive Summary:

The Bradley A3 effort is part of the overall Bradley Modernization program aimed at upgrading the existing fleet by correcting deficiencies identified in the 1994-2008 Battlefield Development Plan, while accomplishing the intent of the Bradley Base Sustainment Program approved by the Secretary of Defense as part of the FY94 Amended Budget Submission. The BFVS is on the Department of the Army's Industrial Preparedness Planning List, making it essential to the Army combat needs to domestically manufacture/remanufacture these vehicles. Acquisition Decision Memorandum (ADM) approval was received on Mar 29, 1994.

A successful Critical Design Review in Jan 1996 kept the program on track for first prototype vehicle deliveries in Sep 1996 and as of Dec 31, 1996, 6 of 8 prototypes were delivered. An Integrated Baseline Review was conducted in Feb 1996 which examined the technical, budget and schedule components of the contract baseline. An Army Systems Acquisition Review Council (ASARC) Integrated Product Team (IPT) kickoff meeting was held in Jul 1996 leading the way to the LRIP ASARC scheduled for Jul 1997.

The Bradley A3 program was designated as one of the five pilot programs for the Functional Area Assessment (FAA) integrated test and evaluation program. The A3 FAA IPT restructured the A3 Test Evaluation Master Plan (TEMP) with a streamlined Development Test/Operational Test (DT/OT) strategy. The TEMP has been approved at DUSA (OR) and is at OSD for signature. The Production Qualification Test-Contractor (PQT-C) was initiated in Oct 1996, and the Production Qualification Test-Government (PQT-G) was initiated in Dec 1996 on test vehicles containing the first software release. The next two software releases are scheduled for Feb 1997 and Apr 1997.

An extensive cost reduction plan was developed, validated and formally submitted to the Army to reduce the production and program cost of the A3. The review was coordinated with the prime contractor and planning is underway to include this

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BFVS A3 Upgrade, December 31, 1996

7. Executive Summary (Cont'd):

strategy in the Program Office Estimate as part of the initial Jul 1997 ASARC cost documentation. The proposed changes, which include multi-year procurements with the prime and Improved Bradley Acquisition System (IBAS) are detailed in Section 12j, and will nullify the Nunn-McCurdy breach.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	Yes
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	Yes
Average Procurement Unit Cost	Yes

c. Explanation of Breach:

The program is reporting an APB breach. Major contributions to the procurement cost increases are incorporation of Horizontal Technology Integration (HTI) efforts and improved estimates of the prime's subcontractor costs, Improved Bradley Acquisition System (IBAS) and 2nd Generation Forward Looking Infra Red (FLIR) costs.

The program is reporting a Nunn-McCurdy cost breach in both the PAUC and APUC. An extensive cost reduction plan is detailed in Section 12j (Future Actions).

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone IV	JAN 94	JAN 94	JAN 94
Development Contract Award	APR 94	MAY 94	MAY 94
Preliminary Design Review	JUN 94	MAR 95	JUL 95
Critical Design Review	OCT 94	SEP 95	JAN 96
1st Low Rate Initial Production (LRIP Award)	FEB 96	JUL 97	JUL 97
Pre-Production Qualification Test (PPQT)			
Start	AUG 95	OCT 96	OCT 96
Complete (Government)	MAY 96	JUL 97	JUL 97
2nd LRIP Award	OCT 96	MAY 98	MAY 98
PQT			

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BFVS A3 Upgrade, December 31, 1996

9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Start	NOV 97	OCT 98	OCT 98
Complete	JUN 98	JUL 99	AUG 99
1st LRIP Vehicle Deliveries	AUG 97	OCT 98	OCT 98
3rd LRIP Award	OCT 97	DEC 98	DEC 98
2nd LRIP Vehicle Deliveries	MAY 98	AUG 99	AUG 99
Initial Operation Test & Evaluation (IOT&E)			
Start	FEB 98	MAR 99	MAR 99
Complete	JUN 98	JUL 99	JUL 99
First Unit Equipped (FUE)	SEP 98	APR 00	AUG 00
Milestone III	NOV 98	NOV 99	NOV 99
3rd LRIP Vehicle Deliveries	MAY 00	APR 00	APR 00

b. Current Change Explanations -- None.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Command and Control:				
The command & control system must comply with the Army Standard Protocol	MIL-STD-188-220	MIL-STD-188-220 / MIL-STD-188-220	TBD	MIL-STD-188-220
The command & control system must communicate fully with the command and control system employed by the armored forces	Combined Arms Command and Control	Combined/ Army Arms / Brigade Command / and / below Control /	TBD	Future Battle Command Brigade and Below
Lethality:				
Improve the target acquisition and fire control system	Dual track and auto track with IBAS and CIV	Dual / track / and / auto / track / with / IBAS / CIV	TBD	Dual track and Auto track with IBAS
Survivability:				
NBC protection for dismount element while in vehicle	Ventilated face pieces	Ventila- / ted / face / pieces	TBD	Ventilat ed Face Pieces
Mobility:				

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BFVS A3 Upgrade, December 31, 1996

10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
	16	16 / 16	TBD	16
Ability of the BFVS to navigate in all weather conditions with GPS (accuracy plus or minus in meters)				
The driver display will present navigational information	GPS informa- tion and map	GPS / GPS Informa- tion / Informa- tion and map /	TBD	GPS Informat ion
Maintain cross-country mobility with main battle tank	M1A2 Tank	M1A2 / M1A2 Tank / Tank	TBD	M1A2 Tank
RAM (Mean Miles Between Failure)	N/A	500 / 400	TBD	400
Integrated Logistics Support:				
Systems fault isolation capability to provide unambiguous fault isolation to:	95	95 / 95	TBD	95
Mission critical Line Replaceable Units (LRU) (% of the time)				
Non-Mission critical LRUS (% of the time)	90	90 / 90	TBD	90

The EMD testing phase is planned to occur Nov 96 through Sep 97. At completion of the testing, demonstrated performance will be determined and reported.

b. Current Change Explanations -- None.

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BFVS A3 Upgrade, December 31, 1996

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	394.1	419.1	430.1
Procurement	2703.2	3036.7	3982.1
Non-recurring	(27.9)		(50.3)
Recurring	(2476.8)		(3625.9)
Total Rollaway	(2504.7)		(3676.2)
Training Devices	(53.1)		(73.1)
Other	(58.2)		(105.9)
Total Other Wpn Sys	(111.3)		(179.0)
Peculiar Support	(40.1)		(15.7)
Initial Spares	(47.1)		(111.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	107.7
Total FY 94 Base-Year \$	3097.3	3455.8	4519.9
Escalation	941.5	670.6	1144.2
Development (RDT&E)	(31.4)	(27.9)	(28.0)
Procurement	(910.1)	(642.7)	(1090.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(26.0)
Total Then Year \$	4038.8	4126.4	5664.1
b. Quantity --			
Development (RDT&E)	2	0	0
Procurement	1600	1602	1602
Total	1602	1602	1602

Note: Excludes 8 RDTE prototypes from the SAR Baseline and 8 from the Current Estimate that are not considered fully configured.

The current approved LRIF quantity is 131, which is less than 10% of the total procurement quantity.

Two fully configured vehicles originally planned to be funded by RDT&E are now going to be funded by the Procurement Appropriation.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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BFVS A3 Upgrade, December 31, 1996

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 96 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	4519.9	3455.8	
(2) Quantity	1602	1602	
(3) Unit Cost	2.821	2.157	+30.78
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	3982.1	3036.7	
(2) Quantity	1602	1602	
(3) Unit Cost	2.486	1.896	+31.12
	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 96 APB)	Percent Change
c. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (TY\$)	5664.1	4126.4	
(2) Unit Cost	3.536	2.576	+37.27
d. Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	5072.3	3679.4	
(2) Unit Cost	3.166	2.297	+37.83
e. Changes from Previous SAR (DEC 95)	Dollars/Qty	Percent	
(1) PAUC (BY\$)	0.659	+30.48	
(2) APUC (BY\$)	0.585	+30.78	
(3) PAUC Quantity	0	0.00	
(4) PAUC (TY\$)	0.953	+36.90	
(5) APUC (TY\$)	0.862	+37.41	
f. Initial SAR Information			
Initial SAR Date (DEC 93):			
(1) Program Acquisition Cost (BY\$)	1.9		
(2) Program Acquisition Cost (TY\$)	2.6		

g. Unit Cost PAUC Changes --

□ Major changes to the PAUC and APUC are procurement increases resulting from Horizontal Technology (HTI) development efforts, Improved Bradley Acquisition System (IBAS), 2nd Generation Forward Looking Infra Red (FLIR), and the prime's sub-contractor estimates based on knowledge and experience gained in the development phase. These procurement changes as well as funding reductions in the POM years have extended the procurement schedule which further increased the unit cost.

Also contributing to the PAUC is the increased cost of refurbishment which resulted in the addition of OMA costs. The previous concept for the A3 was to inspect common A2 parts and repair only as necessary, not make them like new. The cost of this effort was minimal and was included in the production unit cost of the vehicle. The current approach is to align the vehicle with the fleet management concept of fielding the best vehicle to lower the maintenance cost of the fleet. More knowledge and experience was also gained about the specific vehicles that will be inducted and the condition of these vehicles.

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BFVS A3 Upgrade, December 31, 1996

12. Unit Cost Summary (Cont'd):

Unit Cost APUC Changes --

The reasons for the APUC changes are the same as the reasons for the PAUC changes, except that the OMA portion does not apply.

h. Impact of Perf or Sched Changes --

Performance changes account for \$253.3M or 27% of the APUC and 24% of the PAUC. These are the two engineering changes that resulted from the development of HTI efforts; (1)The Laser Warning Receiver Program(LWRP) provides protection from laser guided munitions by identifying the current disposition and direction of the potential threat munition. It also initiates countermeasures if deemed appropriate. (2)The other engineering change is an engine modification which reconfigures the engine to increase horsepower and enhance crew survivability.

i. Program Management & Control --

Bradley:

Col(P) Joseph Yakovac,
Project Manager
Bradley Fighting Vehicle Systems

LTC Theodore Johnson,
Product Manager
Bradley M2/M3 A3

IBAS:

LTC(P) Roger Carter
Project Manager
Close Combat Anti-Armor Weapon Systems

LTC Nichols
Product Manager
Integrated Bradley Acquisition System

FLIR:

Col J. Sorenson
Project Manager
Night Vision Reconnaissance Surveillance and Target Acquisition

LTC C. McCoy
Product Manager
2nd Gen. Forward-Looking Infrared

j. Cost Control Actions --

Actions Taken:

The Commander Independent Viewer(CIV), Flat Panel Display(FPD), the Gunner's/Commander's Hand Stations(G/CHS), Position Interface Box(PIB), Mass Memory Unit(MMU), and the Turret/Hull Processor Units(T/HPU) have been competed to minimize the cost of prototypes. The IBAS and CIV leveraged technology from the Improved TOW Acquisition System(ITAS) and the Turret Direction Control Unit(TDCU) used technology from the M2A2 Digital Electronic Control Assembly(DECA). Seventy-seven percent of the A3 lines of code in the system

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BFVS A3 Upgrade, December 31, 1996

12j. Unit Cost Summary (Cont'd):

processor and memory units is Commercial Off The Shelf (COTS) as a result of the Line Replaceable Unit competition.

Government and contractor cost account managers (CAMs) jointly monitor and assess their accounts on a recurring basis for any measures that can be taken to reduce cost and submit to management for approval. A streamlined test approach is being evaluated that will combine government and contractor technical testing and conduct incremental operational testing to better focus on critical performance requirements.

Future Actions:

An extensive cost reduction plan was developed, validated and formally submitted to the Army to reduce the production and program cost of the A3. The review was coordinated with the prime contractor and planning is underway to include this strategy in the Program Office Estimate (POE) as part of the initial Jul 1997 LRIP ASARC cost documentation. Key elements of the plan are (1) Partnering with industry continues with reviews being held with the various vendors to determine additional potential cost savings in production. One of the resulting initiatives is in the manufacturing process for the Gimbal assembly of the CIV. Through redesign in the LRIP phase, the program can expect to gain significant savings in production and sustainment costs by casting the entire Gimbal instead of welding individual parts together. The initial assessment is a reduction in manufacturing man-hours and materials and a more robust housing that will require less maintenance in the field.

(2) Vendors are also looking at using industrial grade components in lieu of MIL-SPEC for introduction during the LRIP phase. One promising component for this application is the Turret Distribution Control Unit (TDCU). (3) Eight components are low risk candidates for breakout from the prime contractor. Breakout is planned for FY99, the last year of the LRIP phase. The prime contractor, however, is considering a reduction of burden as an alternative to breakout. (4) Competition is also planned commencing in FY99 for selected components: the Flat Panel Display (FPD), Commander's Independent Viewer (CIV), Gunner's/Commander's Hand Stations (G/CHS), and the Position Interface Box (PIB). (5) Multi-year procurements with the prime contractor as well as Improved Bradley Acquisition System (IBAS) commensurate with full-up production are a key element of the plan. (6) A single multi-product contract is also being explored. This will be one contract that includes requirements from individual programs within the Bradley family of vehicles.

Excluding multi-year procurements and the multi-product contracts, the above mentioned changes will impact the current estimate and reduce the PAUC/APUC to well below 25%. The proposed changes including the multi-year procurements with the prime and IBAS, but excluding the multi-product contract will nullify the Nunn-McCurdy breach. Furthermore, the program is still in the Engineering, Manufacturing, and Development (EMD) phase (65% complete) and the Army is committed to seeking additional production cost reduction initiatives that will be applied at the appropriate time.

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12k. Unit Cost Summary (Cont'd):

k. Contract Information (In Millions of Then-Year Dollars) -- None.

l. Contracts exceeding Contract Cost Baseline Thresholds -- None.

m. General Comments -- None.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	425.5	3613.3	-	-	4038.8
Previous Changes:					
Economic	-11.9	-267.9	-	-	-279.8
Quantity	-3.1	+4.8	-	-	+1.7
Schedule	-	-73.5	-	-	-73.5
Engineering	-	+108.6	-	-	+108.6
Estimating	+36.0	+210.1	-	-	+246.1
Other	-	-	-	-	-
Support	-	+84.0	-	-	+84.0
Subtotal	+21.0	+66.1	-	-	+87.1
Current Changes:					
Economic	-0.8	-12.6	-	-	-13.4
Quantity	-	-	-	-	-
Schedule	-	+362.5	-	-	+362.5
Engineering	-	+298.5	-	-	+298.5
Estimating	+12.4	+659.8	-	+133.7	+805.9
Other	-	-	-	-	-
Support	-	+84.7	-	-	+84.7
Subtotal	+11.6	+1392.9	-	+133.7	+1538.2
Total Changes	+32.6	+1459.0	-	+133.7	+1625.3
Current Estimate	458.1	5072.3	-	133.7	5664.1

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	O&M	TOTAL
Development Estimate	394.1	2703.2	-	-	3097.3
Previous Changes:					
Quantity	-3.0	+3.0	-	-	-
Schedule	-	-	-	-	-
Engineering	-	+77.5	-	-	+77.5
Estimating	+27.6	+194.8	-	-	+222.4
Other	-	-	-	-	-
Support	-	+58.2	-	-	+58.2
Subtotal	+24.6	+333.5	-	-	+358.1
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	+131.7	-	-	+131.7
Engineering	-	+225.9	-	-	+225.9
Estimating	+11.4	+538.6	-	+107.7	+657.7
Other	-	-	-	-	-
Support	-	+49.2	-	-	+49.2
Subtotal	+11.4	+945.4	-	+107.7	+1064.5
Total Changes	+36.0	+1278.9	-	+107.7	+1422.6
Current Estimate	430.1	3982.1	-	107.7	4519.9

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDTE</u>		
	Revised escalation indices. (Economic)	N/A	-0.8
	Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
	Program adjusted to reflect actual expenditures (Estimating)	-0.3	-0.3
	Increased funding for Field Service Rep to provide training for tests (Estimating)	+0.6	+0.6
	Increased contract costs (Estimating)	+1.1	+1.2
	Increased requirement for test and diagnostic equipment (Estimating)	+0.6	+0.6
	Change in cost to Initial Operational Test & Evaluation (IOT&E) (Estimating)	-1.1	-1.3
	Increased program effort to meet Army digitization requirements (Estimating)	+10.2	+11.3
	RDTE Subtotal	+11.4	+11.6
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-12.6
	Three year stretchout of annual procurement buy profile. (Schedule)	+131.7	+362.5

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Addition of Survivability Suite of Enhancement Systems (SSES) (Army Horizontal Technology Integration (HTI)) initiative	+74.6	+98.6
(Engineering)		
Addition of engine performance enhancements (Army HTI initiative) (Engineering)	+178.7	+235.5
Decrease quantity of pontoons from 1602 to 160 (Engineering)	-27.4	-35.6
Improved estimates of 2nd Generation Forward Looking Infra Red (FLIR) due to more experience in the development phase (Estimating)	+59.7	+75.0
Improvement to Improved Bradley Acquisition System (IBAS) estimates due to more experience in the development phase (Estimating)	+103.5	+129.2
Improvement to prime contractor and sub-contractor estimates due to more experience in the development phase (Estimating)	+322.4	+389.2
Increase in estimate of Government Engineering and Project Management Costs (Estimating)	+49.7	+61.6
Increase in estimate of System Test & Evaluation costs (Estimating)	-2.3	-2.7
Increase in First Destination Transportation estimate (Estimating)	+5.6	+7.5
Increase in Initial Spares estimate (Support)	+48.2	+64.1
Reduction in Peculiar Support Equipment estimate (Support)	-33.0	-39.9
Increase in Training Devices estimate (Support)	+13.7	+20.3
Increase in other support cost estimates (Support)	+20.3	+40.2
Procurement Subtotal	+945.4	+1392.9
(3) <u>O&M</u>		
Decision to refurbish used vehicles to like-new condition to extend the service life of the A3. (Estimating)	+107.7	+133.7
O&M Subtotal	+107.7	+133.7

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.52	-0.18	--	+0.18	+0.25	+0.66	--	+0.11	+1.02	3.54

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.26	-0.18	+0.01	+0.18	+0.25	+0.54	--	+0.11	+0.91	3.17

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	JAN 94	N/A	JAN 94
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	SEP 98	N/A	AUG 00
Total Cost	N/A	4038.8	N/A	5664.1
Total Quantity	N/A	1602	N/A	1602
Prog Acq Unit Cost	N/A	2.52	N/A	3.54

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

A3 EMD:

United Defense (LP), San Jose, CA
DAAE07-94-C-0456, CPIF
Award: May 19, 1994
Definitized: June 30, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$280.0	N/A	8

Current Contract Price		
Target	Ceiling	Qty
\$282.3	N/A	8

Estimated Price At Completion	
Contractor	Program Manager
\$297.5	\$310.0

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-4.5	\$-7.2
Cumulative Variances To Date (12/27/96)	\$-22.7	\$-7.0
Net Change	\$-18.2	\$0.2

Explanation of Change:

Change in variance is due mainly to increase in cost expended by subcontracts and prime software management and integration. The major subcontract variance drivers were the Commander's Independent Veiwier (CIV)--due to the effect of the 2nd Gen FLIR on design, and the software documentation rework required for the Turret/Hull Processing Units (T/HPU). Software management and planning increased due to increased reliance on consultants and associated hardware and software accounts.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>IBAS EMD:</u> Texas Instruments, McKinney, TX DAAH01-93-C-0206, CPIF/AF Award: February 18, 1994 Definitized: July 20, 1994	\$51.7	N/A	16

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$56.4	N/A	14	\$63.2	\$64.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.0	\$-0.9
Cumulative Variances To Date (12/31/96)	\$-6.4	\$-0.3
Net Change	\$-3.4	\$0.6

Explanation of Change:

Changes due to increased cost expended to resolve difficulties in the integration and environmental stress screening of IBAS prototypes to support A3 vehicle deliveries. Schedule performance improved as prototypes were delivered.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>Imp BFVS Acquis Sys (IBAS:</u> Texas Instruments Inc, McKinney TX DAAH01-93-C-0206, CPIF/AF Award: February 18, 1994 Definitized: July 22, 1994	\$51.7	\$	16

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$56.4	\$	14	\$63.2	\$64.2

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.0	\$-0.9
Cumulative Variances To Date (12/31/96)	\$-6.4	\$-0.3
Net Change	\$-3.4	\$0.6

Explanation of Change:

Net changes are due to increased cost expended to resolve difficulties in the integration and environmental stress screening of IBAS prototypes to support A3 vehicle deliveries. Schedule performance improved as prototypes were delivered.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY94-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-09)	<u>Total</u>
RDT&E	343.7	75.3	37.1	2.0	458.1
Procurement	172.9	119.7	338.0	4441.7	5072.3
MILCON	-	-	-	-	-
O&M	-	5.3	7.6	120.8	133.7
Total	516.6	200.3	382.7	4564.5	5664.1

b. Annual Summary -- BFVS A3 Upgrade

Appropriation: 2040 Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY94 Dollars Nonrec</u>	<u>Flyaway FY94 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1994				60.3	61.2
1995				74.2	76.9
1996				109.4	115.8
1997				83.1	89.8
1998				68.3	75.3
1999				33.0	37.1
2000				0.9	1.0
2001				0.9	1.0
Subtotal				430.1	458.1

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16b. Program Funding Summary (Cont'd):

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	35	24.0	124.2	156.7	172.9
1998	18	3.9	92.9	106.2	119.7
1999	78	9.7	265.3	293.7	338.0
2000	122	2.0	296.9	329.8	387.7
2001	154	0.8	355.3	381.9	458.9
2002	128	0.9	291.0	309.7	381.0
2003	131	0.8	294.5	311.0	392.4
2004	243	1.5	509.1	529.5	685.5
2005	242	0.8	495.2	519.0	689.5
2006	262	3.8	511.6	539.9	735.9
2007	189	2.5	389.9	413.0	577.6
2008				47.3	67.8
2009				44.4	65.4
Subtotal	1602	50.3	3625.9	3982.1	5072.3

Appropriation: 2020 Operation & Maintenance, Army

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998				4.8	5.3
1999				6.8	7.6
2000				9.0	10.3
2001				10.6	12.4
2002				9.2	11.0
2003				9.3	11.4
2004				15.0	18.9
2005				15.0	19.3
2006				15.9	21.1
2007				12.1	16.4
Subtotal				107.7	133.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1602	50.3	3625.9	4519.9	5664.1

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17. Delivery/Expenditure Information:

a. Deliveries To Date - None.

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 0.0

Percent Total Program Expended: 0.0%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Operation and support costs reflect world wide regular Army activity and are presented as an estimate of the average annual cost per fielded M2A3 and M3A3. These costs assume an average operating tempo of 880 miles per year (per ODCSOPS Training Directorate). The source for this cost estimate is the A3 Army Cost Position (ACP), dated January 1994. There is no antecedent.

b. Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost/Veh Reg Army M2A3/M3A3	Avg Annual Cost/Veh (Antecedent)
Mission Pay & Allowances	39.8	N/A
Unit Level Consumption	27.6	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	4.5	0.0
Contractor Support	0.0	0.0
Sustaining Support	7.6	0.0
Indirect Costs	3.0	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Total	82.5	0.0

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A-18 MCS

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: MCS

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): MANEUVER CONTROL SYSTEM (MCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

FM-OPTADS, SFAE-C3S-MVR COL STANLEY C LEJA
FORT MONMOUTH, NJ 07703-5405 Assigned: August 24, 1995
DSN 992-4041; COMM 908-532-4041

4. Program Elements/Procurement Line Items:

RDT&E:
PE 23740 (Shared) Project D2HT, D484
PROCUREMENT:
APPN 2035 ICN BA9320 (Army)
APPN 2035 ICN BA9710 (Army)
APPN 2035 ICN BS9710 (Army)

5. References:

SAR Baseline (Development Estimate):

AAE Approved Acquisition Program Baseline dated 16 October 1989.

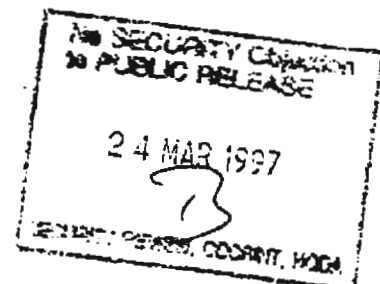
Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated December 18, 1995.

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DIRECTORATE FOR FREEDOM OF INFORMATION
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DEPARTMENT OF DEFENSE



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97-C-0535

MCS, December 31, 1996

6. Mission and Description:

The Maneuver Control System (MCS) is one of the five Battlefield Functional Areas (BFA) of the Army Tactical Command and Control Systems (ATCCS). MCS is a network of computer equipment which serves the Commander and Staff Corps, Division, Brigade, and Maneuver Battalion. The system provides automated assistance in the coordination of plans, dissemination of orders and guidance, and the monitoring and supervision of operations. MCS is the force level commander's information system and integrates the maneuver functions with the automated or manual Command and Control (C2) systems of the other four functional areas. (The other four functional areas are: Fire Support, Air Defense, Intelligence/Electronic Warfare, and Combat Service Support). MCS versions of software will extend automated command and control capabilities down to battalion/ squadron, company/troop, squad/weapon system and platoon level through the subordinate systems to MCS.

The Maneuver Control System (MCS) is a collection of computer equipment which supports operation planning and control at one of the five nodal points (Maneuver Control) of the Army Tactical Command and Control System (ATCCS). MCS currently consists of the Non-Development Items (NDI) such as the Tactical Computer Processor (TCP) nomenclatured AN/UYQ-43(V)1. It is a microprocessor based portable system which provides automated assistance to the maneuver commanders. The Analyst Console (AC) nomenclatured AN/UYQ-43(V)2, is a microprocessor based intelligent terminal, connected to the TCP via Local Area Network, which provides multiple workstations within a nodal configuration.

The TCP/AC were transitioned with currently fielded software Version 10.03.1G1, from OPM OPTADS to the Communications-Electronics Command (CECOM) on Oct 4, 1992. The NDI equipment (TCP/AC) will be replaced by Common Hardware (CH). CH is composed of CHS-2 computers which will exceed the capability and the processing of the TCP/AC. These devices are to be fielded to all US Army Tactical Units. They are smaller and lighter and provide ease of transportability to all ATCCS users.

7. Executive Summary:

In 1980, the first elements of the MCS were fielded to VII Corps in Europe, which consisted of Engineering models of the AN/UYQ-30 Tactical Computer Terminal (TCT) with a limited Command, Control and Communications (C3) capability. In 1981 the system was enhanced with additional TCT's and increased software C3 capabilities. In 1982, the MCS program was continued by awarding a MCS System Engineering/Integration and Software Development contract which was awarded to Ford Aerospace and Communication Corporation (FACC). This five year effort continued the MCS evolutionary development. By 1986 the software had evolved to Version 9, was written in Ada, fielded with production TCTs in Europe, and ported to the Tactical Computer Processor (TCP) prototype. In 1986 the production contract for the AN/UYQ-43 (V)1/(V)2 TCP/AC Non- Developmental Item (NDI) was awarded. In 1987 the second five year evolutionary development effort was awarded to FACC (now Loral Command and Control Systems) for the software effort and a separate contract was awarded to TRW for the system engineering/integration effort. Under these efforts, Version 10 software was completed, and fielded in 1989.

MCS Version 11 software development effort was continued under Loral. However, Loral experienced significant delays in their development effort. As a

MCS, December 31, 1996

7. Executive Summary (Cont'd):

result, there was little confidence in Loral's ability to deliver Version 11 without further schedule slips and cost growth. The decision was made by the Army to discontinue funding the contract. The Army decided the MCS requirements could best be satisfied by an alternative other than continuing the Loral contract effort. The decision to discontinue the development contract beyond the current target contract price, was approved by the Army Acquisition Executive via a memorandum dated February 24, 1993.

A restructured MCS program strategy was presented to and approved in concept by the OSD C3I Committee on March 11, 1993. OSD formal approval was received via an Acquisition Decision Memorandum (ADM) dated April 6, 1993. The revised approach to complete Block III development is described as MCS Version 12.0. Version 12.0 is a rapid prototype effort which relies on Common Hardware, and a foundation of Common Operating Environment (COE) to support stand alone applications which provide an initial maneuver control capability, supports horizontal inter operability testing with other BFA control systems, and exploits reusable software from MCS Version 11.0.

In August 1994 MCS V12.0 successfully completed an Integrated Inter operability Demonstration (as an MCS Operational Assessment) which was included as a part of the ATCCS level testing at Fort Hood, Texas. The MCS Operational Requirements Document (ORD) (October 26, 1992) remains valid for Version 12.0. The PEO C3S directed the FM OPTADS to replan the program on December 22, 1994, due to the continued delays in the CHS-2 hardware contract award. This direction required substituting a Limited User Test (LUT) for the the IOT&E. Also, the program was to proceed toward a Low Rate Initial Production (LRIP) decision to procure CHS-2 hardware to be used for the MCS IOT&E. This program strategy was subsequently changed when the MCS program came under the Integrated Product Team process in May 1995.

The MCS Block IV contract was awarded to Lockheed Martin Corporation Management and Data Systems Division on September 26, 1996. The Block IV effort is basically a combat developer approved sequencing of pre-planned product improvements to the Block III baseline functionality, providing application and functionality enhancements which reside on the Defense Information Infrastructure Common Operating Environment (DII COE) software infrastructure in line with the migration plan for compliance with the Army Technical Architecture (ATA). Block III application software will be considered as candidate reuse software by the Block IV contractor to satisfy a portion of the overall Block IV functional requirements. Block IV encompasses development of MCS software versions 12.1, 12.2 and 12.3 and fielding of this upgraded functionality to the Army, once each of the three versions have successfully passed a Follow On Test and Evaluation (FOT&E). Software enhancements in Version 12.1 through 12.3 include developing and analyzing basic course of action war gaming, and embedded training at the operator and staff section level.

On November 22, 1996, a C3I Systems Overarching Integrated Product Team (OPT) met to review the Army's request to procure hardware, prior to Milestone III for the training base. The Army proposed equipping the training base with MCS in two phases. The Army is authorized to acquire initial LRIP quantities of 81 CHS-2 systems for operational assessment in the training base. A DOT&E directed operational assessment on the training base will be conducted using these 81 systems and the available MCS Block III software. An MCS IOT&E must be completed prior to a Milestone III decision to field MCS to operational units. The IOT&E can make use of the results of the Limited User Test and the training base operational assessment.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	Yes
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. Explanation of Breach:

The Maneuver Control System has deviated from its current approved baseline, dated December 18, 1995, for the following reasons: On October 9, 1996, the OPTEC Commander and Deputy PEO C3S decided that MCS/P was not yet ready to proceed to an IOTE based on results of technical testing conducted October 7-9, 1996. The testing verified that MCS/P functionality works, but uncovered one Priority 1 software deficiency in the commercial software used for automatic data replication. On January 16, 1997, the MCS Test Integration Working Group (TWIG) met and recommended an update to the MCS test strategy calling for a Block III IOTE in 2QFY98.

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
BLOCK I			
AN/UYQ-30/30A			
Milestone III ASARC	MAY 83	MAY 83	MAY 83
Initial Prod Contract Award	JUN 83	N/A	N/A
First Prod Del Initial Contr	FEB 85	N/A	N/A
Follow-on Prod Contr Award	AUG 86	N/A	N/A
FUE/IOC	SEP 86	SEP 86	SEP 86
Version 9 Software Release	SEP 86	SEP 86	SEP 86
User Follow-on Test & Eval I	APR 87	APR 87	APR 87
First Prod Deliv Follow Contr	NOV 87	N/A	N/A
BLOCK II			
AN/UYQ-43 (V)1&(V)2			
IPR Approval	JUN 86	JUN 86	JUN 86
Initial Production Contract Award	JUN 87	N/A	N/A
First Article Test Start	MAY 88	MAY 88	MAY 88

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Complete	SEP 88	SEP 88	SEP 88
Production Contract Option Award	SEP 88	N/A	N/A
Version 10 Software Release	OCT 88	OCT 88	OCT 88
First Prod Deliv Initial Contr	FEB 89	N/A	N/A
FUE\IOC	APR 89	APR 89	APR 89
First Prod Deliv Prod Option	JUN 89	N/A	N/A
Field Validation	AUG 89	AUG 89	AUG 89
BLOCK III			
AN/TYQ-45 (CHS)			
CHS Software Verification Test	MAY 91	N/A	N/A
FUE/IOC	NOV 91	N/A	N/A
Follow-on Test & Evaluation	JAN 92	N/A	N/A
Milestone III ASARC	MAY 92	N/A	N/A
First MCS Prod Buy of CHS	JUN 92	N/A	N/A
First Production Deliveries	OCT 92	N/A	N/A
Software Releases	N/A	N/A	N/A
Version 9	SEP 86	N/A	N/A
Version 10	OCT 88	N/A	N/A
Version 11 (30/30A & 43 (V) 1&2)	NOV 90	N/A	N/A
Version 11 (CHS)	SEP 91	N/A	N/A
First CHS Prototype Delivery	DEC 88	DEC 88	DEC 88
(BuildI)			
MCS Version 12.0			
MCS Integration and Validation	N/A	SEP 93	SEP 93
Compliance Test			
MCS V12.0 Operational Assessment	N/A	AUG 94	AUG 94
MCS Version 12.01			
System Segment Acceptance Test-1	N/A	FEB 96	FEB 96
V12.01 IOT&E			
Start	N/A	NOV 96	MAR 98 (Ch-1)
Complete	N/A	FEB 97	MAR 98 (Ch-1)
Milestone III DAB	N/A	JUN 97	SEP 98 (Ch-1)
Issue V12.01 to the Field	N/A	NOV 97	AUG 98 (Ch-1)
IOC	N/A	JUN 98	FEB 99 (Ch-1)
BLOCK IV			
AN/TYQ-45 (CHS)			
Award MCS Contract	N/A	JUL 96	SEP 96 (Ch-2)
MCS Version 12.1	N/A	N/A	
FOTE	N/A	JUN 98	FEB 99 (Ch-1)
Issue V12.1 to the Field	N/A	OCT 98	JUL 99 (Ch-1)
MCS Version 12.2	N/A	N/A	
FOTE	N/A	JUN 99	FEB 00 (Ch-1)
Issue V12.2 to the Field	N/A	OCT 99	AUG 00 (Ch-1)
MCS Version 12.3	N/A	N/A	
FOTE	N/A	JUN 00	FEB 01 (Ch-1)
Issue V12.3 to the Field	N/A	OCT 00	AUG 01 (Ch-1)
Convert to Post Deployment	N/A	NOV 00	DEC 02 (Ch-1)
Software Support (PDSS)			

b. Current Change Explanations --

(Ch-1) - On 9 October 1996, the OPTEC Commander and Deputy PEO C3S decided

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9b. Schedule (Cont'd):

that MCS/P was not yet ready to proceed to an IOTE based on results of technical testing conducted 7-9 October 1996. The testing verified that MCS/P functionality works, but uncovered one Priority 1 software deficiency in the commercial software used for automatic data replication. Instead, the Army conducted a Limited User Test (LUT) following the IOT&E rules, the following milestones changes:

	From	To
Block III		
VI2.01 IOTE		
Start	Nov 96	Mar 98
Complete	Feb 97	Mar 98
Milestone III DAB	Jun 97	Sep 98
Issue Version 12.01 to the Field	Nov 97	Aug 98
IOC	Jun 98	Feb 99
Block IV		
MCS Version 12.1 FOTE	Jun 98	Feb 99
Issue Version 12.1 to the Field	Oct 98	Jul 99
MCS Version 12.2 FOTE	Jun 99	Feb 00
Issue Version 12.2 to the Field	Oct 99	Aug 00
MCS Version 12.3 FOTE	Jun 00	Feb 01
Issue Version 12.3 to the Field	Oct 00	Aug 01
Convert to Post Deployment		
Software Support (PDSS)	Nov 00	Dec 02

(Ch-2) The MCS Block IV Contract was awarded September 26, 1996.

(Ch-3) These milestones are new and will be introduced in the revised APB.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
BLOCK I				
AN/UYQ-30/30A				
100% Memory	5	5 / 5	10	5
Retention during power fluc/loss (at least xx mins)				
Purge Memory (within xx mins)	3	3 / 3	1.57	3
Mean Time to Repair (hrs)				
Organizational	.5	.5 / .5	.5	.5
Direct Support	2.0	2.0 / 2.0	2.0	2.0
Reliability (hrs)				
AN/UYQ-30/30A TCT	433	433 / 433	433	433
AN/UYQ-30/30A	310	310 / 310	310	310
TCT'				
Operational				
Availability (Ao)				
AN/UYQ-30 TCT	.88	.88 / .88	.88	.88
AN/UYQ-30 TCT'	.84	.84 / .84	.84	.84

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10a. Performance Characteristics (Cont'd):

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
BLOCK II				
AN/UYQ-43 (V)1 & (V)2				
100% Memory Retention during power fluc/loss (at least xx mins)	5	5 / 5	10	5
Emergency Purge Memory (within xx mins)	3	3 / 3	1.32	3
Mean Time to Repair Organizational (Hr)	.5	.5 / .5	.5	.5
Operational Availability (Ao)	.76	.76 / .76	.76	.76
BLOCK III				
AN/TYQ-45 (CHS)				
100% Memory Retention during power fluc/loss (at least xx mins)	5	N/A / N/A	N/A	N/A
Purge Memory (within xx mins)	3	N/A / N/A	N/A	N/A
Mean Time to Repair Organizational (Hr)	.5	N/A / N/A	N/A	N/A
Situation Awareness Integrity of Common Picture & Between Div and Corps Main (sec)	N/A	□ / N/A	TBD	
Between Adjacent Echelons or Among TAC/Main/Rear Within an Echelon (sec)	N/A	95 / 85	TBD	95
Between Div and Corps Main (sec)	N/A	7200 / 7200	TBD	7200
Between Adjacent Echelons or Among TAC/Main/Rear Within an Echelon (sec)	N/A	3600 / 3600	TBD	3600
Interoperability Direct Data Exchange Integrity IAW Applicable UIRs	N/A	95 / 85	TBD	95
Continuity of Operations Commander's Situation Report Availability After:				
Planned Outage (min)	N/A	90 / 90	TBD	90

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Unplanned Outage (min)	N/A	180 / 180	TBD	180
Operational Availability (Ao)	.88	.88 / .76	.76	.88
BLOCK IV				
AN/TYQ-45 (CHS)				
100% Memory Retention during power fluc/loss (at least xx mins)	5	N/A / N/A	N/A	N/A
Purge Memory (within xx mins)	3	N/A / N/A	N/A	N/A
Mean Time to Repair Organizational (Hrs)	.5	N/A / N/A	N/A	N/A
Situation Awareness Integrity of "Common Picture" (Assumes COE compliant input from external sources) %	N/A	100 / 95	TBD	100
Between Army and Joint Echelons (sec)	N/A	8 / 1800	TBD	8
Adjacent Army and Joint Echelons (sec)	N/A	8 / 900	TBD	8
Within Army and Joint Echelons (sec)	N/A	8 / 900	TBD	8
Interoperability Direct Data Exchange Integrity IAW DoD COE Standards	N/A	100 / 95	TBD	100
(8)				
Continuity of Operations (hrs)				
Commander's Situation Report Availability After:				
Planned Outage (min)	N/A	15 / 30	TBD	15
Unplanned Outage (min)	N/A	45 / 60	TBD	45
Operational Availability (Ao)	.88	.88 / .76	.76	.88

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10a. Performance Characteristics (Cont'd):

NOTE:

1/

- (Development Baseline - October 16, 1989) Purging System Memory - Purge the system, memory, excluding tape, within 3 minutes.
 2/ (Development Baseline - October 16, 1989) User has not established a required Ao for the MCS system
 3/ (Development Baseline - October 16, 1989) Continuity of Operations - Data elements in maneuver, enemy, NBC, and other data base partitions shall not display more than 1 hour difference in age between same echelons CPs, while their CPs are operational in 80% of the sample.
 4/ (Development Baseline - October 16, 1989) Fidelity - That which is transmitted, is transmitted with a least 95% fidelity.
 5/ (Development Baseline - October 16, 1989) Quality - Data concerning current location and status of a maneuver battalion shall not be more than 4 hrs old at Corps, 2 hrs old at Division and 1 hr old at Brigade.
 6/ Contract Specs - Performance parameters are consistent with the MCS ORD for Block IV. Contract Specs are not applicable for Operational Availability because the equipment is in the hands of the unit and beyond the control of the contractor.

b. Current Change Explanations -- None.

11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	215.2	259.2	269.0
Procurement	545.5	347.3	358.1
Flyaway	(451.3)		(284.0)
Support Fielding Costs			(35.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(94.2)		(38.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 80 Base-Year \$	760.7	606.5	627.1
Escalation	511.4	386.1	389.1
Development (RDT&E)	(123.1)	(160.2)	(161.8)
Procurement	(388.3)	(225.9)	(227.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1272.1	992.6	1016.2
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	6365	3156	3156
Total	6365	3156	3156

A unit of measure equates to one MCS Tactical High Capacity Computer Suite including installation kits, peripherals and common off-the-shelf software. The Low Rate Initial Production (LRIP) for MCS is 81 systems procured in February 1997.

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11c. Total Program Cost and Quantity (Cont'd):

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (DEC 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 80 BY\$)	627.1	606.5	
(2) Quantity	3156	3156	
(3) Unit Cost	0.199	0.192	+3.65
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 80 BY\$)	358.1	347.3	
(2) Quantity	3156	3156	
(3) Unit Cost	0.113	0.110	+2.73

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	338.3	933.8	-	1272.1
Previous Changes:				
Economic	-12.6	-12.2	-	-24.8
Quantity	-	-219.9	-	-219.9
Schedule	-	+17.9	-	+17.9
Engineering	-	+14.3	-	+14.3
Estimating	+106.7	-90.8	-	+15.9
Other	-	-	-	-
Support	-	-54.3	-	-54.3
Subtotal	+94.1	-345.0	-	-250.9
Current Changes:				
Economic	+0.1	-0.9	-	-0.8
Quantity	-	-	-	-
Schedule	-	+0.2	-	+0.2
Engineering	-	-17.9	-	-17.9
Estimating	-1.7	+1.8	-	+0.1
Other	-	-	-	-
Support	-	+13.4	-	+13.4
Subtotal	-1.6	-3.4	-	-5.0
Total Changes	+92.5	-348.4	-	-255.9
Current Estimate	430.8	585.4	-	1016.2

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 1980 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	215.2	545.5	-	760.7
Previous Changes:				
Quantity	-	-108.0	-	-108.0
Schedule	-	-3.6	-	-3.6
Engineering	-	+8.2	-	+8.2
Estimating	+54.2	-56.2	-	-2.0
Other	-	-	-	-
Support	-	-26.4	-	-26.4
Subtotal	+54.2	-186.0	-	-131.8
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-8.5	-	-8.5
Estimating	-0.4	+0.8	-	+0.4
Other	-	-	-	-
Support	-	+6.3	-	+6.3
Subtotal	-0.4	-1.4	-	-1.8
Total Changes	+53.8	-187.4	-	-133.6
Current Estimate	269.0	358.1	-	627.1

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Economic adjustment for negative program change. (Economic)	N/A	+0.1
	Revised estimate to fully fund the Block IV contract. (Estimating)	-0.4	-1.7
	RDT&E Subtotal	-0.4	-1.6
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-1.4
	Economic adjustment for negative program change. (Economic)	N/A	+0.5
	Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.2
	A decrease in hardware requirements for the TCIM, power supply and several cables. (Engineering)	-4.6	-10.0
	Decrease engineering in FY97 and FY98 from Ruggedized V2 hardware to Commercial V1 hardware for the training base. (Engineering)	-3.9	-7.9
	Adjustment for Current and Prior Inflation. (Estimating)	0.0	+0.1

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
A revised estimate resulting from a change in MCS methodology. (Estimating)	+0.8	+1.7
Reduced Initial Spares requirements. (Support)	-1.3	-1.9
Increase Support/Fielding Costs due to requirement changes in ICS, TPF, NETT, licenses and maintenance. (Support)	+7.6	+15.3
Procurement Subtotal	-1.4	-3.4

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.20	-0.01	+0.12	+0.01	--	+0.01	--	-0.01	+0.12	0.32

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.15	--	+0.07	+0.01	--	-0.03	--	-0.01	+0.04	0.19

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	MAY 83	N/A	MAY 83
FUE/IOC	N/A	SEP 86	N/A	SEP 86
Total Cost	N/A	1272.1	N/A	1016.2
Total Quantity	N/A	6365	N/A	3156
Prog Acq Unit Cost	N/A	0.2	N/A	0.32

[May 1983 represents Block 1, Milestone III. Block III current schedule for Milestone III is September 1998.

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15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --
Maneuver Control System:
 LOCKHEED MARTIN CORP, TINTON FALLS NJ
 DAAB07-96-C-E008, CPIF and T&M
 Award: September 26, 1996
 Definitized: N/A

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$54.1	\$95.1	1	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$54.1	\$95.1	1	\$63.1	\$63.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
Cumulative Variances To Date	\$	\$
Net Change	\$	\$

Explanation of Change:

None.

Contract Comments:

Lockheed Martin is currently replanning the MCS Block IV software development, and is only reporting actuals. Performance measurement will begin with the May 1997 CPR, which will be based upon April's data.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY80-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-04)	<u>Total</u>
RDT&E	347.7	25.6	23.9	33.6	430.8
Procurement	435.8	15.7	18.3	115.6	585.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	783.5	41.3	42.2	149.2	1016.2

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16b. Program Funding Summary (Cont'd):

b. Annual Summary -- MANEUVER CONTROL SYSTEM

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY80 Dollars Nonrec	Flyaway FY80 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1980				8.5	9.0
1981				13.2	15.2
1982				13.6	16.6
1983				15.7	19.9
1984				12.6	16.5
1985				23.5	31.8
1986				8.6	11.9
1987				8.8	12.6
1988				9.4	14.0
1989				7.7	11.9
1990				7.0	11.3
1991				10.6	17.8
1992				21.5	36.8
1993				15.3	26.8
1994				8.9	15.9
1995				9.3	17.0
1996				18.7	34.8
1997				14.7	27.9
1998				13.2	25.6
1999				12.0	23.9
2000				8.9	18.0
2001				3.5	7.2
2002					
2003					
2004				3.8	8.4
Subtotal				269.0	430.8

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY80 Dollars Nonrec	Flyaway FY80 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1983	34	2.0	18.0	21.0	27.7
1984	31	0.2	20.7	21.8	29.5
1985	38	0.2	19.9	21.7	30.4
1986	103	0.4	38.3	45.9	66.0
1987	705	0.1	39.7	47.5	70.6
1988	887	1.1	53.5	73.7	114.3
1989			5.9	5.9	9.6
1990			11.4	11.4	19.1
1991			3.5	3.5	6.0
1992			2.2	4.6	8.0
1993			9.3	9.4	16.8
1994					

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16b. Program Funding Summary (Cont'd):

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY80 Dollars Nonrec	Flyaway FY80 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995					
1996	123		7.5	9.9	18.7
1997	150		5.1	9.9	19.1
1998	138		4.9	8.0	15.7
1999	151		6.5	9.1	18.3
2000	338		14.1	20.1	41.4
2001	458		18.9	26.1	54.8
2002			0.3	0.3	0.7
2003			0.3	0.3	0.7
2004				8.0	18.0
Subtotal	3156	4.0	280.0	358.1	585.4

The recurring costs from FY89 through FY93 were for hardware component upgrades and for software development through FY90 and no end items were purchased. Until the MCS initial spare line is corrected, initial spares are shown in FY04 to support fielded equipment from FY96 through FY01. Funds in FY02/03 are for personnel costs in support of MCS.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	3156	4.0	280.0	627.1	1016.2

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	10	10
Procurement	3156	1921

Percent Total Program Quantities Delivered: 61.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 736.5

Percent Total Program Expended: 72.5%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Major assumptions and ground rules used to estimate operating and support costs are as follows: All MCS operating costs are estimated based upon peacetime usage rates. Costs are based on an operating life of 20 years. In each year that MCS workstation is fielded, it will be fielded with the latest available version of MCS software. In years in which a new version becomes available any equipment already in the field will require an upgrade to its software, as well as a

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18a. Operating and Support Costs (Cont'd):

retraining from the NET team. This will be the case until all the Army units are equipped with Version 12.3 software. No Military Occupational Specialty (MOS) nor Skill Identifiers have been authorized for MCS. Therefore, MCS has no dedicated military operation crew. CHS-2 equipment is contractor maintained. The CHS-2 contract with GTE includes a charge for contractor maintenance of the equipment in the component unit cost. Spares and repair parts are procured in each year that equipment is in the field. For the first year that equipment is in the field it will utilize Initial Spares and Repair Parts, and Replenishment Spares and Repair Parts thereafter. The sustaining investment consists primarily of replenishment repair parts (Vehicles, Standard Integrated Command Post System (SICPS), generators) and replenishment spares for all equipment). There is depot maintenance labor for the end item vehicles for the CHS-2 equipment. POL is required for all the vehicles and generators to support the CHS-2 equipment. There is no antecedent system for MCS.

b. Costs -- (FY 1980 Constant (Base-Year) Dollars in Thousands)

Cost Element	MCS Avg Annual Cost Per Equipment	Avg Annual Cost Per Equipment (Antecedent)
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.2	0.0
Intermediate Maintenance	2.6	0.0
Depot Maintenance	0.4	0.0
Contractor Support	2.9	0.0
Sustaining Support	0.1	0.0
Indirect Costs	1.0	0.0
SOFTWARE MODIFICATIONS	0.3	0.0
SYSTEM PROJ MGT	0.1	0.0
CONSUMABLES	0.4	0.0
SYSTEM TEST & EVALUATION	2.1	0.0
OTHER	0.6	0.0
Total	10.7	0.0

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A-19 SADARM

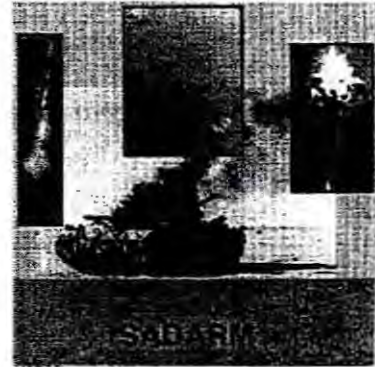
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SADARM

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Sense and Destroy Armor (SADARM)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

OFFICE OF THE PROJECT MANAGER FOR SENSE & DESTROY ARMOR (SADARM) PICATINNY ARSEN, NJ 07806-5000	COL JAMES E. UNTERSEHER Assigned: September 1, 1995 DSN 880-2573; COMM 201-724-2573 UNTERSEH@PICA.ARMY.MIL
---	---

4. (U) Program Elements/Procurement Line Items:

RD&E:

(U) PE 64802 Project D369
(U) PE 64814 Project D2ST, D644

PROCUREMENT:

(U) APPN 2034 ICN E66300 (Army)

B

~~Classified By: SADARM SCG DTD 16 April 1992~~

~~Downgrade Instructions: Regrade unclassified when removed from environment pages~~
~~Declassify: OADR~~

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5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline, dated 24 July 1989.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated April 4, 1995.

6. (U) Mission and Description:

(U) The SADARM smart munitions will provide an enhanced counterfire capability for the 155mm Howitzer delivery system capable of attacking targets well beyond the Forward Line of Troops (FLOT) in a fire and forget mode. This indirect fire mission can be accomplished under inclement weather, degraded battlefield conditions and Nuclear, Biological, Chemical (NBC) environments, both day and night. The SADARM munition is designed for use against self-propelled howitzers, lightly armored personnel carriers and other stationary armored threat vehicles encountered in counterfire, close support, Suppression of Enemy Air Defense (SEAD) and interdiction. The SADARM Munition Need and Planned Operational Environment description is contained in the SADARM Required Operational Capability (ROC) document dated 11 March 1986 and as revised 18 June 1987, and in an Operational Requirements Document (ORD) dated 3 August 1994. The system is comprised of the following major components: multi-mode sensor with infra-red, and active and passive millimeter wave; lethal mechanism with explosively-formed penetrator; parachutes which control deceleration, spin and descent velocity; fuzing, safe and arm device; and appropriate carrier hardware.

7. (U) Executive Summary:

(U) The original SADARM was to be an 8 inch projectile. The Army decided to retire the 8 inch howitzer fleet near the end of the Advanced Technology Demonstration in 1989. The program was changed to a mix of 63,386 155mm Projectiles (2 SADARM submunitions each) and 59,110 MLRS Rockets (6 SADARM submunitions each. Low Rate Production was to start in FY 92 with 500 projectiles and 552 rockets, totaling 4,312 submunitions that year. A four year build up to a steady state production of 8,240 projectiles and 7,500 rockets, totaling 61,480 submunitions per year, was planned. They were to be built by the two development contractors, competing for shares of the production. In 1991, due to a reevaluation of the European threat, the quantities were cut to 39,018 projectiles and 23,712 rockets, built by a sole source contractor, downselected from the development contractors. In 1993, due to low reliability during technical testing, the program was suspended to determine if it was still viable. The program was reinstated in 1994 after the reliability problems were identified and fixes planned. The MLRS SADARM Rocket portion of the program was terminated, to be potentially resumed sometime in the future. To make up for the lost MLRS Rocket quantities, the 155mm SADARM Projectile quantity was increased to its present level of 73,612. Budget limitations over the years have stretched the production from 11 years to 18 years. The Production costs in the April 1995 Acquisition Program Baseline (APB) decreased from a total of \$3,803M (TY \$M) to \$2,541M (33%) for a 155mm only SADARM program to defeat the same number of targets, without diminishing battlefield effectiveness.

SADARM successfully completed Engineering and Manufacturing Development (EMD) during testing at Yuma Proving Ground, AZ, on 30 April 96. Six projectiles (each

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7. (U) Executive Summary (Cont'd):

with two submunitions), were fired at the maximum zone, 8S and resulted in five direct target hits. This data, combined with 30 March 1996 results of three hits from three projectiles under identical conditions, yielded an overall Verification Testing outcome of eight hits from nine projectiles and satisfied EMD exit criteria of eight hits (from a maximum of 12 rounds) at Zone 8S.

The Government began accepting SADARM projectiles with a first delivery in November 1996 and system level production testing began. The SADARM First Article Test (FAT) "A" was successfully conducted on 18 December 1996 at Yuma Proving Ground (YPG), AZ. In this first system production FAT, an M198 howitzer fired four SADARM rounds at the YPG target array from a distance of 17 kilometers. Five of the eight submunitions (two submunitions in each projectile) had direct hits, well exceeding the established success criteria of three hits. The after-armor effects from the impact of the Explosively Formed Penetrator destroyed the interiors of the target vehicles along with their dummy crews.

The SADARM production program received a \$33.5 million Congressional increase to the FY 1997 President's Budget amount resulting in a total \$93.8 million appropriated for 600 projectiles. This was the second year in a row for Congressional increases to the SADARM production.

The FY 1997 Firm Fixed Price Low Rate Production contract for 600 M898 SADARM projectiles was awarded on 6 February 1997 to Aerojet, Azusa, CA for \$81.6 million.

A SADARM Product Improvement Program (PIP) was initiated in FY 1997 and the sole source development contract award was made to Aerojet, Azusa, CA, in February 1997. This \$62 million effort will be complete in FY 2001 and the effectiveness improvements will be "cut-in" to production with the FY 2001 procurement award.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	Yes
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

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8. (U) Threshold Breaches (Cont'd):

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

c. (U) Explanation of Breach:

There is a RDT&E Breach in excess of 15% to the APB dated 5 April 1995. It resulted from funding the SADARM Product Improvement Program to increase the SADARM's effectiveness. The breach was reported in the Dec 1995 SAR. A Program Deviation Report and APB change request were submitted on 6 March 1996. The APB change has not yet been approved.

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Generic SADARM Submunition Development	NOV 84	NOV 84	NOV 84
Approved by Army Materiel Cmd			
Congressional Direction for FSD/Prod	DEC 85	DEC 85	DEC 85
DA Approval SADARM (155mm & MLRS) ROC	MAR 86	MAR 86	MAR 86
DA In-Process Review for Submunition	SEP 86	SEP 86	SEP 86
FSD			
Competitive Submunition FSD Contract	SEP 86	SEP 86	SEP 86
Award			
Milestone II (ASARC)	NOV 87	NOV 87	NOV 87
Milestone II (DAB)	MAR 88	MAR 88	MAR 88
Congressional Demonstration			
Start	JAN 89	JAN 89	JAN 89
Complete	APR 89	APR 89	JUL 89
Army Decision: keep 2 submun sizes	N/A	NOV 90	NOV 90
155mm SADARM Tech Tests			
Start	MAY 90	AUG 91	JUL 91
Complete	JUL 91	FEB 96	APR 96
Milestone IIIA-155mm SADARM	N/A	N/A	MAR 95
155mm SADARM IOT&E			
Start	JUL 91	JUN 98	JUN 98
Complete	DEC 91	JUL 98	JUL 98
Submunition Design Select	JAN 92	N/A	N/A
Type Classification	JAN 92	N/A	N/A
Milestone III (ASARC)	JAN 92	N/A	N/A
LRP Decision	N/A	MAR 95	MAR 95
LRP Contract Award	N/A	APR 95	APR 95
LRP First Delivery	N/A	OCT 97	NOV 96 (Ch-1)
Milestone III DAB	APR 92	DEC 98	DEC 98
155mm SADARM Full Scale Production	MAY 92	JAN 99	JAN 99
Award			
Service Support Depot	N/A	N/A	N/A
IOC/First Unit Equipped-155mm SADARM	JUL 93	JUL 99	JUL 99
Organic Support Capability	N/A	JUL 99	JUL 99

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9b. (U) Schedule (Cont'd):

b. (U) Current Change Explanations --

(Ch-1) The current estimate for LRP First Delivery was changed from OCT 96 to NOV 96 to reflect actual delivery date.

10. (U) Performance Characteristics:

a. Performance --

Development	Approved	Demon-	Current
Estimate (SAR)	Program (APB)	strated	Estimate
	Obj/Threshold	Perf	

(b)(1)



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SADARM, December 31, 1994

11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	237.7	316.6	365.1
Procurement	248.0	1486.2	1528.2
Recurring Flyaway	(248.0)		(1481.9)
Nonrecurring Flyaway	(0.0)		(31.0)
Total Flyaway	(248.0)		(1512.9)
Pallets	(0.0)		(0.0)
Data			(14.2)
Total Other Wpn Sys	(0.0)		(14.2)
Peculiar Support	(0.0)		(1.1)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 89 Base-Year \$	485.7	1802.8	1893.3
Escalation	49.4	1093.9	907.7
Development (RDT&E)	(8.2)	(38.8)	(50.0)
Procurement	(41.2)	(1055.1)	(857.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	535.1	2896.7	2801.0

(U) In addition to the above, \$589.8M (then year) was spent on MLRS SADARM Rocket RDT&E prior to termination.

b. (U) Quantity --

Development (RDT&E)	132	166	166
Procurement	10156	73612	73612
Total	10288	73778	73778

Note: Excludes 772 RDTE prototypes from the SAR Baseline and 772 from the Current Estimate that are not considered fully configured.

(U) The Low Rate Initial Production (LRIP) quantity planned at the time of the 30 March 1995 DAB was 1287.

The LRIP quantity was increased to 1367 due to Congressional adds.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (APR 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 89 BY\$)	1893.3	1802.8	
(2) Quantity	73778	73778	
(3) Unit Cost	0.026	0.024	+8.33
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 89 BY\$)	1528.2	1486.2	
(2) Quantity	73612	73612	
(3) Unit Cost	0.021	0.020	+5.00

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	245.9	289.2	-	535.1
Previous Changes:				
Economic	-0.5	-172.8	-	-173.3
Quantity	-	+1019.3	-	+1019.3
Schedule	+7.9	+603.5	-	+611.4
Engineering	+62.8	-	-	+62.8
Estimating	+100.1	+523.2	-	+623.3
Other	-	-	-	-
Support	-	+25.0	-	+25.0
Subtotal	+170.3	+1998.2	-	+2168.5
Current Changes:				
Economic	-0.3	+29.6	-	+29.3
Quantity	-	-	-	-
Schedule	-	+68.8	-	+68.8
Engineering	-	-	-	-
Estimating	-0.8	+0.3	-	-0.5
Other	-	-	-	-
Support	-	-0.2	-	-0.2
Subtotal	-1.1	+98.5	-	+97.4
Total Changes	+169.2	+2096.7	-	+2265.9
Current Estimate	415.1	2385.9	-	2801.0

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13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	237.7	248.0	-	485.7
Previous Changes:				
Quantity	-	+683.7	-	+683.7
Schedule	+6.4	+216.5	-	+222.9
Engineering	+47.8	-	-	+47.8
Estimating	+73.8	+329.5	-	+403.3
Other	-	-	-	-
Support	-	+15.5	-	+15.5
Subtotal	+128.0	+1245.2	-	+1373.2
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	+35.1	-	+35.1
Engineering	-	-	-	-
Estimating	-0.6	+0.1	-	-0.5
Other	-	-	-	-
Support	-	-0.2	-	-0.2
Subtotal	-0.6	+35.0	-	+34.4
Total Changes	+127.4	+1280.2	-	+1407.6
Current Estimate	365.1	1528.2	-	1893.3

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-0.3
	Decrement for Bosnia (Estimating)	-0.3	-0.4
	Revised Program Estimate. (Estimating)	-0.3	-0.4
	RDT&E Subtotal	-0.6	-1.1
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+29.6
	Stretchout of annual procurement buy profile. (Schedule)	+35.1	+68.8
	Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.3
	Revised Support Estimate. (Support)	-0.2	-0.2
	Procurement Subtotal	+35.0	+98.5

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14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.05	--	-0.03	+0.01	--	+0.01	--	--	-0.01	0.04

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.03	--	-0.02	+0.01	--	+0.01	--	--	--	0.03

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	MAR 88	N/A	MAR 88
Milestone III	N/A	APR 92	N/A	DEC 98
FUE/IOC	N/A	JUL 93	N/A	JUL 99
Total Cost	N/A	535.1	N/A	2801
Total Quantity	N/A	10228	N/A	73778
Prog Acq Unit Cost	N/A	0.05	N/A	0.04

15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --

(U) SADARM-LRP:

AEROJET ELECTROSYSTEMS CO, AZUSA CA

DAAE30-95-C-0080, CPIF

Award: April 20, 1995

Definitized: August 11, 1995

Initial Contract Price
Target Ceiling Qty

\$29.0 N/A 110

Current Contract Price
Target Ceiling Qty
\$29.0 N/A 110

Estimated Price At Completion
Contractor Program Manager
\$31.9 \$31.9

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15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.4	\$0.0
Cumulative Variances To Date (12/31/96)	\$-2.9	\$-2.9
Net Change	\$-3.3	\$-2.9

Explanation of Change:

(U) The schedule variance increase is a result of a shortage of parts for the sensor builds. The cost variance increase is a result of material prices higher than planned.

(U) LRP 96 Option:
 AEROJET ELECTROSYSTEMS CO, AZUSA CA
 DAAE30-95-C-0080, CPIF
 Award: May 22, 1996
 Definitized: N/A

<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$35.2	N/A	150

<u>Current Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$35.2	N/A	150

<u>Estimated Price At Completion</u>	
<u>Contractor</u>	<u>Program Manager</u>
\$35.2	\$35.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/96)	\$-0.7	\$-0.1
Net Change	\$-0.7	\$-0.1

Explanation of Change:

(U) Cost and Schedule Variances are not significant.

(U) Contract Comments:

This is the first time this contract has been reported in the SAR.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY86-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-14)</u>	<u>Total</u>
RDT&E	357.0	22.4	20.8	14.9	415.1
Procurement	164.6	67.9	77.6	2075.8	2385.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	521.6	90.3	98.4	2090.7	2801.0

b. Annual Summary -- 155mm SADARM Projectile

Appropriation: 2040 Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY89 Dollars Nonrec</u>	<u>Flyaway FY89 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1986				2.7	2.5
1987				14.9	14.2
1988				24.2	24.0
1989				37.8	39.0
1990				48.3	51.7
1991				29.0	32.2
1992				55.4	63.0
1993				19.4	22.6
1994				35.1	41.6
1995				33.4	40.5
1996				12.8	15.8
1997				7.8	9.9
1998				17.4	22.4
1999				15.8	20.8
2000				9.6	12.9
2001				1.5	2.0
2002					
Subtotal	166			365.1	415.1

(U) Due to commonality, the RDT&E costs for submunitions for the 155mm Projectile and MLRS Rocket have been allocated to each system based on the total quantity of submunitions to be procured for each end item. All MLRS SADARM Rocket efforts have been terminated. The following table shows the sunk RDT&E costs allocated to the MLRS SADARM Rocket:

<u>FY</u>	<u>BY89 \$M</u>	<u>TY \$M</u>
1986	34.3	31.7
1987	60.1	57.3
1988	76.7	76.1
1989	101.9	105.2
1990	77.6	83.1
1991	68.0	75.6

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16b. (U) Program Funding Summary (Cont'd):

1992	74.9	85.2
1993	64.6	75.2
1994	0.3	0.4
<u>TOTAL</u>	<u>558.4</u>	<u>589.8</u>

Appropriation: 2034 Procurement of Ammunition, Army

Fiscal Year	Qty	Flyaway FY89 Dollars Nonrec	Flyaway FY89 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	110	6.6	18.3	24.4	29.8
1996	150	7.8	28.5	32.9	41.1
1997	600	10.8	59.0	73.4	93.7
1998	507	5.8	43.6	52.0	67.9
1999	1085		57.5	58.2	77.6
2000	1307		61.2	61.9	84.3
2001	1977		59.4	60.1	83.7
2002	2292		62.1	62.8	89.6
2003	2737		67.5	68.3	99.7
2004	6800		133.2	133.9	200.7
2005	6800		122.1	122.9	189.0
2006	6800		115.7	116.5	183.8
2007	6800		111.0	111.8	181.0
2008	6800		107.3	108.1	179.5
2009	6800		104.3	105.1	179.0
2010	6800		101.7	102.6	179.3
2011	6800		99.6	100.4	180.0
2012	6800		97.7	98.5	181.2
2013	1647		32.2	33.0	62.3
2014				1.4	2.7
Subtotal	73612	31.0	1481.9	1528.2	2385.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	73778	31.0	1481.9	1893.3	2801.0

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	707	707
Procurement	9	9

(U) Percent Total Program Quantities Delivered: 1.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 372.8

(U) Percent Total Program Expended: 13.3%

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The 155mm SADARM munitions are considered "wooden rounds" and have no operational costs. The only O&S costs are for depot storage and stockpile testing. There is no antecedent.

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per 155mm SADARM/year	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	0.0	0.0

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A-13 FMTV

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: FMTV

AS OF DATE: December 31, 1996

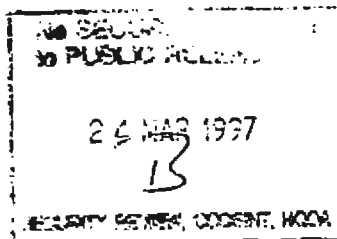
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FMTV

1. Designation and Nomenclature (Popular Name): Family of Medium Tactical Vehicles (FMTV)
2. DoD Component: Army
3. Responsible Office and Telephone Number:
Program Executive Office, COL Kenneth R. Dobeck
Tactical Wheeled Vehicles Assigned: July 15, 1996
ATTN: SFAE-TWV-FMTV DSN 786-8665; COMM (810) 574-8665
Warren, MI 48397-5000 dobeckk@cc.tacom.army.mil
4. Program Elements/Procurement Line Items:
RDT&E:
PE 64604 (Shared)
PROCUREMENT:
APPN 2035 ICN D15500 (Army)
APPN 2035 ICN DS1010 (Army)
APPN 2035 ICN DV0310 (Army)
APPN 2035 ICN DV0320 (Army)



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97-C-0136

FMTV, December 31, 1996

5. References:

SAR Baseline (Production Estimate):

AAE Approved Acquisition Program Baseline dated September 11, 1995.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated September 11, 1995.

6. Mission and Description:

The Family of Medium Tactical Vehicles (FMTV) is a complete series of trucks based on a common chassis, varied by payload and mission. The Light Medium Tactical Vehicle (LMTV) has a 2-1/2 ton capacity consisting of cargo and van models. The Medium Tactical Vehicle (MTV) has a 5 ton capacity and consists of cargo, tractor, van, wrecker, tanker and dump truck models. Subvariants provide Low Velocity Air Drop (LVAD) capability for contingency and rapid deployment operations. Over 80% commonality of parts between variants significantly reduces operational and support costs. FMTV, intended to replace obsolete and maintenance-intensive trucks currently in the fleet, performs local and line haul, unit mobility, unit resupply, and other missions in combat, combat support, and combat service support units. The system is designed to be rapidly deployable worldwide and operate on primary and secondary roads, trails, and cross-country terrain, in all climatic conditions.

7. Executive Summary:

The FMTV Operational and Organizational Plan was approved in September 1984. The User Requirement Document (JSOR) was established on 1 May 1986, and subsequently, the Army Cost and Operational Effectiveness Analysis (COEA) justified the program initiation on 4 June 1987. The FMTV Army Systems Acquisition Review Council (ASARC) approval was obtained on 5 August 1987, with further program approval from the Defense Acquisition Board (DAB) on 23 May 1988, which led to the prototype contracts being awarded on 21 October 1988.

The December 1988 SAR represented a procurement program of 15 years. As a result of competing Army priorities, the December 1989 SAR reflected the current 30 year procurement program. The FMTV ASARC IIIA milestone review was completed in September 1991, and granted approval to proceed to Low Rate Initial Production. The FMTV production contract was awarded to Stewart & Stevenson Services Inc. of Houston, TX on 11 October 1991. This was a five-year multiyear fixed price contract with an escalation clause which procures 10,843 trucks and includes option provisions. The new production facility is located in Sealy, TX.

In March 1992, the FMTV program was selected by Congress as part of the "Mentor-Protégé" program to develop Small and Disadvantaged Businesses as qualified subcontractors. A sole-source R&D contract was awarded to Stewart & Stevenson on 30 September 1992 to build and test hardware, as well as develop the Technical Drawing Package (TDP) for the deferred fuel tanker, expansible van and trailers. These models will be incorporated into the competitive FMTV rebuy solicitation.

The ASARC IIIB for Full Rate Production and Type Classification Standard was approved in August 1995, and the production APB was approved on 11 September 1995.

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7. Executive Summary (Cont'd):

First Unit Equipped (FUE) occurred in January 1996 at Ft. Bragg, followed by additional fieldings at Ft. Campbell in February 1996. The contract modification was signed in April 1996 for the contractor to develop the Level III Technical Data Package for the expansible van and fuel tanker variants.

In July 1996 the PM Office refined the FMTV rebuy strategy to incorporate a modified Producibility Evaluation Task (PET) approach which will increase competitive awareness of the planned rebuy. In October 1996 the contractor negotiated a three year contract to stretch the 5th base year production to December 1998.

The Office of the PM, FMTV had a name change to Project Manager, Medium Tactical Vehicles due to the approval for incorporation and transfer of operational control of the office of the Product Manager, Remanufacture Program on 1 September 1996.

A requirements contract is under development for negotiation with the current producer in support of Foreign Military Sales cases for FMTV during the 1997/1998 timeframe. The current contract option capabilities expired in February 1997.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate	
Milestone I/II (ASARC)	MAY 87	MAY 87	MAY 87	
DAB Program Review	MAY 88	MAY 88	MAY 88	
Prototype Contract Awards	OCT 88	OCT 88	OCT 88	
First Prototype Delivery	JAN 90	JAN 90	JAN 90	
FSD Development Testing				
Start	JAN 90	JAN 90	JAN 90	
Complete	DEC 90	DEC 90	DEC 90	
Early User Test and Evaluation				
Start	MAY 90	MAY 90	MAY 90	
Complete	OCT 90	OCT 90	OCT 90	
ASARC IIIA	SEP 91	SEP 91	SEP 91	
Production Award (MYP)	OCT 91	OCT 91	OCT 91	
Call up 2nd Year of MYP	AUG 92	AUG 92	AUG 92	
Production Qualification Test (PQT)				
Start	MAY 92	MAY 92	MAY 92	
Complete	NOV 92	NOV 92	NOV 92	
First Production Delivery	MAY 93	MAY 93	MAY 93	
Initial Production Test (IPT)				
Start	MAY 93	MAY 93	MAY 93	
Complete	JUL 95	JUL 95	JUL 95	
IOT&E				
Start	APR 95	APR 95	APR 95	
Complete	JUL 95	JUL 95	JUL 95	
Call Up 3rd Year of MYP Increment 1	SEP 93	SEP 93	SEP 93	
ASARC IIIB	AUG 95	AUG 95	AUG 95	
Call Up 3rd Year of MYP Increment 2	JUL 95	JUL 95	JUL 95	
Organic Support Capability	DEC 95	DEC 95	DEC 95	
First Unit Equipped (FUE)/Initial	DEC 95	DEC 95	JAN 96	(Ch-1)
Operational Capability (IOC)-FMTV				
Call up 4th Year of MYP Increment 1	JUL 95	JUL 95	JUL 95	
Call up 4th Year of MYP Increment 2	SEP 95	SEP 95	SEP 95	
Call Up 5th Year of MYP	JUL 96	JUL 96	AUG 96	(Ch-2)
Production Decision Review Van, Tanker,	JUN 96	JUN 96	NOV 96	(Ch-3)
& Trailer				
PQT, Van & Tanker				
Start	NOV 99	NOV 99	NOV 99	
Complete	DEC 99	DEC 99	DEC 99	
IPT, Van & Tanker				
Start	FEB 00	FEB 00	FEB 00	
Complete	OCT 00	OCT 00	OCT 00	
IOT&E, Van & Tanker				
Start	APR 00	APR 00	APR 00	
Complete	AUG 00	AUG 00	AUG 00	
PQT, Trailer				
Start	NOV 99	NOV 99	NOV 99	
Complete	DEC 99	DEC 99	DEC 99	
IPT Trailer				
Start	FEB 00	FEB 00	FEB 00	
Complete	OCT 00	OCT 00	OCT 00	

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9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
IOT&E, Trailer			
Start	APR 00	APR 00	APR 00
Complete	AUG 00	AUG 00	AUG 00

b. Current Change Explanations --

(Ch-1) First Unit Equipped (FUE) was scheduled for Dec 95 but was actually completed in Jan 96.

(Ch-2) Call Up 5th Year of MYP was scheduled for Jul 96 and was actually completed in Aug 96.

(Ch-3) The Production Decision Review Van, Tanker, & Trailer was expected to be completed in Jun 96 but was actually completed in Nov 96 due to the need to review available test data.

10. Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Highway Speed on 2% Grade at GVW (mph)	55	55 / 55	54.8	55
Highway Speed on 3% Grade at GVW (mph)	45	45 / 45	48.7	48.7
Highway Speed on 2% Grade at GCW (mph)	40	40 / 40	45.5	45.5
Highway Speed on 3% Grade at GCW (mph)	30	30 / 30	35.8	35.8
LMTV Payload (tons)	2.5	2.5 / 2.5	2.5	2.5
MTV Payload (tons)	5	5 / 5	5	5
LMTV Towed Load (lbs)	7500	7500 / 7500	7500	7500
MTV Towed Load (lbs)	21000	21000 / 21000	21000	21000
Longitudinal Grade Operation (%)	60	60 / 60	60	60
Slide Slope Operation (%)	30	30 / 30	30	30
Fording Without Kit (inches)	30	30 / 30	30	30
Fording With Kit (inches)	60	60 / 60	60	60
Operating Range on Integral Fuel at GCW (miles)	300	300 / 300	300	300
Reliability:				
MMBMMF (miles)				
Truck, Cargo (LMTV)	3000	3000 / 2450	12000	12000
Truck, Cargo (MTV)	2700	2700 / 1950	12000	12000
Tractor	3300	3300 / 2600	4800	4800

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10a. Performance Characteristics (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Wrecker	2300	2300 / 2000	4800	4800
Trailer (LMTV)	2800	2800 / 1985	5000	5000
Trailer (MTV)	2600	2600 / 1600	5000	5000
MMBOMF (miles)				
Truck, Cargo (LMTV)	2228	2228 / 1832	>8279	16847
Truck, Cargo (MTV)	2035	2035 / 1446	6386	6386
Tractor	2480	2480 / 1960	3606	3606
Wrecker	1875	1875 / 1500	4720	4720
Trailer (LMTV)	2056	2056 / 1489	5000	5000
Trailer (MTV)	1913	1913 / 1200	5000	5000
MMHPOM				
Truck, Cargo (LMTV)	.01	.01 / .011	.0037	.01
Truck, Cargo (MTV)	.011	.011 / .012	.0048	.011
Tractor	.012	.012 / .015	.0062	.012
Wrecker	.015	.015 / .018	.0069	.015
Trailer (LMTV)	.003	.003 / .005	.0003	.0003
Trailer (MTV)	.003	.003 / .005	.0006	.0006
Transportability:				
Surface	H, S&R	H, S&R / H, S&R	H, S&R	H, S&R
Transportation (Highway, Ship & Rail)				
Air Transportation	C-141	C-141 / C-141	C-141	C-141
Mobility: (vehicle cone index)				
Truck Cargo	25	25 / 25	25	25
Truck & Trailer Combination	35	35 / 35	30	35

MMBHMF - Mean Miles Between Hardware Mission Failure
MMBOMF - Mean Miles Between Operational Mission Failure
MMHPOM - Maintenance Man Hour/Operating Mile
GVW - Gross Vehicle Weight
GCW - Gross Combined Weight

b. Current Change Explanations -- None.

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11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	121.8	121.8	121.5
Procurement	11472.4	11472.4	11503.7
Rollaway	(10677.1)		(10782.2)
Other Wpn Systems Cost	(777.3)		(698.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(18.0)		(22.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	11594.2	11594.2	11625.2
Escalation	7327.1	7327.1	5144.4
Development (RDT&E)	(-6.2)	(-6.2)	(-5.2)
Procurement	(7333.3)	(7333.3)	(5149.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	18921.3	18921.3	16769.6
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	85488	85488	85488
Total	85488	85488	85488

Note: Excludes 51 RDTE prototypes from the SAR Baseline and 51 from the Current Estimate that are not considered fully configured.

Total LRIP quantities produced prior to Milestone III, Full Rate Production Decision were 1,804 LMTV trucks and 779 MTV trucks.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (SEP 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	11625.2	11594.2	
(2) Quantity	85488	85488	
(3) Unit Cost	0.136	0.136	0.00
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	11503.7	11472.4	
(2) Quantity	85488	85488	
(3) Unit Cost	0.135	0.134	+0.75

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	115.6	18805.7	-	18921.3
Previous Changes:				
Economic	-0.6	-2198.6	-	-2199.2
Quantity	-	-	-	-
Schedule	+0.7	-415.7	-	-415.0
Engineering	-	-	-	-
Estimating	-1.6	+223.1	-	+221.5
Other	-	-	-	-
Support	-	-152.6	-	-152.6
Subtotal	-1.5	-2543.8	-	-2545.3
Current Changes:				
Economic	+0.2	+507.6	-	+507.8
Quantity	-	-	-	-
Schedule	-	-36.7	-	-36.7
Engineering	-	+6.0	-	+6.0
Estimating	+2.0	-110.9	-	-108.9
Other	-	-	-	-
Support	-	+25.4	-	+25.4
Subtotal	+2.2	+391.4	-	+393.6
Total Changes	+0.7	-2152.4	-	-2151.7
Current Estimate	116.3	16653.3	-	16769.6

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Production Estimate	121.8	11472.4	-	11594.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	+0.2	-	-	+0.2
Engineering	-	-	-	-
Estimating	-1.8	+169.6	-	+167.8
Other	-	-	-	-
Support	-	-97.4	-	-97.4
Subtotal	-1.6	+72.2	-	+70.6
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	+42.6	-	+42.6
Engineering	-	+5.7	-	+5.7
Estimating	+1.3	-112.8	-	-111.5
Other	-	-	-	-
Support	-	+23.6	-	+23.6
Subtotal	+1.3	-40.9	-	-39.6
Total Changes	-0.3	+31.3	-	+31.0
Current Estimate	121.5	11503.7	-	11625.2

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDTE</u>		
	Revised escalation indices. (Economic)	N/A	+0.2
	Purchase of Technical Data Package (TDP). (Estimating)	+1.3	+1.2
	Delay of RDTE effort due to lack of current funding. (Estimating)	0.0	+0.8
	RDTE Subtotal	+1.3	+2.2
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+507.6
	Renegotiated costs for Program Year 4 vehicles being extended to 1997 and 1998. (Schedule)	+40.6	+42.0
	Additional Federal Excise Tax costs associated with the renegotiated unit costs for Program Year 4 vehicles. (Schedule)	+1.4	+1.5
	Change in annual procurement buy profile of the MTV truck. (Schedule)	+0.2	-9.1
	Change in annual procurement buy profile of the LMTV truck. (Schedule)	+0.3	-92.4
	Change in annual procurement buy profile of the MTV trailers. (Schedule)	0.0	+10.8

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13b. Cost Variance Analysis (Cont'd):

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Change in annual procurement buy profile of the LMTV trailers. (Schedule)	+0.1	+10.5
Addition of Anti-corrosion enhancement. (Engineering)	+5.7	+6.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+1.4
Adjustments due to changes in model mix (i.e. requirement for fewer of the more expensive models and more of the less expensive models). (Estimating)	-117.9	-116.3
Revised estimate for in-house program management matrix support. (Estimating)	+3.7	+4.0
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Increase in Initial Spares requirements due to model mix change. (Support)	+3.1	+3.2
Increase in documentation and fielding requirements due to model mix change. (Support)	+20.4	+22.1
Procurement Subtotal	-40.9	+391.4

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.07	--	+0.04	+0.04	--	+0.07	--	+0.01	+0.15	0.22

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.22	-0.02	+0.01	-0.01	--	--	--	--	-0.02	0.20

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14b. Unit Cost and Other History (Cont'd):

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.07	--	+0.03	+0.03	+0.01	+0.07	--	+0.01	+0.15	0.22

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.22	-0.02	--	-0.01	--	--	--	--	-0.03	0.19

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	AUG 87	MAY 87	MAY 87
Milestone II	N/A	AUG 87	MAY 87	MAY 87
Milestone III	N/A	MAR 93	AUG 95	AUG 95
FUE/IOC	N/A	APR 93	DEC 95	JAN 96
Total Cost	0	8568.6	18921.3	16769.6
Total Quantity	0	119542	85488	85488
Prog Acq Unit Cost	0	0.07	0.22	0.2

The unit of measure for the PAUC and PUC included truck and trailer quantities in the Development Estimate. The unit of measure was changed to truck quantities in the December 31, 1993 SAR and is reflected in the Production Estimate unit and Current Estimate costs.

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

FMTV:
Stewart & Stevenson Serv., Houston TX
DAAE07-92-C-R001, FFP-EPA
Award: October 11, 1991
Definitized: October 11, 1991

Initial Contract Price		
Target	Ceiling	Qty
\$1196.2	N/A	10843

Current Contract Price		
Target	Ceiling	Qty
\$1196.2	N/A	10843

Estimated Price At Completion	
Contractor	Program Manager
\$1196.2	\$1196.2

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

Cost and schedule variance reporting is not required on this FFP/EPA contract.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY88-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-24)</u>	<u>Total</u>
RDT&E	90.7	-	-	25.6	116.3
Procurement	1310.3	209.5	367.9	14765.6	16653.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1401.0	209.5	367.9	14791.2	16769.6

b. Annual Summary -- FMTV

Appropriation: 2040 Research, Development, Test + Eval, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY96 Dollars Nonrec</u>	<u>Flyaway FY96 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1988				12.0	9.8
1989				31.8	27.0
1990				22.1	19.5
1991				10.7	9.8
1992				11.6	10.9
1993				0.7	0.7
1994				7.4	7.2
1995				4.3	4.3
1996				1.5	1.5
1997					
1998					
1999					
2000					
2001				1.4	1.6
2002					
2003					
2004				7.9	9.6
2005				2.9	3.6
2006					
2007					
2008					

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16b. Program Funding Summary (Cont'd):

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2009					
2010					
2011				1.9	2.8
2012				3.5	5.2
2013				1.8	2.8
Subtotal				121.5	116.3

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991	394	20.0	57.9	83.6	78.6
1992	1304	9.9	153.7	187.6	180.1
1993	1991	12.1	240.9	264.3	259.2
1994	179	2.6	28.6	37.2	37.1
1995	3351	11.9	341.8	362.8	370.3
1996	675	45.5	83.3	141.3	146.2
1997	1807	12.6	202.4	225.7	238.8
1998	1506	9.5	167.0	194.2	209.5
1999	2204	6.1	302.8	334.0	367.9
2000	1652	9.9	217.1	242.5	272.9
2001	2088	15.0	255.2	289.1	332.6
2002	2986	7.9	344.0	381.1	448.6
2003	3060	7.2	342.5	383.7	462.9
2004	3336	4.0	421.8	458.5	567.6
2005	3334	19.8	417.1	467.8	594.2
2006	3334	15.4	410.7	441.4	575.2
2007	3334	4.5	402.0	418.7	559.8
2008	3322	4.7	391.7	409.1	561.2
2009	3319	3.9	416.4	433.7	610.4
2010	3319	19.8	409.8	441.9	638.1
2011	3319	15.3	404.8	432.3	640.5
2012	3319	4.5	396.2	420.1	638.6
2013	3319	4.6	388.0	420.9	656.4
2014	3319	3.9	416.3	453.2	725.2
2015	3319	19.8	409.8	461.6	757.8
2016	3319	15.4	405.0	451.2	760.0
2017	3317	4.5	396.4	431.1	745.0
2018	3316	4.7	387.9	423.4	750.8
2019	2484	3.9	334.7	372.5	677.7
2020	2485	19.8	327.4	380.0	709.3
2021	2489	15.3	321.0	367.8	704.4
2022	2493	4.4	314.6	346.6	681.0
2023	2495	4.4	307.9	339.3	684.0
2024		1.3	1.9	5.5	11.4

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16b. Program Funding Summary (Cont'd):

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	85488	364.1	10418.6	11503.7	16653.3

Fiscal Year 2024 shows recurring flyaway costs and no quantity for truck procurement since only trailers will be procured.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	85488	364.1	10418.6	11625.2	16769.6

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	51	51
Procurement	2810	2786

Percent Total Program Quantities Delivered: 3.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 709.8

Percent Total Program Expended: 4.2%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The average miles/vehicle/year for the LMTV truck is 3,371 miles; the MTV truck is 6,006 miles; the LMTV trailer is 1,725 miles; the MTV trailer is 3,000 miles. The average years of operation (useful life) is 20 years. The dedicated crew/vehicle/year for LMTV trucks is .1 annual manyears per vehicle; for MTV trucks is .25 annual manyears per vehicle. Dedicated crew is not applicable for trailers. The current Baseline Cost Estimate dated April 1991 was used to develop the costs in Section 18 b, but current doctrine reduces the projected Operating and Support Costs for the FMTV fleet. A revised Baseline Cost Estimate will be developed and included in the December 31, 1997 SAR.

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per LMTV	Ave Annual Cost Per MTV
Mission Pay & Allowances	5.0	8.3
Unit Level Consumption	1.8	4.5
Intermediate Maintenance	0.0	0.0

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FMTV, December 31, 1996

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per LMTV	Ave Annual Cost Per MTV
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.2	0.2
Indirect Costs	2.2	3.6
Total	9.2	16.6

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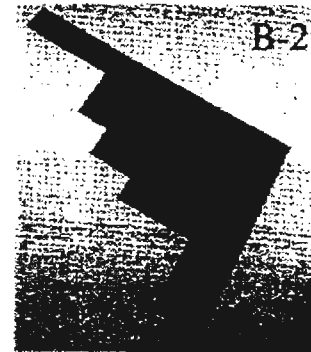
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: B-2A Spirit

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): B-2 (B-2A Spirit)2. (U) DoD Component: USAF3. (U) Responsible Office and Telephone Number:

B-2 Program Office

Col William J. Jabour

ASC/YS Bldg 16

Assigned: January 22, 1996

2275 D St Ste 4

DSN 785-9484; COMM (937) 255-9484

WPAFB, OH 45422-7221

4. (U) Program Elements/Procurement Line Items:

RDT&E:

(U) PE 0604240F

PROCUREMENT:

(U) APPN 3010 ICN B002A0 (Air Force)

MILCON:

(U) PE 0101127F

(U) PE 0101216F (Shared)

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FOR OPEN PUBLICATION
AS AMENDED

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

(U) NOTE: The B-2 transferred funding from PE 0101127F into PE 0708011F for industrial preparedness work at Air Force Plant 42 at Palmdale, CA.

SAF/PAE

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~~Downgrade Instructions: [redacted]~~
~~Declassify on: [redacted] Originating Agency Determination Required (OADR)~~

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B-2A Spirit, December 31, 1996

5. (U) References:

SAR Baseline (Production Estimate):

(U) ATB Program Management Directive (PMD) R-Q 2020(5) dated 1 June, 1987 as amended by the FY90/91 President's Budget.

Approved Program:

(U) None.

6. (U) Mission and Description:

(U) The B-2 Spirit exploits breakthroughs in low observables technology (radar, infrared, visual, electromagnetic, and acoustic) to achieve vehicle signatures that will allow penetration of current and postulated enemy defenses. The B-2 will have the capability to perform world-wide conventional and nuclear delivery missions. Survivability will be enhanced by reduction of observable signatures and a complementary defensive management system. It will also have a low altitude terrain following capability and a penetration speed commensurate with high probability of survival without unduly penalizing mission range. The B-2 is an all-wing, two-person crew aircraft with twin weapons bays of over 20,000 pounds capacity each. It is powered by four F118-GE-100 turbofan engines. The low wing loading provides efficient cruise for long endurance and good airfield performance.

7. (U) Executive Summary:

(U) In November 1981, after a competitive source selection, a contract for Full Scale Development (FSD) and Production Program Planning was awarded to Northrop Corporation for an Advanced Technology Bomber. General Electric was selected to be the engine contractor. An initial FSD phase was conducted to pull selected risk reduction tasks forward, reducing uncertainty while limiting financial exposure. This phase was successfully completed in August 1984, approximately 90 days after the Weapon System Preliminary Design Review. In July 1985, a contract for Aircrew Training Devices (ATD) was awarded to Singer-Link after a competitive source selection. The Weapon System Critical Design Review (CDR) was successfully completed in December 1985. A low rate initial production (LRIP) contract was awarded for five aircraft in November 1987. The first aircraft completed its first flight on 17 July 1989. The durability test article completed first lifetime testing in March 1991 and second lifetime testing in June 1992. The SECDEF Major Aircraft Review in 1990 prompted a major program restructure. It reduced the total aircraft from 132 to 75 and implemented a new procurement schedule. The FY92 President's Budget and the FY92 Appropriation Act prompted a major program restructure in which near term buys were drastically reduced and the program stretched. The amended FY93 President's Budget reduced the total aircraft buy from 75 to 20. The primary mission was changed from a strategic/nuclear role to a conventional/deployable bomber with a collateral nuclear mission. Air Force organic maintenance capability for the F-118-GE-100 engine was in place at Oklahoma Air Logistics Center on 19 June 1991. The FY89/90 LRIP contract for AV-12 through AV-16 was awarded on 23 December 1991. Full scale static

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B-2A Spirit, December 31, 1996

7. (U) Executive Summary (Cont'd):

structural testing was completed on 16 December 1992. The final Low Observables (LO) configuration was endorsed by the Defense Science Board (DSB) in May 1993 and approved by HQ ACC in July 1993. AV-1 completed its Engineering and Manufacturing Development (EMD) flight testing and was placed in flyable storage in March 1993. At Whiteman AFB, the B-2 Field Training Detachment opened on 14 May 1993, the first Weapon System Trainer was delivered in July 1993, training of the initial maintenance cadre was completed on 17 November 1993, and initial aircrew training began on 4 January 1994. Block 10 Operational Test and Evaluation (OT&E) Certification was accomplished on 31 August 1993 and dedicated OT&E began in October 1993. First LRIP Aircraft was delivered to Whiteman AFB on 17 December 1993. The first increment of the airframe Functional Configuration Audit (FCA) was conducted in October 1994. The airframe Physical Configuration Audit (PCA) was conducted in January 1995. The Tri-Service Standoff Attack Missile (TSSAM) program, the only long-range standoff capability in the baseline program, was canceled in February 1995. On 7 February 1995, USD(A&T) delivered a report to Congress on the efficient and effective utilization of both public and private facilities for depot maintenance support for the B-2. In accordance with the depot support plan, the B-2 support concept is a mix of organic and contractor support for depot repair.

The B-2 development program continued on track towards planned EMD flight test completion in July 1997. Key subsystems such as the Pilot Alert System used for contrail detection, Milstar used for command and control, and terrain following (TF) continued excellent performance. For Block 20, the TF/TA essential employment capability, ACC's minimum operational requirement, was 1000 feet manual TF. All Block 20 TF/TA requirements were successfully tested and a 600 feet auto/manual TF capability was released to ACC. For Block 30, TF testing has progressed to the final stage covering 200 feet auto/manual over all terrain types including water, mountains, and snow covered terrain. In terms of weaponization, all Mk-82 accuracy tests were completed for Block 30 with demonstrated results significantly better than the specified requirements. The Joint Direct Attack Munition (JDAM), the B-2 precision weapon for Block 30, has continued integration testing and is on schedule for Block 30 operational dates. The GPS Aided Munition (GAM), a 2000-pound class weapon, completed development in the spring of 1996. This unique weapon, to be used on Block 20 aircraft, was delivered to the 509th Bomb Wing in the summer of 1996 and provided the first ever operationally fielded near-precision, all-weather weapon capability. The current focus of the B-2 test program is to complete developmental flight test by July 1997.

During the spring of 1996, the B-2 Combined Test Force (CTF) used AV-17, the first Production Block 20 B-2, to successfully complete Block 20 Operational Test and Evaluation (OT&E). This testing was completed on schedule and use of AV-17 for OT&E significantly reduced developmental flight test schedule risk. The Block 30 Weapon System OT&E, used to verify full operational capability, is scheduled to begin in May 1997.

On the production side of the B-2 program, the industrial base preservation contract, awarded in 1995 was completed in the summer 1996. This effort, directed by Congress, was designed to preserve the option to purchase

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B-2A Spirit, December 31, 1996

7. (U) Executive Summary (Cont'd):

additional B-2 aircraft at a reasonable cost/schedule with the primary focus on sustaining the supplier base required for a potential B-2 production restart. In early 1996, the President directed the Air Force to upgrade the first B-2 test prototype, AV-1, into the 21st operational B-2. The contract for this effort was definitized in November 1996. By the end of 1996, a total of thirteen aircraft have been delivered to Whiteman AFB. Of the thirteen delivered aircraft, four aircraft are being modified from a Block 10 to Block 30 configuration and one aircraft is being modified to a Block 20 configuration.

The FY97 Appropriations Act increased the B-2 Bomber Program RDT&E line for FY97 by \$116M. These funds were marked for B-2 Block 30 Improvements with direction that the Air Force prioritize its enhancements within that amount. ACC prioritized the weaponization enhancements for the B-2 Bomber. The Multi-Stage Improvement Program (MSIP) contract is expected to be awarded in the spring of 1997 and will accommodate future ACC evolving needs.

Financially, the FY98 President's Budget reduced the FY99 B-2 RDT&E funding by \$212M. The FY99 RDT&E funds are primarily allocated to completing the modification of the 5 EMD test aircraft to the Block 30 configuration. We are currently assessing program restructure alternatives that provide the most combat capability to ACC based on the funding projected in the FY98 President's Budget.

The B-2 Program has delivered over 90 percent of expected program deliveries. This will be the final SAR for the B-2 Program.

8. (U) Threshold Breaches:

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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B-2A Spirit, December 31, 1996

9. (U) Schedule:

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Program Go-Ahead	NOV 81	N/A	NOV 81
Preliminary Design Review	MAY 84	N/A	MAY 84
Critical Design Review	DEC 85	N/A	DEC 85
LRIP Long Lead	FEB 86	N/A	FEB 86
Low Rate Initial Production (LRIP)	NOV 87	N/A	NOV 87
First Flight	OCT 88	N/A	JUL 89
Prod Readiness Review Complete	N/A	N/A	SEP 91
Production Decision (FY92)	N/A	N/A	N/A
Production Decision (FY93)	N/A	N/A	N/A
First LRIP Delivery	N/A	N/A	DEC 93
Multiyear Decision (FY95)	N/A	N/A	N/A
First Prod Aircraft Delivery	N/A	N/A	N/A

(b)(1)

b. (U) Current Change Explanations --

(Ch-1) - Initial Operational Capability has been added since the December 1995 SAR.

10. (U) Performance Characteristics:

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Single Integrated Operational Plan (SIOP)				

(b)(1)

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B-2A Spirit, December 31, 1996

10a. (U) Performance Characteristics (Cont'd):

	<u>Production</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u> <u>Obj/Threshold</u>	<u>Demon-</u> <u>strated</u> <u>Perf</u>	<u>Current</u> <u>Estimate</u>
Critical Field	8,000	N/A / N/A	N/A	8000
Length for Conventional Mission (ft)				
Landing Distance (ft)	8,000	N/A / N/A	N/A	7000
Speeds				
Cruise (mach)	.76	N/A / N/A	.76	.76
High Altitude (mach)	.76	N/A / N/A	.76	.76
Penetration/With-				

(b)(1)



b. Current Change Explanations -- None.

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11. (U) Total Program Cost and Quantity (Dollars in Millions):

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	15049.9	0.0	17538.6
Procurement	27538.7	0.0	11356.1
Airframe	(16571.9)		(7971.9)
Engine	(1144.6)		(174.4)
Avionics	(4204.5)		(990.2)
Total Flyaway	(21921.0)		(9136.5)
Other Weapon System Cost	(3467.5)		(1566.9)
Peculiar Support	(0.0)		
Initial Spares	(2150.2)		(652.7)
Construction (MILCON)	1144.8	0.0	353.5
Acquisition O&M	0.0	0.0	0.0
Total FY 81 Base-Year \$	43733.4	0.0	29248.2
Escalation	25791.0	0.0	15505.9
Development (RDT&E)	(5285.1)	(0.0)	(7157.8)
Procurement	(19827.0)	(0.0)	(8148.0)
Construction (MILCON)	(678.9)	(0.0)	(200.1)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	69524.4	0.0	44754.1

(U) Production estimate of other weapon system costs includes Pre-Planned Product Improvement (P3I) (installation and retrofit), and Peculiar Support Equipment.

b. (U) Quantity --

Development (RDT&E)	5	N/A	6
Procurement	127	N/A	15
Total	132	N/A	21

(U) AV-1, an RDT&E test article, is being upgraded to Block 30 configuration with procurement funding as directed by the President of the United States. This brings the total number of aircraft to 21.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (N/A)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 81 BY\$)	29248.2	0.0	
(2) Quantity	21	0	
(3) Unit Cost	1392.771	N/A	N/A
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 81 BY\$)	11356.1	0.0	
(2) Quantity	15	0	
(3) Unit Cost	757.073	N/A	N/A

(U) There is no approved APB for the B-2 program. Therefore, Unit Cost Reporting (UCR) does not apply, and there is no requirement to establish a unit cost baseline.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	20335.0	47365.7	1823.7	69524.4
Previous Changes:				
Economic	+45.0	+3194.0	+58.4	+3297.4
Quantity	-	-31570.3	-639.5	-32209.8
Schedule	+2470.1	+5068.7	-	+7538.8
Engineering	+428.9	-467.7	-	-38.8
Estimating	+1466.0	+1828.6	-692.9	+2601.7
Other	+286.3	+297.7	-	+584.0
Support	-401.9	-5585.9	-	-5987.8
Subtotal	+4294.4	-27234.9	-1274.0	-24214.5
Current Changes:				
Economic	-5.2	-10.9	-0.2	-16.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+255.0	-	-	+255.0
Estimating	-182.8	-207.3	+4.1	-386.0
Other	-	-	-	-
Support	-	-408.5	-	-408.5
Subtotal	+67.0	-626.7	+3.9	-555.8
Total Changes	+4361.4	-27861.6	-1270.1	-24770.3
Current Estimate	24696.4	19504.1	553.6	44754.1

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B-2A Spirit, December 31, 1996

13a. (U) Cost Variance Analysis (Cont'd):

(U) Summary (FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	15049.9	27538.7	1144.8	43733.4
Previous Changes:				
Quantity	-	-16722.4	-380.8	-17103.2
Schedule	+1512.2	+3010.1	-	+4522.3
Engineering	+276.2	-263.9	-	+12.3
Estimating	+749.8	+1082.1	-412.6	+1419.3
Other	+172.6	+150.3	-	+322.9
Support	-259.9	-3148.6	-	-3408.5
Subtotal	+2450.9	-15892.4	-793.4	-14234.9
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+139.2	-	-	+139.2
Estimating	-101.4	-95.9	+2.1	-195.2
Other	-	-	-	-
Support	-	-194.3	-	-194.3
Subtotal	+37.8	-290.2	+2.1	-250.3
Total Changes	+2488.7	-16182.6	-791.3	-14485.2
Current Estimate	17538.6	11356.1	353.5	29248.2

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E		
Revised Escalation Indices (Economic)	N/A	-5.2
Added Multi-Stage Improvement Program funding (Engineering)	+66.1	+116.0
Added Joint Air-to-Surface Standoff Missile (JASSM) Integration (Engineering)	+73.1	+139.0
Incorporation of ECPs to Contract/Revised Estimate of Engineering Change Orders (Estimating)	-23.9	-42.0
Congressional Cut for EMD Curtailment Tooling (Estimating)	-11.5	-20.0
FY98 PB Funding Reduction (Estimating)	-99.2	-182.4
Incorporation of ECPs on Northrop Contract (Estimating)	+18.0	+28.6
Added Flight Test Sustaining (Estimating)	+40.2	+77.8
Revised Estimate of Combined Flight Test funding (Estimating)	-3.7	-8.1
Revised Estimate of Mission Planning (Estimating)	-21.3	-36.7
RDT&E Subtotal	+37.8	+67.0

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-10.9
Adjustment for current and prior year inflation (Estimating)	+1.0	+1.8
Reduced nonrecurring estimate due to better understanding of closeout risks (Estimating)	-110.2	-235.7
Increased corrections to production aircraft (Estimating)	+12.4	+24.6
Minor changes to engines and weapon system delivery systems (Estimating)	+0.9	+2.0
Increased software investment due to additional Line Replaceable Unit (LRU) requirements and increased integration effort (Support)	+112.1	+218.5
Reduced PSE, data requirements (Support)	-88.1	-169.9
Reduced interim contractor support due to lower repair generation and lower negotiated costs (Support)	-70.0	-140.4
Increased retrofit costs for spares upgrades (Support)	+21.7	+45.2
Completion of Bomber Industrial Base Preservation Study (Support)	-12.2	-23.0
Reduced facilities rearrangements/improvements (Support)	-9.4	-18.5
Increased costs for aircraft acceptance testing (Support)	+14.1	+28.7
Increased program management administration (Support)	+2.1	+4.1
Adjustment for current and prior year inflation (Support)	+1.4	+2.6
Decrease in mission readiness spares requirements (Support)	-208.8	-437.0
Increase in aircraft initial spares requirements (Support)	+33.2	+62.7
Increase in engine initial spares requirements - EMD engines upgrade (Support)	+9.6	+18.5
Procurement Subtotal	-290.2	-626.7
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.2
Adjustment for Current and Prior Year Inflation. (Estimating)	0.0	+0.1
Deleted Paint/Corrosion Facility at Tinker AFB (TAFB) (Estimating)	-2.7	-5.0

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13b. (U) Cost Variance Analysis (Cont'd):

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Deleted Depot Maintenance Hangar at TAFB (Estimating)	-9.9	-18.2
Added Funds to Complete Additional Space for Flight Control Hydraulic Integration Lab at TAFB (Estimating)	+5.3	+9.7
Added 2 Docks at Whiteman AFB (Estimating)	+9.4	+17.5
MILCON Subtotal	<u>+2.1</u>	<u>+3.9</u>

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
526.70	+156.24	+1250.19	+358.99	+10.30	+105.51	+27.81	-304.59	+1604.45	2131.15

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
372.96	+212.21	+680.06	+337.91	-31.18	+108.09	+19.85	-399.63	+927.31	1300.27

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
(b)(1)				
Total Cost	N/A	N/A	69524.4	44754.1
Total Quantity	N/A	N/A	132	21
Prog Acq Unit Cost	N/A	N/A	526.7	2131.15

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a. RDT&E --	Initial Contract Price		
(U) <u>Airframes:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop Grumman B-2 Div, Pico Rivera CA			
F33657-81-C-0067, CPIF/CPFF/AF	\$9400.0	N/A	8
Award: November 2, 1981			
Definitized: November 2, 1981			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$11098.6	N/A	8	\$20952.2	\$20952.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-38.8	\$-97.7
Cumulative Variances To Date (11/29/96)	\$-55.4	\$-65.1
Net Change	\$-16.6	\$32.6

(U) The Contract Price (Target) increased due to the incorporation of planned effort such as Phase I Rain Erosion Coating System, GAM-113, and the B-61/Mod-11 B-2 Weapon System Study. Also impacting the Target Price was the FY96 Datalink effort and the definitization of the JDAM Interface Control Working Group effort and the Northrop/Boeing Associate Contractor Agreement for the Mission Planning effort.

(U) The improvement in the schedule variance is due to the Material organization for TPS development, Portable Delivery Subsystem (PDS), High Accuracy (HIAC) and Flex cable purchase order duplication, and LIB-28 termination milestone completion.

(U) Contract Comments:
Quantity includes two non-flying test articles.

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B-2A Spirit, December 31, 1996

15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

(U) The increase in the Contract Price (Target) and Estimated Price at Completion is due to added effort in support of the program schedule. These efforts include environmental tasks, rearrangement/installation of utilities, rehabilitation of buildings, and seismic bracing at Plant 42, Palmdale CA.

(U) No CPR reporting required.

(U) There is no impact to the program or contract.

b. Procurement --

(U) <u>Airframe:</u>	<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u> <u>Qty</u>
Northrop Grumman B-2 Div, Pico Rivera CA	\$2271.0	\$2727.0 5
F33657-87-C-2000, FPIF		
Award: November 19, 1987		
Definitized: November 19, 1987		

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$14213.9	\$16429.2	15	\$14907.7	\$15192.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$48.7	\$-117.1
Cumulative Variances To Date (11/29/96)	\$55.5	\$-89.9
Net Change	\$6.8	\$27.2

Explanation of Change:

(U) The Contract Price (Target and Ceiling) increased due to the addition of numerous modifications that acquired technical orders, support equipment, engineering changes, and curtailment/industrial base preservation efforts.

(U) The Contractor's and Program Manager's Estimate at Completion increased due to incorporation of the contract modifications listed above.

(U) The positive schedule variance is due to replanning of the Disk Drive Unit, Contrail Management System Enhancements, software rehost, Technical Data, Electronics Division, Vought and Subcontractors. This improvement was due to updating the budget baseline to a negotiated schedule and reassessments of work accomplished. Also contributing to the positive schedule variance was the completion of behind schedule effort for Loral's Production Base Preservation and Alternate Test Equipment at Teledyne delivering parts (Digital Fast Analogs and Analog Subsystems) that were

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B-2A Spirit, December 31, 1996

15. (U) Contract Information (Cont'd):

previously scheduled. The remaining variance is due to subcontractors working to schedules earlier than the contract schedule, final checkout and delivery LO recovery plans, additional Air Vehicle Customer Acceptance Flights and Modification Drawings.

(U) The favorable change in cumulative cost variance is primarily due to posting earned value for good performance on Subcontractor reserves on the first LRIP lot buy (FY89/90).

(U) The initial contract was for five (5) aircraft. The current contract includes ten (10) additional aircraft, for a total buy of fifteen (15) aircraft. An Over-Target Baseline (OTB) was implemented in May 1993 and the variance analysis reflects the incorporation of the OTB.

(U) There is no impact to the program or contract.

(U) <u>Aircrew Training Device:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
HTILink Flight Simulation, Binghamton NY				
F33657-84-C-2265, CPAF	\$206.2	N/A	3	
Award: November 1, 1993				
Definitized: November 1, 1993				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$202.8	N/A	3	\$200.1	\$200.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.9	\$-1.3
Cumulative Variances To Date (12/13/96)	\$5.5	\$-2.6
Net Change	\$2.6	\$-1.3

Explanation of Change:

(U) The Contract Price (Target and Ceiling) decreased due to a computer credit proposal.

(U) The favorable change in cost variance is attributable to the contractor underrunning to the EAC.

(U) The schedule variance is a result of programmatic slips due to software delays and additional OFPs. The net result has not been enough to overcome the cost variance.

(U) There is no impact to the program or contract.

(U) Contract Comments:

(U) This contract updates all of the trainers procured under the EMD and Production Option 1 contracts. Option 1 trainers will be delivered under this program.

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B-2A Spirit, December 31, 1996

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY81-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-04)</u>	<u>Total</u>
RDTE	23986.9	355.8	44.9	308.8	24696.4
Procurement	18664.4	255.9	279.3	304.5	19504.1
MILCON	526.5	27.1	-	-	553.6
O&M	-	-	-	-	-
Total	43177.8	638.8	324.2	613.3	44754.1

b. Annual Summary -- B-2

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY81 Dollars Nonrec	Flyaway FY81 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1981				9.6	10.0
1982				446.4	498.2
1983				443.7	518.2
1984				1108.0	1344.0
1985				1882.9	2361.2
1986				2021.0	2595.0
1987				2308.8	3100.7
1988				2025.5	2793.2
1989				1506.2	2176.5
1990				1236.0	1841.7
1991				1110.2	1716.4
1992				956.8	1522.3
1993				729.5	1185.4
1994				469.6	776.3
1995				216.5	364.8
1996				341.8	587.5
1997				339.3	595.5
1998				198.5	355.8
1999				24.5	44.9
2000				112.2	209.5
2001				37.8	72.0
2002				6.8	13.3
2003				7.0	14.0
Subtotal	6			17538.6	24696.4

(U) One RDTE aircraft of the six was not planned for retrofit and was to remain in flight test (AV-1). AV-1, is being upgraded to Block 30 configuration with procurement funding as directed by the President of the

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B-2A Spirit, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):

United States. Additionally, there are two non-flying ground test articles.

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY81 Dollars Nonrec	Flyaway FY81 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986			120.5	120.5	175.0
1987	2	141.8	1028.4	1247.1	1884.3
1988	2	135.1	852.4	1103.7	1750.4
1989	2	113.1	1435.7	1857.8	3043.1
1990	2	109.6	1075.3	1363.4	2304.1
1991	2	105.6	1145.0	1326.0	2324.5
1992	1	18.8	1224.5	1280.5	2288.2
1993	4	100.4	1105.4	1451.3	2632.7
1994		37.7	8.6	406.2	749.5
1995		14.4	3.7	277.0	520.8
1996		9.9	254.4	446.0	855.8
1997		12.1	7.7	69.4	136.0
1998		10.9	5.7	127.9	255.9
1999		10.3	1.6	136.6	279.3
2000		21.6	1.9	82.2	171.7
2001		7.1		23.7	50.5
2002		6.2		16.7	36.6
2003		2.7		8.0	17.9
2004		8.4		12.1	27.8
Subtotal	15	865.7	8270.8	11356.1	19504.1

(U) Note:

The total then-year dollar, program, procurement, cost is comprised of the following:

PE11127F, B-2 Squadrons

Aircraft Procurement, Air Force, Combat Aircraft, BA01	BP100000
Aircraft Procurement, Air Force, Modifications, BA05	BP110000
Aircraft Procurement, Air Force, Post-Production Support, BA07	BP130000
Aircraft Procurement, Air Force, Aircraft Initial Spares, BA06	BP160000

PE78011, Industrial Preparedness

Aircraft Procurement, Air Force, Aircraft Support Equipment and Facilities, BA07	BP140000
--	----------

(U) Note:

Recurring flyaway dollars (FY94/out) consists of engineering changes, recurring armament and AV-1 upgrade (FY96).

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B-2A Spirit, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY81 Dollars Nonrec	Flyaway FY81 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986				2.4	3.2
1987				3.4	4.7
1988				69.6	98.7
1989				53.5	78.7
1990				63.1	98.2
1991				50.0	79.9
1992				15.4	25.1
1993				30.2	50.2
1994				23.7	40.2
1995				13.4	23.0
1996				14.0	24.6
1997					
1998				14.8	27.1
Subtotal				353.5	553.6

(U) (U) Includes both Military Construction and Planning/Design funds.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	21	865.7	8270.8	29248.2	44754.1

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	6	6
Procurement	13	13

(U) Percent Total Program Quantities Delivered: 90.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 36504.6

(U) Percent Total Program Expended: 81.6%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The O&S costs were computed on 16 primary authorized aircraft (PAA) for a nine year phase in period and a twenty five (25) year steady state, with each bomber flying at 431 hours per year at maturity. Whiteman AFB hosts the B-2 Formal Training Unit. This concept of operations relies heavily on using weapon system trainers and complementary training aircraft to train the

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B-2A Spirit, December 31, 1996

18a. (U) Operating and Support Costs (Cont'd):

aircrews. The personnel cost represents the total cost to support the primary program element personnel, allowances, acquisition, training and the base operating and support costs. The depot maintenance cost element is based on the 1995 Depot Support Review Decision. Engine overhaul is based on an organic repair concept. There are no costs included for replenishment spares, they are funded from the Air Force Stock Fund. Sustaining support includes permanent modifications, projections for replacement support equipment, sustaining engineering, software support estimates, and recurring weapon system support center costs.

b. (U) Costs -- (FY 1981 Constant (Base-Year) Dollars in Millions)

Cost Element	Average Cost Per B-2 Wing	Average Annual Cost Per Antecedent Wing
Mission Pay & Allowances	41.8	N/A
Unit Level Consumption	5.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	49.0	N/A
Contractor Support	39.5	N/A
Sustaining Support	96.0	N/A
Indirect Costs	0.0	N/A
Personnel Support	5.2	N/A
Personnel Acq & Trn	0.7	N/A
Total	237.2	N/A

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: JSOW

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AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): Joint Standoff Weapon
Program (JSOW)

2. (U) DoD Component: Navy

Joint Participants:
Air Force

3. (U) Responsible Office and Telephone Number:

Conventional Strike Weapons
PMA-201
Arlington, VA 22243-1201

CAPT C.H. Johnston
Assigned: August 6, 1996
DSN DSN 664-2410X4849
COMM (703) 604-2410X4849
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

4. (U) Program Elements/Procurement Line Items:

ROTE:

(U) PE 0604727F
(U) PE 0604727N

PROCUREMENT:

(U) APPN 1507 ICN 223000 (Navy)
(U) APPN 3020 ICN JSOW00 (Air Force)

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5. (U) References:

Baseline/BLU-108

SAR Baseline (Development Estimate):

(U) Acquisition Decision Memorandum (ADM) dated June 23, 1992, subject: Authorization for Milestone II.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated January 30, 1997.

Unitary

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline dated April 26, 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated April 26, 1995.

6. (U) Mission and Description:

(U) The JSOW is an air-to-ground weapon designed to attack a variety of targets during day, night, and adverse weather conditions. JSOW will enhance aircraft survivability as compared to current interdiction weapon systems by providing the capability for launch aircraft to standoff outside the range of most target area surface-to-air threat systems. The JSOW Global Positioning System (GPS)/Inertial Navigation System (INS) capability will allow several target kills per aircraft sortie. The Navy will integrate the JSOW onto the F/A-18 and AV-8B aircraft, and the Air Force will integrate the JSOW onto the F-16 C/D, F-15E and bomber aircraft. A main focus of the JSOW development has been high payoff, low risk, low cost engineering solutions to effectively achieve both operational requirements and a low unit procurement cost. The program objective is to obtain an ample inventory of precision standoff weapons for use against the numerous, yet tactically significant targets which must be attacked in any conflict.

7. (U) Executive Summary:

(U) The original JSOW Acquisition Plan (AP), AP-88-21, was approved on July 1, 1988. The JSOW program was reviewed by the Defense Acquisition Board (DAB) on June 5, 1989, and was granted Milestone I approval to enter an 18 month Demonstration/Validation (DEM/VAL) phase for the JSOW Baseline program. The program name was changed from Advanced Interdiction Weapon System (AIWS) to Joint Standoff Weapon (JSOW).

On March 30, 1996, the Special Tooling/Special Test Equipment contract option was exercised. The effort planned under this option prepared the program to enter Low Rate Initial Production in February 1997.

The JSOW team crafted a production strategy that put the JSOW program on the

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7. (U) Executive Summary (Cont'd):

leading edge of acquisition reform. The time and effort to develop, negotiate and approve the first JSOW Baseline LRIP contract was drastically reduced through the use of a combined government and contractor team implementing an acquisition process. This streamlined process allowed every facet of the contracting negotiations to be productive and effective.

JSOW Baseline DT-IIC was conducted jointly with OT-IIA, from February through November 96. During this phase, JSOW was evaluated with operationally representative hardware and software in real world conditions. This phase of testing included lab and ground testing, shipboard suitability, survivability, training systems evaluation, countermeasures testing, captive flight and free flight testing along with extensive modeling and simulation to ensure all Operational Requirements Document and Test and Evaluation Master Plan thresholds and objectives were evaluated. This phase of testing culminated in 10 successful launches of JSOW, the final four of which were conducted with live submunitions against real threat targets as part of the Live Fire Test and Evaluation program.

JSOW Baseline OT-IIA was conducted from May through September 96. During this phase the operational suitability and operational effectiveness of JSOW Baseline was evaluated. This phase of testing included six weapon launches. Upon completion of testing, JSOW was certified as ready for Operational Evaluation (OPEVAL).

The JSOW BLU-108 Development Test and Evaluation (DT&E) program commenced on February 29, 1996. To date, testing completed includes: proper F-16/missile software operation; loads, stability and control, and flutter testing; and F-16 self-targeting capabilities.

Application of acquisition reform initiatives in JSOW Unitary resulted in a 15% reduction in estimated production costs in the first year of E&MD.

On January 30, 1997, Dr. Kaminski (USD (A&T)) signed the JSOW Baseline Acquisition Decision Memorandum which officially approved the JSOW Baseline Low Rate Initial Production (LRIP) strategy, Full Rate Production (FRP) entry criteria, and the delegation of the JSOW Baseline FRP decision to the Navy Service Acquisition Executive. The LRIP contract with Texas Instruments was awarded on February 13, 1997.

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8. (U) Threshold Breaches:

Baseline/BLU-108

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

Unitary

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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9. (U) Schedule:
Baseline/BLU-108

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I	JUN 89	JUN 89	JUN 89
DEMVAL Contract Award	JUN 89	JUN 89	JUN 89
Early Operational Assessment (OT-I)			
Start	MAR 91	MAR 91	MAR 91
Complete (Report)	OCT 91	OCT 91	OCT 91
Milestone II	APR 92	APR 92	JUN 92
E&MD Contract Award	MAY 92	MAY 92	JUN 92
Preliminary Design Review	NOV 92	NOV 92	JAN 93
Critical Design Review	DEC 94	DEC 94	APR 95
IOT&E (OT-IIA)			
Start	DEC 95	DEC 95	FEB 96
Complete (Report)	JUL 96	JUL 96	DEC 96 (Ch-1)
TECHEVAL (DT-IIC)			
Start	NOV 95	NOV 95	FEB 96
Complete (Report)	JUL 96	JUL 96	DEC 96
Functional Configuration Audit	OCT 95	OCT 95	DEC 95
Production Verification Review	APR 96	APR 96	JAN 96
Production Readiness Review	JUN 96	JUN 96	OCT 96 (Ch-1)
LRIP Contract Option Exercised	OCT 96	OCT 96	FEB 97 (Ch-1)
LRIP First Delivery	MAY 98	MAY 98	JUL 98
OPEVAL (OT-IIB)			
Start	AUG 96	AUG 96	FEB 97 (Ch-1)
Complete (Report)	JUL 97	JUL 97	SEP 97
Organizational Level Support	APR 00	APR 00	JUN 00
Intermediate Level Support	JUL 00	JUL 00	SEP 00
Milestone III	JUL 98	JUL 98	OCT 98

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9a. (U) Schedule (Cont'd):
Baseline/BLU-108

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Start (Air Force)	N/A	N/A	N/A	(Ch-3)
Start (Navy)	N/A	N/A	N/A	(Ch-3)
Complete (Report)	N/A	N/A	N/A	(Ch-3)
LRIP Contract Option Exercised	N/A	JAN 00	JAN 99	(Ch-1)
LRIP First Delivery	N/A	JUL 01	JUL 00	(Ch-4)
Milestone III	N/A	OCT 01	OCT 00	(Ch-4)

(b)(1)

- b. (U) Current Change Explanations --
- (Ch-1) - One month change to better align with program events.
 - (Ch-2) - Incorporates redesign of BLU-108 payload lid.
 - (Ch-3) - These milestone have been replaced with IOT&E (Start, Complete BLU-108 Report and Complete IBLU Report).
 - (Ch-4) - Incorporates the improved Sensor Fuzed Weapon submunition.

Unitary

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Milestone II	APR 95	APR 95	APR 95	
E&MD Contract Award	JUL 95	JUL 95	AUG 95	
Critical Process Review #1	FEB 96	FEB 96	JUN 96	(Ch-1)
Critical Process Review #2	DEC 98	DEC 98	MAR 99	
Critical Process Review #3	AUG 00	AUG 00	AUG 00	
System Flight Test				
Start	JAN 01	JAN 01	JAN 99	(Ch-2)
Complete (Report)	SEP 01	SEP 01	AUG 00	(Ch-2)
LRIP Contract Option Exercised	OCT 00	OCT 00	OCT 00	
LRIP First Delivery	APR 02	APR 02	JAN 02	(Ch-2)
OPEVAL (OT-IIB)				
Start	NOV 01	NOV 01	NOV 00	(Ch-2)
Complete (Report)	MAY 02	MAY 02	MAY 01	(Ch-2)
Milestone III	SEP 02	SEP 02	JUL 02	(Ch-2)

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- b. (U) Current Change Explanations --

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9b. (U) Schedule (Cont'd):

Unitary

(Ch-1) - The Critical Process Review #1 was changed from Apr 96 to Jun 96 to better align with program events.

(Ch-2) - The changes are based on contractor initiatives to accelerate efforts in support of FY 97 President's budget.

10. (U) Performance Characteristics:

Baseline/BLU-108

a. Performance --

Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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10a. (U) Performance Characteristics (Cont'd):
Baseline/BLU-108

Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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10a. (U) Performance Characteristics (Cont'd):
Baseline/BLU-108

Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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10b. (U) Performance Characteristics (Cont'd):
Unitary

b. Current Change Explanations -- None.

11. (U) Total Program Cost and Quantity (Dollars in Millions):
Baseline/BLU-108

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	328.3	506.1	563.4
Procurement	1535.7	2963.3	2975.2
Recurring	(1320.2)		(2746.0)
Non-Recurring	(79.6)		(208.0)
Total Flyaway	(1399.8)		(2954.0)
Fleet Support	(92.4)		(20.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(43.5)		(1.2)
Construction (MILCON)	21.8	21.8	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	1885.8	3491.2	3538.6
Escalation	1083.4	2056.1	1526.8
Development (RDT&E)	(44.5)	(83.1)	(98.7)
Procurement	(1032.1)	(1966.2)	(1428.1)
Construction (MILCON)	(6.8)	(6.8)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Than Year \$	2969.2	5547.3	5065.4
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	8800	16000	16000
Total	8800	16000	16000

Note: Excludes 102 RDTE prototypes from the SAR Baseline and 102 from the Current Estimate that are not considered fully configured.

(U) Note: 16,000 procurement units includes 8800 Navy Baselines (\$2130.8M), 1200 Navy BLU-108's (\$452.8M), 3,000 Air Force Baselines (\$660.3M), and 3,000 Air Force BLU-108's (\$1158.2M).

Note: No LRIP quantities were approved at Milestone II for Baseline. LRIP quantities approved at Milestone II for BLU-108 were 150. This does not represent 10% or more of the planned buy quantities.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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11a. (U) Total Program Cost and Quantity (Cont'd):
Unitary

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	257.2	257.2	268.8
Procurement	3103.7	3103.7	205.0
Recurring Flyaway	(2825.2)		(0.0)
Nonrecurring Flyaway	(102.1)		(95.1)
Total Flyaway	(2927.3)		(95.1)
Fleet Support	(35.5)		(25.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(140.9)		(84.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	3360.9	3360.9	473.8
Escalation	2946.3	2946.3	1671.9
Development (RDT&E)	(79.1)	(79.1)	(66.8)
Procurement	(2867.2)	(2867.2)	(1605.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6307.2	6307.2	4569.2
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	7800	7800	7800
Total	7800	7800	7800

Note: Excludes 50 RDTE prototypes from the SAR Baseline and 50 from the Current Estimate that are not considered fully configured.

(U) Note: LRIP quantities approved at Milestone II are 140 for Unitary. This does not represent 10% or more of the planned buy quantities.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

Baseline/BLU-108

	Current Estimate (Dec 96 SAR)	UCR Baseline (JAN 97 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	3538.6	3491.2	
(2) Quantity	16000	16000	
(3) Unit Cost	0.221	0.218	+1.38
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	2975.2	2963.3	
(2) Quantity	16000	16000	
(3) Unit Cost	0.186	0.185	+0.54

Unitary

	Current Estimate (Dec 96 SAR)	UCR Baseline (APR 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	2897.3	3360.9	
(2) Quantity	7800	7800	
(3) Unit Cost	0.371	0.431	-13.92
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	2628.5	3103.7	
(2) Quantity	7800	7800	
(3) Unit Cost	0.337	0.398	-15.33

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13. (U) Cost Variance Analysis:
Baseline/BLU-108

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	372.8	2567.8	28.6	2969.2
Previous Changes:				
Economic	-8.4	-316.3	-1.2	-325.9
Quantity	-	+1565.2	-	+1565.2
Schedule	-	-119.6	+0.4	-119.2
Engineering	-	-	-	-
Estimating	+272.8	+802.7	-11.7	+1063.8
Other	-	-	-	-
Support	-	-94.1	-	-94.1
Subtotal	+264.4	+1837.9	-12.5	+2089.8
Current Changes:				
Economic	+19.7	+37.5	+1.2	+58.4
Quantity	-	-	-	-
Schedule	-	+31.1	-	+31.1
Engineering	-	-	-	-
Estimating	+5.2	+25.2	-17.3	+13.1
Other	-	-	-	-
Support	-	-96.2	-	-96.2
Subtotal	+24.9	-2.4	-16.1	+6.4
Total Changes	+289.3	+1835.5	-28.6	+2096.2
Current Estimate	662.1	4403.3	0.0	5065.4

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13a. (U) Cost Variance Analysis (Cont'd):
Baseline/BLU-108

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	328.3	1535.7	21.8	1885.8
Previous Changes:				
Quantity	-	+964.1	-	+964.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+228.2	+565.4	-9.3	+784.3
Other	-	-	-	-
Support	-	-50.6	-	-50.6
Subtotal	+228.2	+1478.9	-9.3	+1697.8
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+6.9	+24.7	-12.5	+19.1
Other	-	-	-	-
Support	-	-64.1	-	-64.1
Subtotal	+6.9	-39.4	-12.5	-45.0
Total Changes	+235.1	+1439.5	-21.8	+1652.8
Current Estimate	\$63.4	2975.2	0.0	3538.6

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	+19.7
	Adjustment for Current and Prior Inflation. (Estimating)	-12.3	-19.7
	Adjustment of estimate to reflect actual cost in prior years (Estimating)	-0.5	-0.5
	Reduction of funds for SBIR and inflation adjustment (Estimating)	-2.8	-3.3
	Increased estimate for Improved Sensor Fuzed Weapon integration (Estimating)	+1.5	+1.9
	Increased estimate for SMART RACK requirements. (Estimating)	+21.0	+26.8
	RDT&E Subtotal	+6.9	+24.9
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	+26.7
	Economic adjustment for negative program change. (Economic)	N/A	+10.8
	Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.3

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13b. (U) Cost Variance Analysis (Cont'd):
Baseline/BLU-108

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in LCGEU requirements for the Dispenser. (Estimating)	+24.5	+24.9
Rephasing of program buy quantities and addition of one year for the Navy procurements. (Schedule)	0.0	+21.3
Rephasing of the program buy quantities and addition of two years for the Air Force. (Schedule)	0.0	+9.8
Refinement of Fleet Support requirements. (Support)	-36.8	-56.5
Refinement of estimate for initial spares. (Support)	-27.4	-39.8
Adjustment for current and prior inflation. (Support)	+0.1	+0.1
Procurement Subtotal	<u>-39.4</u>	<u>-2.4</u>
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Economic adjustment for negative program change. (Economic)	N/A	+1.3
Elimination of storage requirements. (Estimating)	-12.5	-17.3
MILCON Subtotal	<u>-12.5</u>	<u>-16.1</u>

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13. (U) Cost Variance Analysis (Cont'd):

Unitary

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	336.3	5970.9	-	6307.2
Previous Changes:				
Economic	-14.2	-706.1	-	-720.3
Quantity	-	-	-	-
Schedule	-	-274.6	-	-274.6
Engineering	-	-	-	-
Estimating	+2.9	+277.0	-	+279.9
Other	-	-	-	-
Support	-	-86.3	-	-86.3
Subtotal	-11.3	-790.0	-	-801.3
Current Changes:				
Economic	-1.1	+239.6	-	+238.5
Quantity	-	-	-	-
Schedule	-	-99.6	-	-99.6
Engineering	-	-	-	-
Estimating	+11.7	-1033.9	-	-1022.2
Other	-	-	-	-
Support	-	-53.4	-	-53.4
Subtotal	+10.6	-947.3	-	-936.7
Total Changes	-0.7	-1737.3	-	-1738.0
Current Estimate	335.6	4233.6	-	4569.2

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13a. (U) Cost Variance Analysis (Cont'd):
Unitary

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	257.2	3103.7	-	3360.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+2.1	+171.8	-	+173.9
Other	-	-	-	-
Support	-	-37.6	-	-37.6
Subtotal	+2.1	+134.2	-	+136.3
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+9.5	-580.5	-	-571.0
Other	-	-	-	-
Support	-	-28.9	-	-28.9
Subtotal	+9.5	-609.4	-	-599.9
Total Changes	+11.6	-475.2	-	-463.6
Current Estimate	268.8	2628.5	-	2897.3

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	-1.1
Adjustment for Current and Prior Inflation. (Estimating)	0.0	+0.1
Increased estimate for support of weapons modernization. (Estimating)	+9.5	+11.6
RDTE Subtotal	+9.5	+10.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+109.3
Economic adjustment for negative program change. (Economic)	N/A	+130.3
Acceleration of schedule resulted in rephrasing of annual buy quantities and deletion of FY15 and FY16. (Schedule)	0.0	-99.6
Change in learning curve efficiency assumptions for increased annual buys (Estimating)	-48.8	-65.7
Refinement of seeker estimate using Design for Manufacturing and Assembly (DFMA) techniques. (Estimating)	-411.5	-746.1

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13b. (U) Cost Variance Analysis (Cont'd):
Unitary

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Refinement of estimate for Low Cost Guidance Electronic Unit (LCGEU) based on prototype cost (Estimating)	-120.2	-222.1
Decrease requirement for initial spares. (Support)	-28.5	-53.0
Adjustment of Fleet Support requirements. (Support)	-0.4	-0.4
Procurement Subtotal	-609.4	-947.3

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):
Baseline/BLU-108

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.34	-0.02	-0.05	-0.01	--	+0.07	--	-0.01	-0.02	0.32

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.29	-0.02	-0.02	-0.01	--	+0.05	--	-0.01	-0.01	0.28

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	JUN 89	JUN 89	N/A	JUN 89
Milestone II	MAR 91	APR 92	N/A	JUN 92
Milestone III	JUN 94	JUL 98	N/A	OCT 98

(b)(1)	Total Cost	260	2969.2	0	5065.4
	Total Quantity	0	8800	0	16000
	Prog Acq Unit Cost	0	0.34	0	0.32

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14a. (U) Unit Cost and Other History (Cont'd):
Unitary

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.81	-0.06	+0.01	-0.05	--	-0.10	--	-0.02	-0.22	0.59

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Dev Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.77	-0.06	--	-0.05	--	-0.10	--	-0.02	-0.23	0.54

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	APR 95	N/A	APR 95
Milestone III	N/A	SEP 02	N/A	JUL 02

(b)(1)

Total Cost	0	6357.2	0	7569.2
Total Quantity	0	7800	0	7800
Prog Acq Unit Cost	0	0.81	0	0.59

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

(U) JSOW Baseline/BLU108 EMD:

TEXAS INSTRUMENTS, Dallas, TX

N00019-91-C-0196, CPIF

Award: June 26, 1992

Definitized: June 26, 1992

Initial Contract Price

Target	Ceiling	Qty
\$202.5	N/A	0

Current Contract Price

Target	Ceiling	Qty
\$316.3	N/A	0

Estimated Price At Completion Contractor	Program Manager
\$340.7	\$340.0

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15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-23.1	\$-3.9
Cumulative Variances To Date (12/31/96)	\$-24.0	\$-1.9
Net Change	\$-0.9	\$2.0

Explanation of Change:

(U) Cost Variance: The unfavorable cost variance is primarily the result of the BLU-108 payload lid redesign activities to improve the consistency of lid ejection performance.

Schedule Variance: The positive improvement since the previous report is due to the completion of tasks earlier than anticipated and offset by unfavorable schedule variances associated with the redesign of the payload lid.

There is no impact to the contract or JSOW program for these variances.

(U) Contract Comments:

The Current Contract Price was reduced due to the refinement by the contractor of the target price calculation methodology.

(U) JSOW UNITARY E&MD: TEXAS INSTRUMENTS, Dallas, TX N00019-95-C-0120, CPIF/AF Award: August 30, 1995 Definitized: August 30, 1995	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$211.5	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$220.4	N/A	0	\$220.4	\$222.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.2	\$-0.4
Cumulative Variances To Date (12/31/96)	\$0.1	\$-0.7
Net Change	\$-0.1	\$-0.3

Explanation of Change:

(U) Cost Variance: The cost variance continues to be favorable and has only slightly declined since the last reporting cycle.

Schedule Variance: This unfavorable schedule variance is very close to plan and no significant deviations have been noted.

There is no impact to the contract of JSOW program for these variances.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

Total Program

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY87-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-14)</u>	<u>Total</u>
RDT&E	675.4	96.2	102.0	124.1	997.7
Procurement	103.7	58.7	184.3	8290.2	8636.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	779.1	154.9	286.3	8414.3	9634.6

Baseline/BLU-108

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY87-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-13)</u>	<u>Total</u>
RDT&E	582.5	33.0	30.7	15.9	662.1
Procurement	103.7	58.7	184.3	4056.6	4403.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	686.2	91.7	215.0	4072.5	5065.4

Unitary

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-14)</u>	<u>Total</u>
RDT&E	92.9	63.2	71.3	108.2	335.6
Procurement	-	-	-	4233.6	4233.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	92.9	63.2	71.3	4341.8	4569.2

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16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- Baseline/BLU-108

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				1.1	1.0
1988				20.3	19.2
1989				13.2	13.0
1990				8.3	8.3
1991				15.6	16.5
1992				42.0	45.6
1993				52.6	58.7
1994				71.1	80.9
1995				89.8	104.3
1996				41.3	48.9
1997				32.9	39.8
1998				6.7	8.3
1999				6.0	7.6
Subtotal				400.9	452.5

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				4.8	5.4
1994				20.3	23.1
1995				32.9	53.1
1996				35.3	41.8
1997				18.6	22.5
1998				20.0	24.7
1999				18.3	23.1
2000				11.1	14.3
2001				1.2	1.6
Subtotal				162.5	209.6

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996		20.9		21.1	25.9
1997	100	9.8	41.0	63.3	78.2
1998	113	9.9	46.4	46.9	58.7
1999	324	25.4	74.1	101.0	130.2

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16b. (U) Program Funding Summary (Cont'd):

Baseline/BLU-108

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	748	9.5	151.1	162.2	213.5
2001	748	8.4	143.5	153.1	205.9
2002	859	9.3	159.6	170.3	234.5
2003	866	10.7	149.4	161.7	228.3
2004	819	6.6	123.2	131.0	189.7
2005	675	5.6	90.8	96.6	143.5
2006	675	5.5	89.0	94.6	144.3
2007	675	5.4	87.5	93.1	145.7
2008	675	5.4	86.5	92.0	147.7
2009	675	5.4	87.0	92.6	152.5
2010	675	5.4	86.3	91.8	155.1
2011	675	5.3	85.6	91.1	157.9
2012	675	5.3	86.3	91.9	163.4
2013	23	1.0	3.5	5.5	10.1
Subtotal	10000	154.4	1590.8	1759.4	2584.7

Appropriation: 3020 Missile Procurement, Air Force

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	139	3.9	37.0	42.0	54.1
2000	265	4.1	61.4	67.0	88.2
2001	377	4.1	79.2	83.6	112.5
2002	292	2.9	63.1	67.5	92.9
2003	367	6.4	80.7	88.3	124.6
2004	717	5.3	133.9	140.4	203.3
2005	717	5.0	148.1	153.1	227.6
2006	717	5.0	147.1	152.1	231.9
2007	717	4.9	145.1	150.0	234.6
2008	680	4.6	133.8	138.2	221.9
2009	300	2.1	37.7	39.8	65.5
2010	300	2.1	37.5	39.5	66.8
2011	300	2.1	37.0	39.1	67.7
2012	112	1.1	13.6	15.2	27.0
Subtotal	6000	53.6	1155.2	1215.6	1818.6

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	10000	154.4	1590.8	2160.3	3037.2
USAF	6000	53.6	1155.2	1378.3	2028.2

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16b. (U) Program Funding Summary (Cont'd):
Baseline/BLU-108

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	16000	208.0	2746.0	3538.6	5065.4

b. Annual Summary -- Unitary

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				1.7	1.9
1993				4.1	4.6
1994				2.1	2.4
1995				8.9	10.3
1996				26.2	31.0
1997				35.3	42.7
1998				51.2	63.2
1999				56.9	71.3
2000				40.5	52.1
2001				26.4	34.7
2002				15.8	21.2
2003				0.1	0.2
Subtotal				268.8	335.6

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000		6.7		6.7	8.8
2001	118	5.7	78.9	89.4	120.2
2002	167	5.3	88.9	100.3	138.1
2003	209	18.3	83.2	110.7	156.3
2004	600	7.6	205.8	221.7	321.1
2005	700	5.4	222.2	236.6	351.6
2006	700	5.4	211.6	225.7	344.1
2007	700	5.3	207.0	220.7	345.3
2008	700	5.3	203.5	217.1	348.5
2009	700	5.3	202.2	215.7	355.3
2010	700	5.2	199.8	213.2	360.3
2011	700	5.2	197.7	211.0	365.8
2012	700	5.2	197.0	210.2	373.9
2013	700	5.4	202.3	215.8	393.9
2014	406	3.8	123.4	133.7	250.4
Subtotal	7800	95.1	2423.5	2628.5	4233.6

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16b. (U) Program Funding Summary (Cont'd):

Unitary

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	7800	95.1	2423.5	2897.3	4569.2

17. (U) Delivery/Expenditure Information:

Baseline/BLU-108

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 507

(U) Percent Total Program Expended: 10.0%

Unitary

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 63.6

(U) Percent Total Program Expended: 1.4%

18. (U) Operating and Support Costs:

Baseline/BLU-108

a. (U) Assumptions and Ground Rules --

SOURCE: Operations and Support requirements analysis dated December 1996.

ASSUMPTIONS:

There is no antecedent system.

No additional operational/maintenance personnel at O-Level.

No I-Level Maintenance.

60 JSOW expenditures per year.

Deployed aboard 10 CVBG each year - 100 JSOW per CV.

20 year missile life.

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18b. (U) Operating and Support Costs (Cont'd):
Baseline/BLU-108

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per JSOW Unit	Avg Annual Cost Per ANTECEDENT
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.3	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.2	0.0
Indirect Costs	0.0	0.0
Total	0.5	0.0

Unitary

a. (U) Assumptions and Ground Rules --

SOURCE: Operations and Support requirements analysis dated April 1995.

ASSUMPTIONS:

There is no antecedent system.

Unitary will be integrated with the established Baseline program.

10 Unitary expenditures per year.

Deployed aboard 10 CVBG each year, 50 JSOW Unitary per CV.

Twenty year missile operating life.

No additional operational/maintenance personnel at O-Level.

No I-Level Maintenance

Contractor Depot Component Repair Program.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per JSOW Unitary	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	0.0	0.0
Unit Level Consumption	0.3	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.1	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.5	0.0
Indirect Costs	0.0	0.0
Total	0.9	0.0

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N-14 MHC 51

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: MHC 51

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): MHC 51 (OSPREY Class) Coastal Minehunter Ship
2. DoD Component: Navy
3. Responsible Office and Telephone Number:
MINE WARFARE SHIP PROG OFF (PMS303) JOHN P. GALLOWAY
PROGRAM EXEC OFFICE MINE WARFARE Assigned: February 12, 1996
2531 JEFFERSON DAVIS HWY DSN 332-6481,6482; COMM 703-602-6481,6482
ARLINGTON, VA 22242-5167
4. Program Elements/Procurement Line Items:
RDT&E:
PE 0604567N (Shared)
PROCUREMENT:
APPN 1611 ICN 32401500 (Navy)

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FOR OPEN PUBLICATION

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5. References:

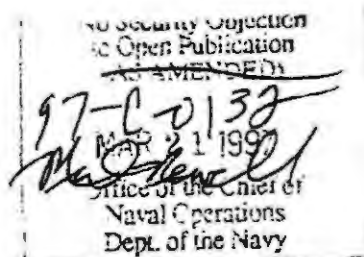
SAR Baseline (Production Estimate):

NAE approved Acquisition Program Baseline dated March 11, 1992.

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated October 20, 1995.

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE



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6. Mission and Description:

The MHC 51 Coastal Minehunter Ship class provides the U.S. Navy with state-of-the-art surface minehunting and mine neutralization mission capability which will be employed well into the 21st century. The 57.2 meter long glass reinforced plastic (GRP) ship integrates exceptionally low noise design and utilizes very low magnetic signature equipment, diesel engines, and cycloidal propulsion. Major payload equipments include the AN/SYQ-13 Navigation, Command, and Control System, AN/SQQ-32 Advanced Minehunting Sonar, and a AN/SLQ-48 Mine Neutralization System. The MHC class serves as the "low-mix" complement to the larger and deeper water capable Mine Countermeasures (MCM) ship. The MHC class will enable battle group and amphibious operations in harbors, coastal waters, and littoral areas worldwide by clearing acoustic, magnetic, pressure and contact mines from the bottom and surrounding water volume. The MHC can operate in coordinated mission scenarios with both Airborne Mine Countermeasures (AMCM) helicopters and MCM ships.

7. Executive Summary:

Significant Historical Developments: During May 1982, an Operational Requirement (OR) was issued for a "low mix" (smaller mission/shallower water) littoral area minehunter ship to complement the larger ocean going MCM ship. This effort led to the Minesweeper Hunter (MSH-1) class design which used Swedish based "foam core" ship construction technology. Major problems were encountered early on when preliminary strength and shock testing on foam core sectional test panels indicated that major weight and shock problems would materialize and that costly redesign would be necessitated. As a result, contract effort was terminated in 1986. The Coastal Minehunter (MHC) ship program was initiated to replace the MSH. The MHC design is based on the LERICI Class minesweeper ships designed and built by Italian shipbuilder Intermarine S.p.A. (IMSpA). IMSpA was contracted to modify the LERICI design to meet U.S. Navy mission requirements. Milestone I (Authorization for Contract Design) was approved in June 1986. An MHC Program Endorsement Memo (PEM) for Milestone II (lead production authorization) was issued by the Ass't Secretary of the Navy, Shipbuilding and Logistics (ASN/S&L) 11 December 1986. The PEM authorized sole source award of the class leadship contract, MHC 51, to Savannah, GA based Intermarine USA (IMUSA). The PEM further directed that a second source shipbuilder be competitively selected. The MHC 51 contract was awarded to IMUSA 5/22/87 and construction began in May 1988. Milestone IIIA (authorization for limited production) was approved by ASN(S&L) during February 1989. The "second source" builder, Avondale Industries, Inc. of New Orleans, LA, was awarded a contract for construction of their first vessel, MHC 53, on 3 October 1989. Milestone IIIB (full rate production) approval was authorized in January 1990. The MHC program force level procurement authorization is 12 ships.

Significant Developments Since Last Report: IMUSA, awarded eight of the twelve MHC program ships, delivered their fourth and fifth (MHCs 58 and 59) on 1/16/96 and 10/14/96 respectively. Avondale Industries, awarded a total of four MHCs, delivered their second and third (MHC 54 and 56) on 2/9/96 and 7/24/96 respectively. Avondale's fourth and final MHC ship, MHC 57, was delivered 1/3/97.

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7. Executive Summary (Cont'd):

During early 1996, the Navy completed evaluation of and formally established repair and upgrade standards for all Glass Reinforced Plastic (GRP) ship foundations in meeting shock design specifications. This effort followed MHC 51 program shock trials which concluded in the fall of 1995.

MHC 51 completed a second phase Post Shakedown Availability (PSA II) in 1996 during which final shock damage assessment was completed and repairs begun. A following sixty day PSA III, concluding in late September, saw completion of remaining critical GRP repairs and development of GRP repair standards for structural systems, i.e., GRP structures such as bulkheads and platforms and their associated connections to the hull shell. Some GRP repair work classed "noncritical" remains but does not currently restrict the ship's operating capability. Repair of noncritical items is planned for an upcoming availability whereafter the ship will be returned to "as built" condition. MHC 51 is currently homeported at Ingleside, TX.

Prior to shock trials, a known design issue existed involving the ship's propulsion train couplings and their capability to withstand high shock loads. The Sound Attenuating and Misalignment Couplings (SAC and MAC) were of specific concern. It was decided that ship shock trials would serve as an empirical basis for defining, measuring, and modelling shock test data on the existing coupling system. A "shock hardened" coupling set would then be produced for installation on all ships. A SAC redesign was recently satisfactorily tested by IMUSA's British coupling vendor. A design has been prepared for the new MAC, however, at the time of this SAR release, shock calculations are not yet completed. Procurement lead time for the first shipset (SAC and MAC couplings) is estimated at 32 weeks with follow shipset deliveries at 8 week intervals thereafter. First shipset delivery is estimated for October 97. Delays associated with this effort have required the PM to request extensions to the SCN appropriation Obligation Work Limiting Dates (OWLD).

Subsequent to the "global settlement" agreement in 1995, Georgia based IMUSA's financial posture continued to improve during 1996. The company earned maximum early delivery incentives of \$3M for each of the two ships delivered during 1996 (MHCs 58 and 59)--substantially enhancing their profit position. The PM expects IMUSA to earn the \$3M max incentives for each of their final three ships (MHCs 60-62). With Navy business declining, IMUSA continues effort to expand their commercial GRP yacht building business--long term profitability and sustainability in this venture are not certain.

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I	JUN 86	JUN 86	JUN 86
Milestone II	DEC 86	DEC 86	DEC 86
MHC 51 (Leadship) Award	MAY 87	MAY 87	MAY 87
Milestone IIIA	FEB 89	FEB 89	FEB 89
MHC53, 1st ship to 2nd yard	OCT 89	OCT 89	OCT 89
Milestone IIIB	JAN 90	JAN 90	JAN 90
Launch MHC 51 Leadship	MAR 91	MAR 91	MAR 91
MHC 51 Acceptance Trial	NOV 92	JUL 93	JUL 93
MHC 51 Delivery	DEC 92	AUG 93	AUG 93
MHC 53 Delivery	MAR 94	MAR 95	AUG 95

Milestone I: ASN(S&L) contract design authorization.

Milestone II: ASN(S&L) Program Endorsement Memo authorizing lead ship production.

Milestone IIIA: ASN(S&L) authorization for award of FY 89 ships.

Milestone IIIB: ASN(S&L) authorization for award of FY 90 ships and out.

b. Current Change Explanations -- None.

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10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Operating Crew (Auth)	51	51 / 57	51	51	
Beam (meters)	11.0	11.0 / 11.0	11.0	11.0	
Draft (Nav) (meters)	2.8	3.68 / 3.86	3.69	3.69	
Length (meters)	57.2	57.2 / 57.2	57.2	57.2	
Full Load Disp (metric tons)	918	918 / 964	959	959	(Ch-1)
Speed (knots)	10.0	10.0 / 10.0	10.0	10.0	
Endurance (NM @ 10 kts) (@ 80% power)	1500.0	1500.0 / 1500.0	1500	1500	
Propulsion					
Diesels (cyl)	2/8	2/8 / 2/8	2/8	2/8	
Shafts	2	2 / 2	2	2	
Horsepower @ (RPM)	1600 @ 1800	1600 @ / 1600 @ 1800 / 1800	1600 @ 1800	1600 @ 1800	

"Draft (Nav)" represents Full Load Navigational Departure Draft.

b. Current Change Explanations --

(CH-1) Full Load Displacement: Value reflects MHC 57 inclining experiment of September 1996. MHC 57 is assessed as the heaviest of the MHC class.

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11. Total Program Cost and Quantity (Dollars in Millions):

a. Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	17.2	17.2	18.5
Procurement	1440.2	1626.9	1636.4
Basic	(966.4)		(1133.2)
Government Furnished Eq	(346.9)		(364.4)
Other	(31.9)		(52.9)
Outfitting/Post Deliver	(80.1)		(71.3)
Total Sailaway	(1425.3)		(1621.8)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(14.9)		(14.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 92 Base-Year \$	1457.4	1644.1	1654.9
Escalation	90.9	85.6	85.7
Development (RDT&E)	(-2.2)	(-2.2)	(-2.3)
Procurement	(93.1)	(87.8)	(88.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1548.3	1729.7	1740.6

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	12	12	12
Total	12	12	12

c. Foreign Military Sales --
None

d. Nuclear Costs --
N/A

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12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (OCT 95 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BY\$)	1654.9	1644.1	
(2) Quantity	12	12	
(3) Unit Cost	137.908	137.008	+0.66
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BY\$)	1636.4	1626.9	
(2) Quantity	12	12	
(3) Unit Cost	136.367	135.575	+0.58

All categories of cost include outfitting and post delivery.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	15.0	1533.3	-	1548.3
Previous Changes:				
Economic	-	+0.6	-	+0.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.2	+163.9	-	+165.1
Other	-	-	-	-
Support	-	-0.3	-	-0.3
Subtotal	+1.2	+164.2	-	+165.4
Current Changes:				
Economic	-	-1.7	-	-1.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+28.6	-	+28.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+26.9	-	+26.9
Total Changes	+1.2	+191.1	-	+192.3
Current Estimate	16.2	1724.4	-	1740.6

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13a. Cost Variance Analysis (Cont'd):

Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Production Estimate	17.2	1440.2	-	1457.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.3	+171.1	-	+172.4
Other	-	-	-	-
Support	-	-0.3	-	-0.3
Subtotal	+1.3	+170.8	-	+172.1
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+25.4	-	+25.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+25.4	-	+25.4
Total Changes	+1.3	+196.2	-	+197.5
Current Estimate	18.5	1636.4	-	1654.9

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised OSD inflation indices. (Economic)	N/A	-1.7
Net increase due mainly to: Contract	+9.0	+10.9
change order reserve (\$+5.4M); contract esca-		
lation adjust, (\$+3.0M); UNISYS REA/claim		
coverage (\$+1.1M); other various minor		
increases and econ offset. (Estimating)		
Refinement in Gov't Furnished Equipment (GFE)	-0.8	-1.3
cost estimate. (Estimating)		
Net increase primarily in planning yard &	+1.8	+1.9
engineering support services. (Estimating)		
Increase in outfitting funding requirements	+15.4	+17.1
esp. for SQQ-32 SONAR provisioning and spare		
support requirements. (Estimating)		
Procurement Subtotal	+25.4	+26.9

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14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
129.03	-0.09	-0.01	--	--	+16.14	--	-0.02	+16.02	145.05

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
127.77	-0.09	--	--	--	+16.04	--	-0.02	+15.93	143.70

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	JUN 86	JUN 86
Milestone II	N/A	N/A	DEC 86	DEC 86
Milestone III	N/A	N/A	FEB 89	FEB 89
FUE/IOC	N/A	N/A	N/A	SEP 96
Total Cost	N/A	N/A	1548.3	1740.6
Total Quantity	N/A	N/A	12	12
Prog Acq Unit Cost	N/A	N/A	129.03	145.05

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

MHC 56/57 (OPTION):

AVONDALE INDUSTRIES, NEW ORLEANS LA

N00024-90-C-2304, FPI

Award: March 29, 1991

Definitized: March 29, 1991

Initial Contract Price		
Target	Ceiling	Qty
\$111.0	\$115.3	2

Current Contract Price		
Target	Ceiling	Qty
\$120.7	\$125.4	2

Estimated Price At Completion	
Contractor	Program Manager
\$125.4	\$125.4

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-5.4	\$-4.2
Cumulative Variances To Date (11/30/96)	<u>\$-8.1</u>	<u>\$-0.2</u>
Net Change	\$-2.7	\$4.0

Explanation of Change:

(\$ Millions/Contract Base Year)

GENERAL: MHCs 56 and 57 are Avondale Industries' final two MHC ships. Of the twelve ship MHC program, four were awarded to Avondale.

COST PERFORMANCE: The \$-5.4M (unfavorable) cost variance reported in the prior year SAR declined to \$-8.1M. The December 95 SAR predicted this continued growth in negative cost variance--particularly giving validity to the PM's \$123.0M cost estimate at completion (EAC) and the extent of cost overrun this EAC represented. Avondale's current cost EAC is \$122.9M; a \$3.4M increase over their \$119.5M EAC noted in last year's SAR. The PM's current EAC of \$123.2M (\$+0.2M increase over last year) equates to a \$2.2M profit on this contract. This contrasts with last year's projected \$4.9M loss. The reason for this reversal was described in last year's SAR. During the time the December 95 SAR was being prepared, a \$28.9M settlement had been negotiated on a \$59.7M Request for Equitable Adjustment (REA). However, contract settlement values had, at the time, not yet been formally apportioned and added to the MHC 56/57 contract Cost Performance Report (CPR) baseline. The prior SAR also predicted that a small profit would be made on this contract.

SCHEDULE: During the past year, Avondale continued to demonstrate consistently favorable monthly production progress gains. As forecast by the PM in last year's SAR, Avondale was expected to maintain a production pace enabling both MHC 56 and 57 to meet respective PM delivery estimates of 8/96 and 1/97. MHC 56 delivered two weeks earlier than last year's estimate; 7/24/96 and MHC 57, Avondale's final MHC production ship, delivered 1/3/97.

Contract Comments:

NOTE: With delivery of MHCs 56 and 57, contract option coverage for these two ships will not be reported in future SAR submissions.

			<u>Initial Contract Price</u>		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>MHC 58, 59, & 60:</u>					
INTERMARINE USA, SAVANNAH, GA					
N00024-92-C-2203, FPI/FFP			\$178.0	\$199.6	3
Award: April 22, 1992					
Definitized: April 22, 1992					
			<u>Current Contract Price</u>		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
			\$235.3	N/A	3
			<u>Estimated Price At Completion</u>		
			<u>Contractor</u>	<u>Program Manager</u>	
			\$235.3	\$235.3	

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-16.2	\$-7.9
Cumulative Variances To Date (11/30/96)	<u>\$-7.6</u>	<u>\$-2.1</u>
Net Change	\$8.6	\$5.8

Explanation of Change:

(\$ Millions/Then Year)

GENERAL: MHC 58-60: IMUSA was awarded 8 of the 12 MHC program ships. MHCs 58, 59, and 60 are respectively IMUSA's 4th, 5th, and 6th ships. Prior SAR submissions have noted IMUSA's history of extreme cost overruns and consequential losses, particularly on the lead ship contract (MHC 51). The December 95 SAR described the background, issues, and decisive approaches in resolving all major issues under one "global settlement" agreement. Execution of this agreement precluded IMUSA's bankruptcy, collectively resolved several claims, REAs, and lawsuits, and will enable all remaining ships under construction, MHCs 60, 61, and 62, to be completed and delivered.

COST PERFORMANCE: An important global settlement provision involved conversion of the MHC 58-60 basic contract and its MHC 61/62 option from Fixed Price Incentive (FPI) to Firm Fixed Price (FFP). The "Estimated Price At Completion" above reflects the current FFP value. The PM has required contract cost and schedule performance reporting to continue with IMUSA in respect to their extraordinarily troubled contract cost performance history. The company has set an estimated at completion (EAC) cost base of \$203.5M as a budget against which future cost performance will be tracked on this \$235.3M FFP contract. This enables both the Navy PM and the contractor to maintain reasonable visibility of contract performance from an earned value management perspective. The prior year's unfavorable cumulative cost variance of \$-16.2M improved, though still negative, to \$-7.6M (\$184.4M of value earned at an actual cost incurred of \$192.0M). Most of this negative cost variance is driven by higher than expected overhead costs. The current PM cost EAC of \$216.0M equates to a \$19.3M profit. The PM expects IMUSA will be increasing their current \$203.5M cost EAC in the very near future--particularly recognizing their incurred costs are currently \$192.0M.

SCHEDULE: IMUSA's monthly production progress gains have significantly improved. The company has delivered 5 of 8 ships awarded them with MHC 59 being the most recent (10/14/96). Early delivery incentives were stipulated by the global settlement for the last five ships, MHCs 58-62. A maximum \$3.0M per ship incentive is payable for ships delivering at least 90 days in advance of stipulated contract target delivery dates. MHCs 58 and 59 have each earned the maximum \$3.0M incentives with MHC 60 expected to deliver by its max incentive target date of 7/15/97. These incentives have significantly enhanced profitability on this contract.

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15. Contract Information (Cont'd):

<u>MHC 61/62 (OPTION):</u>			<u>Initial Contract Price</u>		
<u>INTERMARINE USA, SAVANNAH, GA</u>	<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>		
N00024-92-C-2203, FPI/FFP	\$118.8	\$133.2	2		
Award: March 31, 1993					
Definitized: March 31, 1993					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Oty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$156.6	N/A	2	\$156.6	\$156.6	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-5.0	\$1.9
Cumulative Variances To Date (11/30/96)	\$-7.5	\$-8.1
Net Change	\$-2.5	\$-10.0

Explanation of Change:

(\$ Millions/Then Year)

GENERAL: MHCs 61 & 62 are IMUSA's final production ships and the last two ships of the twelve ship MHC program. The MHC 61/62 contract option is governed by the same "global settlement" provisions applicable for the base MHC 58-60 contract, i.e., conversion from FPI to Firm Fixed Price (FFP) with incentives for early ship delivery.

COST: The "Estimated Price At Completion" above reflects the current MHC 61/62 FFP contract option value. For cost and schedule performance reporting purposes, IMUSA has assigned a \$127.9M budget at completion "cost" baseline for this \$156.6M FFP contract. The prior SAR unfavorable cumulative cost variance of \$-5.0M deteriorated to \$-7.5M (\$84.3M of value assessed as earned at an actual cost incurred of \$91.8M). As is the case with the MHC 58-60 contract, some of this variance results from higher than expected overhead costs. The bulk of the variance, however, ties to IMUSA's optimistic budget at completion cost target of \$127.9M. The contractor's current Estimated At Completion (EAC) cost is \$128.9M. The PM cost EAC is \$140.0M--equating to a \$16.4M projected profit on the \$156.6M FFP contract. MHC 61/62 contract profitability will depend on IMUSA containment of their future overhead costs and earning the full \$3.0M per ship early delivery incentives (PM expects incentives to be made). IMUSA's ability to sustain profitable operations and remain in business for the future is currently dependent on their success in their commercial large GRP yacht building business.

SCHEDULE: Contract schedule performance shows significant deterioration from last year's SAR; \$+1.9M to current \$-8.1M--a \$10.0M decline. Most, if not all, of this variance results from IMUSA setting their time phased budget plan (Budgeted Cost of Work Scheduled) to very optimistic internal company "target" delivery dates. These dates are several months in advance of the current contract stipulated maximum incentive early delivery dates which are, in turn, 3 months in advance of official contract delivery

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15. Contract Information (Cont'd):

dates. The PM believes that IMUSA is capable of delivering MHCs 61 and 62 earlier than contract max incentive dates, but not to the targets against which their budgeted cost is currently time phased. The current negative schedule variance is testament to this. IMUSA is pursuing a mutually agreeable approach with the Navy to accommodate ships being delivered earlier than contract max incentive dates. The Navy has stated its intention in putting forth good faith effort toward accommodating earlier deliveries. This will be principally achieved by Navy working with Gov't Furnished Equipment (GFE) vendors to accelerate equipment deliveries and, where possible, making special arrangements for early crew arrival and training. Despite these efforts, the Navy asserts no liability should circumstances preclude early delivery scenarios. Official PM delivery estimates remain unchanged from the prior SAR submit: MHC 61, 4/98; MHC 62, 12/98 (these dates are contract max incentive early delivery dates). The PM estimates that MHCs 61 and 62 could, under best conditions, respectively deliver 2/98 and 8/98--internal company target delivery dates noted above are 10/97 and 3/98--these are unachievable.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY86-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00)</u>	<u>Total</u>
RDT&E	16.2	-	-	-	16.2
Procurement	1717.2	3.9	1.8	1.5	1724.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1733.4	3.9	1.8	1.5	1740.6

b. Annual Summary -- COASTAL MINEHUNTER SHIP

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY92 Dollars Nonrec</u>	<u>Flyaway FY92 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1986		1.8		1.8	1.5
1987		7.9		7.9	6.7
1988		4.3		4.3	3.8
1989		3.7		3.7	3.4
1990		0.8		0.8	0.8
Subtotal		18.5		18.5	16.2

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MHC 51, December 31, 1996

16b. Program Funding Summary (Cont'd):

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1986	1		288.0	277.1	259.3
1987				0.6	0.6
1988					
1989	2		282.5	269.0	273.0
1990	2		243.5	248.0	258.9
1991	2		213.1	203.6	218.8
1992	3		345.7	332.4	367.5
1993	2		249.0	256.5	287.2
1994				13.9	16.1
1995				5.3	6.2
1996				13.3	16.0
1997				11.1	13.6
1998				3.1	3.9
1999				1.4	1.8
2000				1.1	1.5
Subtotal	12		1621.8	1636.4	1724.4

FY 1990 "Flyaway" column excludes \$14.6M FY 92 base year of SQQ 32 Sonar and SLQ 48 MNS battle spares which are classed as "initial spares."

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	12	18.5	1621.8	1654.9	1740.6

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	8	8

Percent Total Program Quantities Delivered: 66.7%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1423.6

Percent Total Program Expended: 81.8%

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MHC 51, December 31, 1996

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

O & S costs associated with the Coastal Minehunter (MHC) are based on a 35 year service life. Factors and associated O & S cost estimates are based on a new design ship class with first unit delivering in the May/June 1993 timeframe. Estimates are based on an "operating tempo" approach and include direct costs to support the primary personnel to operate the ships (currently authorized force level of 12 ships), Operations (including fuel, repair parts, supplies, training, and purchased services), Intermediate and Depot level maintenance, and Indirect Costs including training, publications, engineering and technical services. There is no antecedent system. Operating and Support cost data is current through 1994.

b. Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Cost Element Avg Annual Cost Per Ship	Avg Annual Cost Per Ship
Mission Pay & Allowances	1.8	N/A
Unit Level Consumption	0.8	0.0
Intermediate Maintenance	0.1	0.0
Depot Maintenance	0.9	0.0
Contractor Support	0.1	0.0
Sustaining Support	0.3	0.0
Indirect Costs	0.1	N/A
Total	4.1	0.0

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AF-19 MILSTAR

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: MILSTAR

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AS OF DATE: December 31, 1996

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MILSTAR
AF

1. (U) Designation and Nomenclature (Popular Name): Milstar Satellite Communications Systems
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:
SMC/MC Col Joseph B. Sovey
2420 Vela Way Assigned: April 15, 1996
Suite 1467-A8 DSN 833-4877; COMM 310-336-4877
Los Angeles AFB, CA 90245-4659
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0303601F
(U) PE 0303603F
(U) PE 0604479F
PROCUREMENT:
(U) APPN 1506 ICN 000000 (Navy)
(U) APPN 3010 ICN 000000 (Air Force)
(U) APPN 2035 ICN 000000 (Army)
(U) APPN 3080 ICN 836780 (Air Force)
MILCON:
(U) PE 0303601F

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FOR OPEN PUBLICATION

AS AMENDED
17 MAR 14 1997

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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5. (U) References:

Satellites

SAR Baseline (Development Estimate):

(U) DAE approved Acquisition Program Baseline dated October 28, 1992.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated February 6, 1995.

CP Terminals

SAR Baseline (Production Estimate):

(U) DAE approved Acquisition Program Baseline dated October 28, 1992.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated February 6, 1995.

6. (U) Mission and Description:

(U) The Milstar Satellite Communications System, which in part takes over the mission of DSCS and AFSATCOM, is a joint service program to develop and acquire the Milstar satellite, its mission control segment, and Army, Navy and Air Force communications terminals. The Milstar system will provide survivable, jam-resistant, world-wide secure communications for the National Command Authorities and Commanders-in-Chief to command and control their tactical and strategic forces at all levels of conflict.

7. (U) Executive Summary:

(U) In 1983, the Milstar Satellite Communications System program was designated with the highest national priority. After a short feasibility study, the Space and Mission Control program proceeded directly into the Full Scale Development (FSD) phase. The FSD contract was awarded in Jun 83.

In the National Defense Authorization Act for FY91, Congress directed the Department of Defense to restructure the Milstar system to reduce cost, increase the utility of the system for tactical users, and eliminate enduring nuclear warfighting capabilities. As a result, the number of satellites, mission control stations and terminals was reduced. Furthermore, features associated with nuclear hardness and survivability were reduced and capabilities to support tactical requirements were added. A contract for the Milstar II satellite development was awarded in Oct 92 following a successful Oct 92 Defense Acquisition Board (DAB) Program Review. The Milstar II satellite will incorporate the Low Data Rate payload of the original Milstar satellite and add a new Medium Data Rate payload.

Sat 1, launched on 7 Feb 94, successfully completed Air Force Operational Test and Evaluation Center's (AFOTEC) Dedicated Asset Test (DAT) and Navy's Follow-On Operational Test and Evaluation (FOT&E) on 9 Sep 94. The program

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7. (U) Executive Summary (Cont'd):

office turned over Satellite Control Authority (SCA) to Air Force Space Command (AFSPC) on 1 Nov 94.

In a 17 Jan 95 memo, the Defense Acquisition Executive (DAE) directed the program office to decouple the Advanced EHF and Milstar programs, and to appropriately revise the Milstar Acquisition Program Baseline to only include the 2 Milstar block I and 4 Milstar block II satellites. In addition, the revised baseline incorporated the current approved test plan and established new milestones in accordance with the approved Milstar Streamlined Acquisition Strategy Report. The revised Milstar APB was approved by the DAE on 6 Feb 95.

On 11 May 95, the Office of the Joint Chiefs of Staff (JCS) certified the Milstar Low Data Rate (LDR) system for Emergency Action Message (EAM) dissemination and force feedback.

On 6 Nov 95 Satellite 2 was successfully launched from Cape Canaveral on a Titan IV/Centaur booster. The satellite arrived at its initial testing location at 90 degrees West longitude and completed early on-orbit operations. On 15 Dec 95, Milstar demonstrated unprecedented communication capability with a message sent from the JCS to the CINCs without the use of vulnerable ground relays. The message was sent from the National Military Command Center's terminal at Ft. Belvoir, VA to Satellite 1, then crosslinked to Satellite 2, and downlinked to the CINCs.

Satellite Control Authority (SCA) was transferred to Air Force Space Command (AFSPC) on 22 Mar 96.

The MILSATCOM Joint Program Office (MJPO) and AFSPC successfully completed a demonstration of Milstar's ability to operate autonomously for a sustained period without any ground commands. Milstar's performance exceeded requirements and specifications. Autonomy is one of Milstar's key survivability features and one of several critical operational parameters to be formally tested during the Phase II IOT&E program.

CP Terminals are 100% delivered. This will be the last SAR in which they are reported.

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8. (U) Threshold Breaches:

Satellites

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

CP Terminals

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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MILSTAR, December 31, 1996

9. (U) Schedule:
Satellites

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Milstar I Dev Contract Award	JUN 83	JUN 83	JUN 83	
LDR Payload/Bus CDR	JUL 87	JUL 87	JUL 87	
Mission Control Segment CDR	AUG 88	AUG 88	AUG 88	
DAB Program Review	SEP 92	OCT 92	OCT 92	
Milstar II Contract Award	OCT 92	OCT 92	OCT 92	
Satellite 1 Delivery	DEC 92	DEC 92	DEC 92	
Satellite 1 On-Orbit DT&E				
Start	JUL 93	FEB 94	FEB 94	
Complete	JAN 94	JUN 94	JUN 94	
Milstar I Phase 1 IOT&E				
Start	FEB 94	AUG 94	AUG 94	
Dedicated Asset Test				
Start	N/A	AUG 94	AUG 94	
Complete	N/A	SEP 94	SEP 94	
Complete	AUG 94	SEP 95	AUG 95	
Milstar I Phase 2 IOT&E				
Start	MAY 95	MAR 96	JUN 96	(Ch-1)
Complete	NOV 95	SEP 96	MAR 97	(Ch-2)
IOC I	MAR 96	JAN 97	JUN 97	
Mission Control Organic Support	SEP 96	SEP 96	SEP 96	
Capability				
Milstar II IOT&E				
Start	APR 99	AUG 99	AUG 99	
Complete	SEP 99	FEB 00	FEB 00	
Milstar II MS III	SEP 99	N/A	N/A	
IOC II	OCT 00	OCT 00	OCT 00	
Constellation Control Organic Support	DEC 00	DEC 00	DEC 00	
FOC	DEC 04	DEC 04	DEC 04	

(U) •Acronyms & Abbreviations:

CDR - Critical Design Review Capability
DAB - Defense Acquisition Board
Dev - Development
DT&E - Developmental Test and Evaluation
FOC - Full Operational Capability
IOC - Initial Operational Capability
IOT&E - Initial Operational Test and Evaluation
LDR - Low Data Rate
MS - Milestone

b. (U) Current Change Explanations --
(Ch-1)

The change in the Milstar I Phase 2 IOT&E (start) current estimate from Aug 96 to Jun 96 reflects early completion of previous testing.

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9b. (U) Schedule (Cont'd):
Satellites

(Ch-2)

The change in the Milstar I Phase 2 IOT&E (complete) current estimate from Feb 97 to Mar 97 reflects delayed progress.

CP Terminals

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
	FEB 84	FEB 84	FEB 84
Critical Design Review			
Phase II Development			
Start	JUN 85	JUN 85	JUN 85
Complete	JUN 91	JUN 91	JUN 91
MS IIIA	MAY 89	MAY 89	MAY 89
First Delivery	AUG 92	AUG 92	AUG 92
Satellite 1 On-Orbit DT&E			
Start	APR 93	FEB 94	FEB 94
Complete	SEP 93	JUN 94	JUN 94
Milstar I Phase 1 IOT&E			
Start	OCT 93	AUG 94	AUG 94
Dedicated Asset Test			
Start	N/A	AUG 94	AUG 94
Complete	N/A	SEP 94	SEP 94
Complete	APR 94	SEP 95	AUG 95
Milstar I Phase 2 IOT&E			
Start	NOV 94	MAR 96	JUN 96 (Ch-1)
Complete	MAR 96	SEP 96	MAR 97 (Ch-2)
IOC I	MAR 96	JAN 97	JUN 97
IOC II	OCT 00	OCT 00	OCT 00
Organic Support Capability	DEC 00	DEC 00	DEC 00
FOC	DEC 04	DEC 04	DEC 04

(U)

Acronyms & Abbreviations:

CDR - Critical Design Review
DT&E - Developmental Test and Evaluation
FOC - Full Operational Capability
IOC - Initial Operational Capability
IOT&E - Initial Operational Test and Evaluation
MS - Milestone

b. (U) Current Change Explanations --
(Ch-1)

The change in the Milstar I Phase 2 IOT&E (start) current estimate from Aug 96 to Jun 96 reflects early completion of previous testing.

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9b. (U) Schedule (Cont'd):

CP Terminals
(Ch-2)

The change in the Milstar Phase 2 IOT&E (complete) current estimate from Feb 97 to Mar 97 reflects delayed progress.

10. (U) Performance Characteristics:

Satellites

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Polar				
Coverage	65N-90N	65N-90N / 65N-90N	65N-90N	65N-90N
Hrs/day	24	24 / 16	16	16
Capacity Payload				
Uplink	TBD	TBD / TBD	TBD	TBD
Downlink	TBD	TBD / TBD	TBD	TBD
Crosslink	TBD	TBD / TBD	TBD	TBD
UHF	TBD	TBD / TBD	TBD	TBD
Anti-jam Capability	TBD	TBD / TBD	TBD	TBD
Scintillation	TBD	TBD / TBD	TBD	TBD
Protection				
Mid Latitude				
Coverage	65S-65N	65S-65N / 65S-65N	65N-65N	65S-65N
LDR				
Hrs/day	24	24 / 24	24	24
Capacity/Payload (Kbps)				
Uplink	315	315 / 225	240	240
Downlink	485	485 / 340	500	500
Crosslink	170	170 / 115	130	130
MDR				
Hrs/day	24	24 / 24	24	24
Capacity/Payload	1 WSA & +1 ECA & +3 MSA & +4 LSA	1 WSA & / 1 WSA & +1 ECA & / +3 MSA +3 MSA & / +4 LSA	1 WSA & +3 MSA	1 WSA & +3 MSA
Uplink (Mbps)	57	57 / 43	57.399	57.399
WSA	40	40 / 30	30	30
MSA	12	12 / 6	6	6
Downlink (Mbps)	76	76 / 38	39.68	39.68
Crosslink (Mbps)	6.3	6.3 / 3.2	5	5

(b)(1)

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10a. ~~(U)~~ **Performance Characteristics (Cont'd):**
Satellites

Development Estimate (SAR)	Approved Program (APB) Chi/Threshold	Demon- strated Perf	Current Estimate
-------------------------------	--	---------------------------	---------------------

(b)(1)



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MILSTAR, December 31, 1996

10a. (S) Performance Characteristics (Cont'd):
Satellites

	Development	Approved	Demon-	Current
	Estimate (SAR)	Program (APB)	strated	Estimate
		Obi/Threshold	Perf	
(b)(1)				

(U) Acronyms & Abbreviations

dBW - decibel Watts
EAM - Emergency Action Message
ECA - Earth Coverage Area
EIRP - Effective Isotropic Radiated Power
Kbps - Kilo bits per second
LDR - Low Data Rate
LSA - Local Service Area
Mbps - Mega bits per second
MCE - Mission Control Element
MDR - Medium Data Rate
MIL-STD 1582C - Military Standard (Milstar Waveform)
MJCS - Joint Chiefs of Staff Memo
MMD - Mean Mission Duration
MSA - Medium Service Area
MTBCF - Mean Time Between Critical Failure
MTTRF - Mean Time To Restore Function
NCGS - Nuclear Criteria Group Secretariat
R&M - Reliability and Maintainability
SCT - Single Channel Transponder
UHF - Ultra High Frequency
WSA - Wide Service Area

b. (U) Current Change Explanations --
None

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10a. (U) Performance Characteristics (Cont'd):
CP Terminals

a. Performance --

Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
------------------------------	--	---------------------------	---------------------

(b)(1)



b. Current Change Explanations -- None.

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11. (U) Total Program Cost and Quantity (Dollars in Millions):
Satellites

	Development	Approved	Current
(b)(1)			

b. (U) Quantity --

Development (RDT&E)	7	6	6
Procurement	<u>4</u>	<u>0</u>	<u>0</u>
Total	11	6	6

(U) Note: All satellites are being procured with RDT&E funding. Procurement funding is for Mission Control Segment support equipment.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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11a. (U) Total Program Cost and Quantity (Cont'd):
CP Terminals

	Production	Approved	Current
(b)(1)			

b. (U) Quantity --

Development (RDT&E)	27	27	27
Procurement	<u>104</u>	<u>87</u>	<u>87</u>
Total	131	114	114

(U) Note: All 87 of the procurement quantities will be procured for low rate initial production (LRIP), including 14 Navy terminals. The total procurement reflects a reduction from the LRIP quantity in the Dec 1992 SAR. Although the original LRIP quantities were less than 10% of the total programmed quantity, force restructuring significantly reduced the quantity of terminals procured. Consequently, all terminals are being procured under LRIP.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

Satellites

	Current Estimate (Dec 96 SAR)	UCR Baseline (FEB 95 APR)	Percent Change
(b)(1)			

(U) Note: Per 1993 Defense Planning Guidance resulting from the SECDEF's Bottom-Up Review, the Milstar II program will terminate after Satellite 6 and transition to a lower cost Advanced EHF satellite with first launch no later than FY06. As a result of this direction, the Milstar II program will no longer build production satellites (8 through 11). Consequently, procurement unit cost is not applicable to the Milstar space segment.

CP Terminals

	Current Estimate (Dec 96 SAR)	UCR Baseline (FEB 95 APR)	Percent Change
(b)(1)			

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13. (U) Cost Variance Analysis:
Satellites

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
(b)(1)				

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13a. (U) Cost Variance Analysis (Cont'd):
Satellites

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
(b)(1)				

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-11.9
Economic adjustment for negative program change. (Economic)	N/A	+19.4
Increased program risk due to funding reductions (Estimating)	-33.9	-47.8
Revised estimate due to Bosnia II funding reductions (Estimating)	-6.0	-8.0
Revised estimate due to Small Business Innovative Research (SBIR) reduction (Estimating)	-16.7	-22.9
Adjustment for Current and Prior Year Inflation. (Estimating)	+2.9	+3.4
Reduced SPO operations and contractor support estimate as development effort ramps down (Estimating)	-41.3	-75.9
Transferred funds for shared program common costs (Estimating)	-7.3	-10.3

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13b. (U) Cost Variance Analysis (Cont'd):
Satellites

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase in Automated Communication Management System Support costs (Support)	+24.2	+29.1
RDT&E Subtotal	<u>-78.1</u>	<u>-124.9</u>

CP Terminals

(b)(1)



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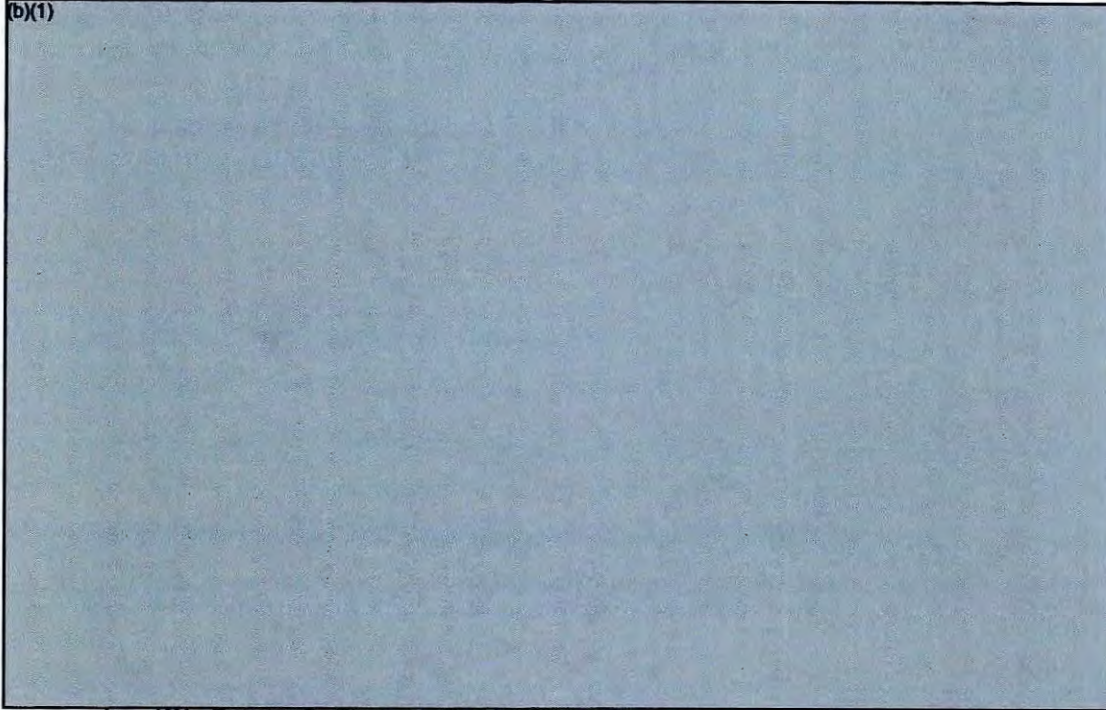
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13a. (U) Cost Variance Analysis (Cont'd):

CP Terminals

(b)(1)



b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Economic adjustment for negative program change. (Economic)	N/A	-0.3
Adjustment for Current and Prior Year Inflation. (Estimating)	+0.2	+0.2
Increased program risk due to funding reductions (Estimating)	-9.3	-12.4
Revised estimate due to Small Business Innovative Research (SBIR) reduction (Estimating)	-0.1	-0.1
Transferred funds to pay base support (Estimating)	-0.1	-0.1
Revised estimate for the the CP Terminals Program (Estimating)	+2.8	+3.4
Revised estimate due to Bosnia II funding reductions (Estimating)	-0.3	-0.3
Change in Program Office Support (Support)	-1.7	-2.2
RDT&E Subtotal	-8.5	-11.8
(2) <u>Procurement</u>		

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13b. (U) Cost Variance Analysis (Cont'd):
CP Terminals

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised escalation indices (Economic)	N/A	-0.3
Revised estimate for the CP Terminals Program (Estimating)	+8.2	+9.8
Transfer of funds between CP Terminals and Tactical Terminals (Estimating)	+4.0	+4.8
Change in Initial Spares (Support)	-0.1	-0.1
Procurement Subtotal	+12.1	+14.2

(b)(1)



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14a. (U) Unit Cost and Other History (Cont'd):
CP Terminals

a. ~~(S)~~ Program Acquisition Unit Cost (PAUC) History

(b)(1)

15. (U) Contract Information (Then-Year Dollars in Millions):

a. RDT&E --
(U) Milstar II Satellites:
Lockheed Msl & Space Co, Sunnyvale CA
F04701-92-C-0049, CPAF
Award: October 30, 1992
Definitized: October 30, 1992

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1659.5	N/A	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$3753.6	N/A	4

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$3337.7	\$3337.7

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15a. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$26.3	\$-5.2
Cumulative Variances To Date (11/30/96)	<u>\$47.9</u>	<u>\$-4.7</u>
Net Change	\$21.6	\$0.5

Explanation of Change:

(U) Cost variance improved from \$26.3M to \$47.939M. The reason for this variance is a large cost underrun as a result of efficiencies in the Program Management and Systems Engineering areas. Favorable variance is also the result of underruns incurred during the recurring development phase (e.g., Radio Frequency & Control subsystems, Wing Integration and Test, and Systems Engineering). In addition, Low Data Rate (LDR) product and process efficiencies, especially in the Antenna area, are driving the favorable performance.

Schedule variance improved from -\$5.2M to -\$4.692M. The unfavorable schedule variance is due mainly to delayed receipt of structure & composite materials and test hardware for the MDR Payload.

Current Contract Target Price increased by \$13.7M since the Dec 95 SAR. The increase is due to the addition of the Automated Communication Management System (ACMS) and Satellite Mission Control Sub-System (SMCS) software sustainment.

There is no major impact to the contract or the program.

(U) <u>CP Production Terminals:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Rockwell, Richardson, TX			
F19628-93-C-0033, FFP	\$111.3	N/A	20
Award: May 28, 1993			
Definitized: May 28, 1993			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$129.2	N/A	24	\$129.2	\$129.2

Explanation of Change:

(U) Cost and schedule variance reporting is not required for this FFP contract. Since this contract is more than 90% complete, this is the last time it will be reported in the SAR.

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MILSTAR, December 31, 1996

15. (U) Contract Information (Cont'd):

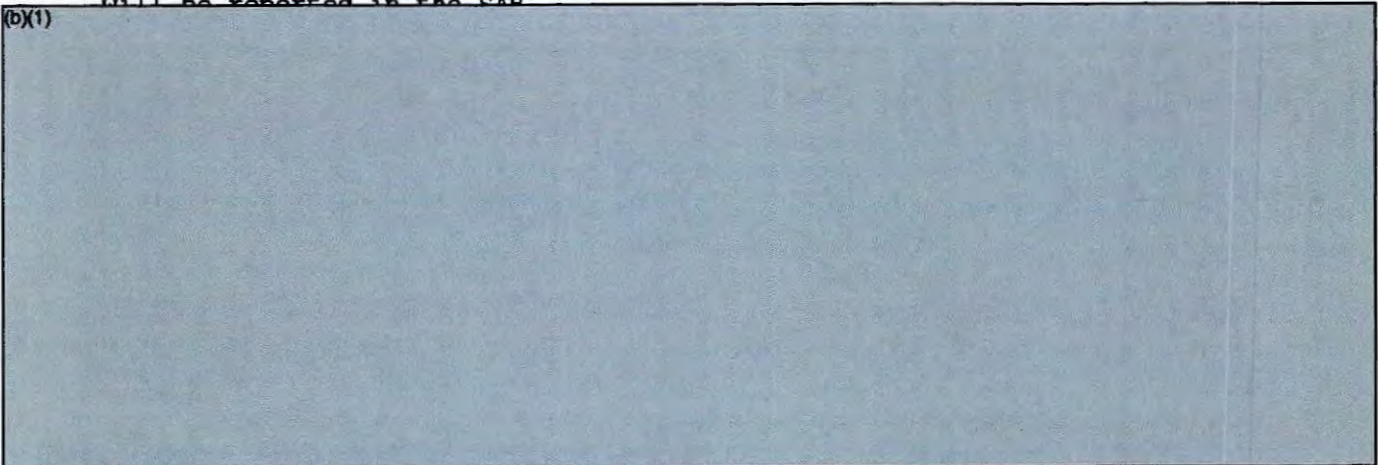
(U) <u>CP Production Terminals:</u>	Initial Contract Price		
Raytheon, Malborough, MA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F19628-93-C-0032, FFP	\$74.0	N/A	20
Award: May 28, 1993			
Definitized: May 28, 1993			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$127.6	N/A	20	\$127.6	\$127.6

Explanation of Change:

(U) Cost and schedule variance reporting is not required for this FFP contract. Since this contract is more than 90% complete, this is the last time it will be reported in the SAR.

(b)(1)

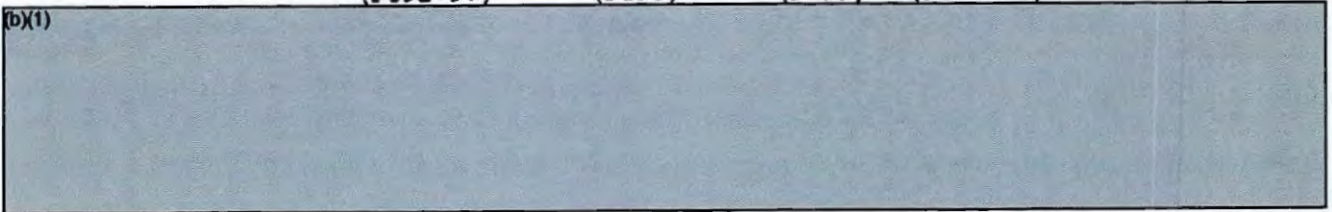


Satellites

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-11)	<u>Total</u>
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(b)(1)



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MILSTAR, December 31, 1996

16a. (U) Program Funding Summary (Cont'd):

CP Terminals

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY98)	<u>Balance To Complete</u> (FY98-11)	<u>Total</u>
(b)(1)					

b. Annual Summary -- Satellites

Appropriation: 3600 Research, Development, Test + Eval, AF

(b)(1)

(U) The FY92 line includes FY92 and prior year information.

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MILSTAR, December 31, 1996

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16b. (b) Program Funding Summary (Cont'd):

Satellites

Appropriation: 3080 Other Procurement, Air Force

(b)(1)



(b) The FY92 line includes FY92 and prior year information.

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MILSTAR, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):
CP Terminals

Approximately \$26M TY in FY89-96 funding is for Classified Host requirements. Approximately \$41M TY in FY83-97 funding is for Dual Modem Upgrades.

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992	8		15.5	30.2	34.3
1993	6		11.5	11.9	13.7
1994				0.2	0.2
Subtotal	14		27.0	42.3	48.2

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				2.3	2.6
1993				1.3	1.5
1994				0.5	0.6
1995				1.3	1.6
Subtotal				5.4	6.3

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1983				0.6	0.5
1984					
1985				10.8	9.6
1986				20.5	18.9
1987	3	3.7	45.3	66.0	63.4
1988	1		8.4	9.1	9.2
1989	4		24.7	42.3	44.1
1990	3	0.6	17.0	42.5	45.7
1991	2	1.9	11.1	14.4	16.1
1992					
1993	1		2.6	14.9	17.2
1994				2.6	3.0
1995				5.3	6.3
1996					
1997				0.2	0.3
Subtotal	14	6.2	109.1	229.2	234.3

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MILSTAR, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):
CP Terminals

(b)(1)

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY90 Dollars Nonrec	Flyaway FY90 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				4.9	5.0
1990				0.3	0.3
1991				1.9	2.1
1992				11.1	12.4
1993					
1994				1.9	2.2
1995					

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MILSTAR, December 31, 1996

16b. (U) Program Funding Summary (Cont'd):

CP Terminals

Appropriation: 3300 Military Construction, Air Force

(b)(1)

17. (U) Delivery/Expenditure Information:

Satellites

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	2	2
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 33.3%

(b)(1)

CP Terminals

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	27	27
Procurement	87	87

(b)(1)

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MILSTAR, December 31, 1996

18. (U) Operating and Support Costs:
Satellites

a. (U) Assumptions and Ground Rules --

The Operating & Support (O & S) period covers phase-in to Full Operation Capability (FOC) FY92-99 plus 12 steady state years. This estimate covers the cost of 12 Satellite Mission Control Subsystems in a steady-state condition. The maintenance concept consists of two levels for hardware and software. A constellation consists of four satellites. Support costs are derived from the 25 Aug 92 Program Life Cycle Cost Estimate (PLCCE).

There is no antecedent for this system.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Constellation	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	17.9	0.0
Unit Level Consumption	2.9	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.1	0.0
Contractor Support	9.5	0.0
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	30.4	0.0

CP Terminals

a. (U) Assumptions and Ground Rules --

Operational requirements are 12 hours per mission for airborne force element terminals, 16 hours per mission for airborne command post terminals, 24 hours per day for fixed ground terminals, and 12 hours per day for transportable ground terminals. These costs assume 5 years ramp-up and 15 years of steady state operations. The maintenance concept for all command post terminals is two-level. Support costs are derived from the Sep 92 Terminal program office estimate.

There is no antecedent for this system.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Terminal	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	0.1	0.0
Unit Level Consumption	0.1	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.0	0.0
Indirect Costs	0.0	0.0

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MILSTAR, December 31, 1996

18b. (U) Operating and Support Costs (Cont'd):
CP Terminals

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Terminal	Avg Annual Cost Per Antecedent
Indirect Support	0.0	0.0
Total	0.2	0.0

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N-4 AOE 6

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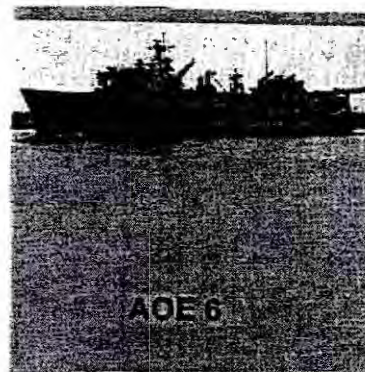
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: AOE 6 SUPPORT SHIP

AS OF DATE: December 31, 1996

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1. Designation and Nomenclature (Popular Name): AOE 6 CLASS FAST COMBAT SUPPORT SHIP

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

Program Executive Office, Carriers, CAPT R.E. Williams USN
Littoral Warfare & Auxiliary Ships Assigned: September 14, 1994
2531 Jefferson Davis Highway DSN 332-3507; COMM (703) 602-3507
Arlington, VA 22242-5171

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603564N Project 0408 (Shared)
PE 0604567N Project 0857 (Shared), 1803 (Shared)

PROCUREMENT:

APPN 1611 ICN 5030 (Navy)

MILCON:

PE 0204441N
PE 0204796N
PE 0702096N
PE 0702228N

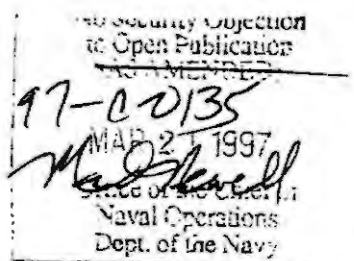
O&M:

PE 070801N

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DEPARTMENT OF DEFENSE



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AOE 6 SUPPORT SHIP, December 31, 1996

5. References:

SAR Baseline (Production Estimate):

NDCP Approved March 20, 1986: Lead Ship Production

DCP Approved May 25, 1989: Follow Ship Production

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated April 8, 1993.

6. Mission and Description:

MISSION. The Fast Combat Support Ship operates as an integral part of the Carrier Battle Group providing simultaneous multiproduct underway replenishment by means of connected replenishment (CONREP) and vertical replenishment (VERTREP) using embarked helicopters. The ship delivers on-station munitions, bulk petroleum and oil and lubricants products, and fresh, frozen, and dry provisions to the Carrier Battle Group underway in hostile environments. The ship delivers and receives fleet freight, mail, and personnel to and from combatant forces underway. The ship will be capable of replenishing from six stations simultaneously.

DESCRIPTION. A 156,000 barrel cargo fuel capacity, twin screw, 20+ knots sustained speed, gas turbine geared drive ship, 753'8" in overall length, 107'0" in beam, and with a draft of 38'3". The ship will have the design capacity for 1800 long tons of ammunition, 400 long tons of Chill and Freeze Storage, 250 long tons of other cargo stowage, two H-46 VERTREP helicopters, and will have accommodations for 667 personnel, including crew, detachment personnel, and 38 transient personnel.

7. Executive Summary:

The AOE 6 Class Program was approved by Navy Decision Coordinating Paper (NDCP) on 20 MAR 86. The lead ship contract for detail design and construction was awarded to National Steel and Shipbuilding Company (NASSCO) on 23 JAN 87. The award was an option-type (one-plus-three), fixed price incentive (FPI), subject to escalation, contract (50/50 share). The option for the first follow ship (AOE 7) was exercised on 3 NOV 88 and for the second (AOE 8) on 6 DEC 89; the third option was allowed to lapse.

As a result of the FY 92 Congressional Budget, the AOE 6 Class Program was reduced from 7 to 4 ships; the FY91 ship (AOE 9) was rescinded and a FY93 ship (AOE 10) was added. A competitive contract for detail design and construction of the AOE 10 was awarded to NASSCO on 15 JAN 93. The award was a fixed price incentive (FPI), subject to escalation, contract (50/50 share). The option to build the AOE 10 Reversing Reduction Gears (RRG) was also exercised with Cincinnati Gear Company on 15 JAN 93. Construction of the AOE 10 commenced on 16 SEP 93.

In MAY 91, the FY91 Dire Emergency Supplemental Appropriations Act provided the AOE 6 Class Program with \$237.0M to complete the three ships under contract at

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AOE 6 SUPPORT SHIP, December 31, 1996

7. Executive Summary (Cont'd):

NASSCO. These funds were required to cover cost growth and claims associated with shipbuilder overruns. Due to these additional funds, the Program Acquisition Unit Cost (PAUC) increased by 30% requiring a Nunn-McCurdy Unit Cost Breach Report. On 12 DEC 91, USD(A) certified the AOE 6 program to Congress in order to continue with the execution of the program.

NASSCO submitted certified claims for \$460.0M. A settlement modification was executed with available funding on 26 DEC 91 for \$239.0M. The majority of claims entitlement was due to the late delivery of Government furnished RRGs resulting in a loss of learning and inefficiencies due to the larger required workforce.

In the summer of 1992, National Steel and Shipbuilding Company's (NASSCO) labor union contract with the production labor personnel expired; shipyard personnel continued to work without a union agreement.

In JAN 93, a fifth ship (AOE 11) was added to the program with a sixth ship in the out-years, increasing the program to 6 ships. In JAN 94, the FY94 Congressional Budget dropped the last two ships restoring the program to 4 ships.

AOE 6 successfully completed Acceptance Trials during the week of 13-17 DEC 93, with delivery on 31 JAN 94 and was commissioned USS SUPPLY on 26 FEB 94.

AOE 7 was delivered on 25 AUG 94 and commissioned USS RAINER on 21 JAN 1995.

AOE 8 was delivered on 11 MAY 1995 and commissioned USS ARCTIC on 16 September 1995. Three of the four AOE 6 class ships being built by NASSCO have now been delivered. The last AOE delivery (AOE 10) is scheduled for 31 MAR 98.

On 28 September 1995 NAVSEA reached an agreement with NASSCO to settle claims against the AOE 6/7/8 for \$38.9M.

A rebaseline contract modification was signed on 6 May 1996. The modification also included a performance incentive clause.

NASSCO's seven unions entered a strike the evening of 17 July 1996. While the strike is technically still continuing, over 90% of the workers have returned to work. NASSCO officially requested schedule relief from the current Contract Delivery Date of 31 March 1998 based on their assessment of the strike impact.

NASSCO and the NAVY settled on the delay impact as a result of the strike. A contract modification (P00019) was signed on 6 MAR 1997 reflecting a 3 week delay.

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AOE 6 SUPPORT SHIP, December 31, 1996

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Operational Requirement (OR)	JUL 82	JUL 82	JUL 82
Ship Characteristics Imp. Board (SCIB)	JUL 83	JUL 83	JUL 83
Characteristics Approved	OCT 84	OCT 84	OCT 84
Production Decision	MAR 86	MAR 86	MAR 86
Production Contract Award	JAN 87	JAN 87	JAN 87
Production Started - 1st Ship	JUN 88	JUN 88	JUN 88
Follow-On Production Decision	NOV 88	NOV 88	NOV 88
Exercise Option (AOE 7)	N/A	NOV 88	NOV 88
Exercise Option (AOE 8)	N/A	DEC 89	DEC 89
Launch - 1st Ship	FEB 90	OCT 90	OCT 90
Acceptance Trials - 1st Ship	MAR 91	AUG 93	DEC 93
Delivery - 1st Ship	APR 91	OCT 93	JAN 94
Organic Support Capability Date	N/A	NOV 94	FEB 95
Service Depot Support Date	N/A	NOV 94	FEB 95
Initial Operational Capability	AUG 91	FEB 95	JUN 95
Last AOE Delivery	FEB 98	DEC 04	APR 98 (Ch-1)

b. Current Change Explanations --

(CH-1) Last Ship Delivery: The delay in the contract delivery date (CDD) from 31 March 1998 to 21 April 1998 is a result of the union strike at NASSCO. Settlement was reached on 6 MAR 1997 and reflects a 3 week delay.

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AOE 6 SUPPORT SHIP, December 31, 1996

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Length Overall (ft)	753'8"	753'8" / 753'8"	753'8"	753'8"
Beam (maximum) (ft)	107'0"	107'0" / 107'0"	107'0"	107'0"
Draft (mean) (ft)	37'9"	38'3" / 38'3"	38'3"	38'3"
Displacement (long tons)	48500	48998 / 48998	48998	48998
Propulsion				
Gas Turbines	4	4 / 4	4	4
Shafts	2	2 / 2	2	2
Shaft Horsepower	100000	100000 / 100000	100000	100000
Accommodations	667	667 / 667	667	667
Speed (kts)	20+	20+ / 20+	20+	20+
Armament				
NSSMS	1	1 / 1	1	1
CIWS	2	2 / 2	2	2
25mm Guns	2	2 / 2	2	2
.50 Cal Guns	4	4 / 4	4	4
Cargo Fuel Cap. (bbls)	156000	156000 / 156000	156000	156000
DFM-JP5-Conv. (%)	30-40-30	30-40-30 / 30-40-30	30-40-30	30-40-30
Ordnance Storage (long tons)	1800	1800 / 1800	1800	1800
Chill & Freeze (long tons)	400	400 / 400	400	400
Other Cargo (long tons)	250	250 / 250	250	250
H-46 Helo (UNREP)	2	2 / 2	2	2

b. Current Change Explanations --

None.

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AOE 6 SUPPORT SHIP, December 31, 1996

11. Total Program Cost and Quantity (Dollars in Millions):

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. Cost --			
Development (RDT&E)	29.4	35.2	31.2
Procurement	2303.1	2859.8	1959.7
Ship Construction	(2230.6)		(1877.4)
OF/PD	(72.5)		(0.0)
Post Delivery			(32.7)
Outfitting			(49.6)
Total Sailaway	(2303.1)		(1959.7)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	124.2	66.6
Acquisition O&M	0.0	0.4	0.4
Total FY 86 Base-Year \$	2332.5	3019.6	2057.9
Escalation	502.3	734.8	366.8
Development (RDT&E)	(-0.6)	(1.3)	(-0.3)
Procurement	(502.9)	(673.8)	(342.9)
Construction (MILCON)	(0.0)	(59.6)	(24.1)
Acquisition O&M	(0.0)	(0.1)	(0.1)
Total Then Year \$	2834.8	3754.4	2424.7
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	7	6	4
Total	7	6	4

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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AOE 6 SUPPORT SHIP, December 31, 1996

12. Unit Cost Summary:

	Current Estimate (Dec 96 SAR)	UCR Baseline (APR 93 APB)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 86 BY\$)	2057.9	3019.6	
(2) Quantity	4	6	
(3) Unit Cost	514.475	503.267	+2.23
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 86 BY\$)	1959.7	2859.8	
(2) Quantity	4	6	
(3) Unit Cost	489.925	476.633	+2.79

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	O&M	TOTAL
Production Estimate	28.8	2806.0	-	-	2834.8
Previous Changes:					
Economic	+0.1	+74.3	-3.7	-	+70.7
Quantity	-	-1222.3	-	-	-1222.3
Schedule	-	+70.5	-	-	+70.5
Engineering	-	-	-	-	-
Estimating	+2.0	+538.9	+121.5	+0.5	+662.9
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+2.1	-538.6	+117.8	+0.5	-418.2
Current Changes:					
Economic	-	-1.9	+0.8	-	-1.1
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	+37.1	-27.9	-	+9.2
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	+35.2	-27.1	-	+8.1
Total Changes	+2.1	-503.4	+90.7	+0.5	-410.1
Current Estimate	30.9	2302.6	90.7	0.5	2424.7

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AOE 6 SUPPORT SHIP, December 31, 1996

13a. Cost Variance Analysis (Cont'd):

Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	O&M	TOTAL
Production Estimate	29.4	2303.1	-	-	2332.5
Previous Changes:					
Quantity	-	-865.3	-	-	-865.3
Schedule	-	+56.6	-	-	+56.6
Engineering	-	-	-	-	-
Estimating	+1.8	+435.6	+84.7	+0.4	+522.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+1.8	-373.1	+84.7	+0.4	-286.2
Current Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	+29.7	-18.1	-	+11.6
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	+29.7	-18.1	-	+11.6
Total Changes	+1.8	-343.4	+66.6	+0.4	-274.6
Current Estimate	31.2	1959.7	66.6	0.4	2057.9

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-1.9
	Adjustment for Current and Prior Inflation. (Estimating)	+1.2	+1.6
	Revised program estimates as a result of repricing based on prior year ship costs. (Estimating)	+28.5	+35.5
	Procurement Subtotal	+29.7	+35.2
(2)	<u>MILCON</u>		
	Revised escalation indices. (Economic)	N/A	-0.3
	Economic adjustment for negative program change. (Economic)	N/A	+1.1
	Revised Homeport requirement estimates (Estimating)	-18.1	-27.9
	MILCON Subtotal	-18.1	-27.1

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AOE 6 SUPPORT SHIP, December 31, 1996

14. Unit Cost and Other History (Then-Year Dollars in Millions):

a. Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
404.97	+17.40	-1.84	+17.62	--	+168.03	--	--	+201.21	606.18

b. Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
400.86	+18.10	-4.93	+17.62	--	+144.00	--	--	+174.79	575.65

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	N/A	JUL 82	JUL 82
Milestone II	N/A	N/A	OCT 84	OCT 84
Milestone III	N/A	N/A	MAR 86	MAR 86
FUE/IOC	N/A	N/A	JAN 92	JUN 95
Total Cost	N/A	N/A	2834.8	2424.7
Total Quantity	N/A	N/A	7	4
Prog Acq Unit Cost	N/A	N/A	404.97	606.17

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

AOE 10:

NASSCO, San Diego, CA

N00024-93-C-2303, FPI

Award: January 15, 1993

Definitized: January 15, 1993

Initial Contract Price
Target Ceiling Qty

\$358.4 \$414.3 1

Current Contract Price
Target Ceiling Qty
\$365.4 \$422.5 1

Estimated Price At Completion
Contractor Program Manager
\$356.2 \$386.1

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AOE 6 SUPPORT SHIP, December 31, 1996

15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-10.8	\$-9.9
Cumulative Variances To Date (11/03/96)	\$-21.3	\$-2.2
Net Change	\$-10.5	\$7.7

Explanation of Change:

The major drivers of the Negative Variances are Production Labor, associated Overhead, and lower efficiencies in material. The Program Manager's estimate remains constant, is below ceiling price, and is within approved funding.

Contract Comments:

The Program Manager's current estimate at completion (PMEAC) of \$386.1M is derived by utilizing historic performance and current trends to project the cost of work remaining. This methodology is applied at the functional level and added to the Actual Cost of Work Performed (ACWP) to date.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY82-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-01)	<u>Total</u>
RDT&E	30.9	-	-	-	30.9
Procurement	2287.4	8.7	6.5	-	2302.6
MILCON	62.5	-	17.9	10.3	90.7
O&M	0.5	-	-	-	0.5
Total	2381.3	8.7	24.4	10.3	2424.7

b. Annual Summary -- AOE-6 SUPPORT SHIP

Appropriation: 1319 Research, Development, Test + Eval, Navy

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY86 Dollars Nonrec</u>	<u>Flyaway FY86 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1982				2.7	2.4
1983				4.0	3.7
1984				7.9	7.6
1985				7.7	7.6
1986				4.5	4.6
1987				1.5	1.6
1988				0.1	0.1
1989					

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AOE 6 SUPPORT SHIP, December 31, 1996

16b. Program Funding Summary (Cont'd):

Appropriation: 1319 Research, Development, Test + Eval, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				0.9	1.0
1991				1.6	1.9
1992				0.3	0.4
Subtotal				31.2	30.9

Appropriation: 1611 Shipbuilding and Conversion, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987	1		644.9	556.8	603.2
1988					
1989	1		442.4	349.2	401.3
1990	1		440.4	337.2	398.7
1991				198.2	241.2
1992				172.0	215.4
1993	1		432.0	309.4	392.5
1994				10.5	13.7
1995				7.1	9.5
1996				8.1	11.1
1997				0.6	0.8
1998				6.1	8.7
1999				4.5	6.5
Subtotal	4		1959.7	1959.7	2302.6

Appropriation: 1205 Military Construction, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1991				16.1	20.0
1992				12.7	16.2
1993				0.9	1.2
1994					
1995				5.7	7.8
1996				12.4	17.3
1997					
1998					
1999				12.1	17.9
2000					
2001				6.7	10.3
Subtotal				66.6	90.7

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AOE 6 SUPPORT SHIP, December 31, 1996

16b. Program Funding Summary (Cont'd):

Appropriation: 1804 Operation and Maintenance, Navy

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				0.4	0.5
Subtotal				0.4	0.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	4		1959.7	2057.9	2424.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	3	3

Percent Total Program Quantities Delivered: 75.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2123.8

Percent Total Program Expended: 87.6%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The AOE 6 Class Fast Combat Support Ship is designed to operate independently or as a unit of an underway replenishment group, furnishing petroleum/oil/lubricant products and fresh, frozen, and dry provisions to operating forces. The O&S costs associated with this ship class are based on a useful life of 30 years. Ship design parameters indicate that each ship will consume about 110,900 BBL of fuel each year.

Mission Personnel Pay and Allowances costs represent the annual cost for the embarked USN crew, Retirement, and PCS costs. Direct operating costs include the cost of fuel, repair parts, supplies, training expendable stores, and purchased services. Direct maintenance includes Intermediate and Depot Level Maintenance. Indirect miscellaneous costs include training, publications, ammunition handling, engineering/technical services support. The baseline AOE 1 and AOE 6 Class Operating and Support estimate was generated using the Center for Naval Analysis (CNA) cost model actuals for the per ship average by class for the AOE 1-4 in constant FY86 dollars as of January 1997. Assumption and ground rules for the O&S costs for the antecedent system are the same as the AOE 6 Class.

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AOE 6 SUPPORT SHIP, December 31, 1996

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per AOE 6 Class	Avg Annual Cost Per AOE 1 Class
Mission Pay & Allowances	25.5	23.9
Unit Level Consumption	2.5	2.2
Intermediate Maintenance	1.0	1.0
Depot Maintenance	8.7	8.5
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	0.3	0.5
Total	38.0	36.1

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A-16 LONGBOW APACHE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: LONGBOW APACHE

AS OF DATE: December 31, 1996

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1. (U) Designation and Nomenclature (Popular Name): LONGBOW APACHE

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

ATTN: SFAE-AV-AAH

COL STEPHEN G. KEE

4300 GOODFELLOW BOULEVARD

Assigned: October 20, 1995

ST. LOUIS, MO 63120-1798

DSN 693-1992; COMM 314-263-1992

4. (U) Program Elements/Procurement Line Items:

RDT&E:

(U) PE 23744 Project D423

(U) PE 63776 Project D472

(U) PE 64816 Project D2DT, DC27, DC31, DC87

PROCUREMENT:

(U) APPN 2031 ICN AA0978 (Army)

(U) APPN 2031 ICN AA6605 (Army)

(U) APPN 2031 ICN AA6607 (Army)

(U) APPN 2031 ICN AA6608 (Army)

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FOR OPEN PUBLICATION
AS AMENDED
MAR 24 1997 12

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

~~Classified by [redacted] on [redacted] 10 May 1998~~
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~~Declassify on: Originating Agency's Declassification Authority~~

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Longbow Apache, December 31, 1996

5. (U) References:

Airframe Modifications

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated November 27, 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated November 27, 1995.

Fire Control Radar

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated November 27, 1995.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated November 27, 1995.

6. (U) Mission and Description:

(U) The Longbow consists of a mast-mounted Fire Control Radar (FCR) that will be integrated into the AH-64 airframe and a Radio Frequency (RF) autonomous seeker in an upgraded Hellfire missile (Longbow Hellfire). Longbow will provide the AH-64 with a true fire-and-forget capability, greatly increasing weapon system effectiveness and aircraft survivability. The weapon system will be employable day or night, in adverse weather and in obscurants. Hellfire must effectively engage and destroy advanced threat armor on the Air-Land Battlefield of the late 1990's and into the next century. To be effective and survive on this future battlefield, the attack helicopter team must rapidly engage multiple targets with minimum exposure time and deploy a system that is inherently resistant to threat countermeasures. A total of 227 aircraft will be modified with all of the Longbow improvements including the FCR and the 701-C engine integrated onto an AH-64 airframe. An additional 531 aircraft will be modified to incorporate all of the Longbow improvements except the FCR and the 701-C engines.

7. (U) Executive Summary:

(U) On August 16, 1996, the Apache Project Manager signed a multi-year contract with McDonnell Douglas Helicopter Systems. The \$1.6B contract provides for the production of 232 aircraft over five years.

The Lot 2 Production contract for the Longbow Fire Control Radar (FCR) was definitized and awarded on January 31, 1997.

On 4 February 1997, the Department of the Army gave approval for a five-year multiyear contract for the Radar Frequency Interferometer.

The six-year multiyear contract for the FCR has been forwarded to the Office of the Secretary of Defense by Department of the Army with a favorable recommendation.

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Longbow Apache, December 31, 1996

8. (U) Threshold Breaches:

Airframe Modifications

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

Fire Control Radar

a. (U) Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Average Procurement Unit Cost (APUC)	(Same as APUC, below)

b. (U) Nunn-McCurdy Unit Cost:

Item	Breach
Program Acquisition Unit Cost	No
Average Procurement Unit Cost	No

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Longbow Apache, December 31, 1996

9. (U) Schedule:
Airframe Modifications

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I In Process Review	AUG 85	AUG 85	AUG 85
Prelimin Design Contract Award	NOV 85	NOV 85	NOV 85
Contract Award (Proof of Principle)	AUG 86	AUG 86	AUG 86
LBA Phase I Contract Award	AUG 88	AUG 88	AUG 88
Milestone IB (DAB)	JUL 89	JUL 89	JUL 89
LBA Phase 2 Contract Award	AUG 89	AUG 89	AUG 89
IDP Contract Award	SEP 89	SEP 89	SEP 89
Dev Test/Early User Test and Eval			
Start	FEB 90	FEB 90	FEB 90
Complete	APR 90	APR 90	APR 90
Milestone II/IV (DAB)	DEC 90	DEC 90	DEC 90
Full Scale Development Contract Award	DEC 90	DEC 90	DEC 90
Verification of Apache Action Tm Fixes			
Start	APR 91	APR 91	APR 91
Complete	JUL 91	JUL 91	JUL 91
First Flight of Prototype w/o Longbow	APR 92	APR 92	APR 92
Prelim Airworthiness Eval			
Start	MAR 93	MAR 93	MAR 93
Complete	AUG 93	AUG 93	JUN 93
LBA Initial Prod Readiness Rev	JUL 92	JUL 92	JUL 92
First Flight w/ Longbow	AUG 93	AUG 93	AUG 93
Component Qualification	JUN 94	JUN 94	DEC 93
LBA Long Lead IPR	OCT 94	OCT 94	OCT 94
First Flight (AH-64D w/o FCR)	JAN 94	JAN 94	JAN 94
Long Lead Time Items Contract Award	DEC 94	DEC 94	DEC 94
Development Test			
Start	JUL 94	JUL 94	JUL 94
Complete	SEP 94	SEP 94	SEP 94
Force Dev Test and Experimentation			
Start	OCT 94	OCT 94	OCT 94
Complete	NOV 94	NOV 94	NOV 94
Production Readiness Review	JUN 95	JUN 95	JUN 95
IOT&E			
Start	JAN 95	JAN 95	JAN 95
Complete	MAR 95	MAR 95	MAR 95
Milestone III (DAB)	OCT 95	OCT 95	OCT 95
Lot 1 Contract Award	NOV 95	NOV 95	DEC 95
First Production Delivery (LBA & FCR)	MAR 97	MAR 97	MAR 97
First Unit Equipped	OCT 97	OCT 97	OCT 97
IOC	SEP 98	SEP 98	OCT 98
Organic Spt for Depot Level of Repair	DEC 00	DEC 00	DEC 00

b. Current Change Explanations -- None.

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Longbow Apache, December 31, 1996

9a. (U) Schedule (Cont'd):
Fire Control Radar

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Milestone I In Process Review	AUG 85	AUG 85	AUG 85
Preliminary Design Contract Award	NOV 85	NOV 85	NOV 85
Contract Award (Proof of Principle)	AUG 86	AUG 86	AUG 86
Milestone IB DAB	JUL 89	JUL 89	JUL 89
IDP Contract Award	SEP 89	SEP 89	SEP 89
Development Test/Early User Test & Experimentation			
Start	FEB 90	FEB 90	FEB 90
Complete	APR 90	APR 90	APR 90
Milestone II/IV	DEC 90	DEC 90	DEC 90
Full Scale Development Award	DEC 90	DEC 90	DEC 90
Long Lead Time Items Contract Award	NOV 94	NOV 94	DEC 94
Lot 1 Contract Award	NOV 95	NOV 95	MAR 96
First Production Delivery	FEB 97	FEB 97	MAR 97
Organic Support for Depot Level of Repair	DEC 02	DEC 02	DEC 02

b. Current Change Explanations -- None.

10. (U) Performance Characteristics:
Airframe Modifications

a. Performance --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Vertical Rate of Climb for AH-64D with FCR Mission Kit (ft/min)	450	450 / 450	705	450
Ordnance Load (primary mission config)				
Hellfire (no.)	16	16 / 12	8	12
Target Handover	No	No / 15%	13%	No
	degrada- tion	degrada- tion / degrada- tion	Degrada- tion	degrada- tion

(b)(1)

(U) The objective for Ordnance Load (primary mission configuration) refers to AH-64A goal. The Longbow primary mission configuration is 8 Longbow Hellfire missiles, and 320 30mm rounds.

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10b. (U) Performance Characteristics (Cont'd):
Airframe Modifications

b. Current Change Explanations -- None.

Fire Control Radar

a. Performance --

Production Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
------------------------------	--	---------------------------	---------------------

(b)(1)

11. (U) Total Program Cost and Quantity (Dollars in Millions):
Airframe Modifications

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	638.4	638.4	635.1
Procurement	5052.2	5052.2	5181.6
Flyaway	(4161.5)		(4175.1)
Other Weapon System	(737.4)		(911.6)
Peculiar Support	(42.6)		(26.2)
Initial Spares	(110.7)		(68.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	5690.6	5690.6	5816.7
Escalation	1337.2	1337.2	896.2
Development (RDT&E)	(-46.1)	(-46.1)	(-37.6)
Procurement	(1383.3)	(1383.3)	(933.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	7027.8	7027.8	6712.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	758	758	758
Total	758	758	758

Note: Excludes 6 RDTE prototypes from the SAR Baseline and 6 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales -- None.

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Longbow Apache, December 31, 1996

11a. (U) Total Program Cost and Quantity (Cont'd):
Fire Control Radar

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	885.2	885.2	863.1
Procurement	813.9	813.9	834.1
Flyaway	(741.3)		(764.7)
Other Weapon System	(22.2)		(0.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(50.4)		(69.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	1699.1	1699.1	1697.2
Escalation	2.3	2.3	-8.4
Development (RDT&E)	(-117.5)	(-117.5)	(-101.7)
Procurement	(119.8)	(119.8)	(93.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1701.4	1701.4	1688.8
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	227	227	227
Total	227	227	227

Note: Excludes 10 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

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LONGBOW APACHE, December 31, 1996

12. (U) Unit Cost Summary:

Airframe Modifications

	Current Estimate (Dec 96 SAR)	UCR Baseline (NOV 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	5816.7	5690.6	
(2) Quantity	758	758	
(3) Unit Cost	7.674	7.507	+2.22
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	5181.6	5052.2	
(2) Quantity	758	758	
(3) Unit Cost	6.836	6.665	+2.57

Fire Control Radar

	Current Estimate (Dec 96 SAR)	UCR Baseline (NOV 95 APB)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	1697.2	1699.1	
(2) Quantity	227	227	
(3) Unit Cost	7.477	7.485	-0.11
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	834.1	813.9	
(2) Quantity	227	227	
(3) Unit Cost	3.674	3.585	+2.48

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Longbow Apache, December 31, 1996

13. (U) Cost Variance Analysis:
Airframe Modifications

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	592.3	6435.5	-	7027.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	+1.1	-	+1.1
Engineering	-	-	-	-
Estimating	+6.0	-157.5	-	-151.5
Other	-	-	-	-
Support	-	-191.2	-	-191.2
Subtotal	+6.0	-347.6	-	-341.6
Current Changes:				
Economic	-	-10.5	-	-10.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.8	-267.6	-	-268.4
Other	-	-	-	-
Support	-	+305.6	-	+305.6
Subtotal	-0.8	+27.5	-	+26.7
Total Changes	+5.2	-320.1	-	-314.9
Current Estimate	597.5	6115.4	-	6712.9

(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	638.4	5052.2	-	5690.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-2.5	+247.9	-	+245.4
Other	-	-	-	-
Support	-	-153.9	-	-153.9
Subtotal	-2.5	+94.0	-	+91.5
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.8	-234.3	-	-235.1
Other	-	-	-	-
Support	-	+269.7	-	+269.7
Subtotal	-0.8	+35.4	-	+34.6
Total Changes	-3.3	+129.4	-	+126.1
Current Estimate	635.1	5181.6	-	5816.7

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Longbow Apache, December 31, 1996

13b. (U) Cost Variance Analysis (Cont'd):
Airframe Modifications

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Refined estimate to adjust program to actual. (Estimating)	-0.8	-0.8
RDT&E Subtotal	<u>-0.8</u>	<u>-0.8</u>
(2) <u>Procurement</u>		
Correction of September 1996 SAR to reconcile flyaway and support (Estimating)	-283.1	-323.5
(Support)	+283.1	+323.5
Revised escalation indices. (Economic)	N/A	-10.5
Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+1.6
Increased estimate because premodification costs previously funded by OMA are now funded with APA. (Estimating)	+45.4	+51.9
Revised flyaway estimate. (Estimating)	+2.0	+2.4
Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
Decreased Initial Spares estimate based on multiyear contract (Support)	-9.8	-13.4
Increased estimate for other weapons systems for costs of initial consumables (moved from spares) (Support)	+1.0	+1.3
Decreased estimate for initial spares (initial consumables moved to other weapons system estimate) (Support)	-1.0	-1.3
Increased estimate for addition of T700-701 kit upgrade evaluation in FY 1997 (Support)	+0.9	+1.0
Increased estimate for training devices (Support)	+4.9	+5.1
Decreased estimate for in-house, matrix support, and contractor support costs (Support)	-9.7	-10.9
Procurement Subtotal	<u>+35.4</u>	<u>+27.5</u>

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Longbow Apache, December 31, 1996

13. (U) Cost Variance Analysis (Cont'd):
Fire Control Radar

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	767.7	933.7	-	1701.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-5.8	-161.5	-	-167.3
Other	-	-	-	-
Support	-	+120.7	-	+120.7
Subtotal	-5.8	-40.8	-	-46.6
Current Changes:				
Economic	-	-5.4	-	-5.4
Quantity	-	-	-	-
Schedule	-	+4.9	-	+4.9
Engineering	-	-	-	-
Estimating	-0.5	+157.4	-	+156.9
Other	-	-	-	-
Support	-	-122.4	-	-122.4
Subtotal	-0.5	+34.5	-	+34.0
Total Changes	-6.3	-6.3	-	-12.6
Current Estimate	761.4	927.4	-	1688.8

(U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	885.2	813.9	-	1699.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-21.6	-118.5	-	-140.1
Other	-	-	-	-
Support	-	+106.9	-	+106.9
Subtotal	-21.6	-11.6	-	-33.2
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.5	+141.9	-	+141.4
Other	-	-	-	-
Support	-	-110.1	-	-110.1
Subtotal	-0.5	+31.8	-	+31.3
Total Changes	-22.1	+20.2	-	-1.9
Current Estimate	863.1	834.1	-	1697.2

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13b. (U) Cost Variance Analysis (Cont'd):
Fire Control Radar

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Reprogrammed to airframe modifications end item. (Estimating)	-0.5	-0.5
RDT&E Subtotal	-0.5	-0.5
(2) <u>Procurement</u>		
Correction to September 1996 SAR to reconcile flyaway and support (Estimating)	+54.5	+62.3
(Support)	-54.5	-62.3
Revised escalation indices. (Economic)	N/A	-5.7
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Increase due to one-year stretchout of annual procurement buy profile. (Schedule)	0.0	+4.9
Decreased Initial Spares estimate based on Lot 1 / Lot 2 contracts (Support)	-55.6	-60.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.5
Decreased Radar Frequency Interferometer estimate based on Lot 1 / Lot 2 contracts (Estimating)	-9.1	-11.1
Increased FCR estimate based on Lot 1 / Lot 2 contracts (Estimating)	+96.0	+105.7
Procurement Subtotal	+31.8	+34.5

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):
Airframe Modifications

a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.34	-1.22	--	-0.41	--	+3.28	--	+0.28	+1.93	9.27

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14a. (U) Unit Cost and Other History (Cont'd):
Airframe Modifications

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
9.27	-0.01	--	--	--	-0.55	--	+0.15	-0.41	8.86

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.77	-1.13	--	-0.41	--	+2.98	--	+0.28	+1.72	8.49

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
8.49	-0.01	--	--	--	-0.56	--	+0.15	-0.42	8.07

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	JUL 89	JUL 89	JUL 89
Milestone II	N/A	DEC 90	DEC 90	DEC 90
Milestone III	N/A	NOV 95	OCT 95	OCT 95
FUE/IOC	N/A	APR 97	SEP 98	OCT 98
Total Cost	N/A	5564.4	7027.8	6712.9
Total Quantity	N/A	758	758	758
Prog Acq Unit Cost	N/A	7.34	9.27	8.86

Fire Control Radar

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14a. (U) Unit Cost and Other History (Cont'd):
Fire Control Radar

a. (U) Program Acquisition Unit Cost (PAUC) History

Initial SAR Baseline to Current SAR Baseline

PAUC Ini Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.36	-1.03	--	+0.08	--	+2.50	--	-0.42	+1.13	7.50

a. (U) Program Acquisition Unit Cost (PAUC) History

Current SAR Baseline to Current Estimate

PAUC Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
7.50	-0.02	--	+0.02	--	-0.05	--	-0.01	-0.06	7.44

b. (U) Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Ini Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.96	-0.63	--	+0.08	--	+2.12	--	-0.42	+1.15	4.11

b. (U) Procurement Unit Cost (PUC) History

Current SAR Baseline to Current Estimate

PUC Prod Est	Changes								PUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
4.11	-0.02	+0.01	+0.02	--	-0.02	--	-0.01	-0.02	4.09

c. (U) Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone I	N/A	JUL 89	JUL 89	JUL 89
Milestone II	N/A	DEC 90	DEC 90	DEC 90
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	1442.6	1701.4	1688.6
Total Quantity	N/A	227	227	227
Prog Acq Unit Cost	N/A	6.36	7.5	7.44

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15. (U) Contract Information (Then-Year Dollars in Millions):

a. Procurement --
(U) FIRE CONTROL RADAR LOT 1:
Longbow LTD Liability Co., Orlando FL
DAAJ09-95-C-A002, FFP
Award: March 4, 1996
Definitized: June 28, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$139.0	N/A	10

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$134.2	N/A	10	\$134.2	\$134.2

Explanation of Change:

(U) Cost and schedule variance reporting is not required on this FFP contract.

(U) AH64D Multiyr Production:
McDonnell Douglas Helisys, Mesa AZ
DAAJ09-95-C-A001, FFP
Award: December 12, 1994
Definitized: August 16, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$1690.3	N/A	232

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1953.2	N/A	232	\$1953.2	\$1953.2

Explanation of Change:

(U) Cost and schedule variance reporting is not required on this FFP contract.

(U) FCR Lot 2 Production:
Longbow Limited Liability, Orlando FL
DAAJ09-96-C-0114, FFP
Award: July 15, 1996
Definitized: January 31, 1997

Initial Contract Price		
Target	Ceiling	Qty
\$15.5	N/A	11

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$82.5	N/A	11	\$82.5	\$82.5

Explanation of Change:

(U) Cost and schedule variance reporting is not required on this FFP contract.

(U) Contract Comments:

This is the first time this contract has appeared in a SAR. The price includes funding for the Fire Control Radar production units, spares, Engineering Change Proposals, and Long Lead Items for Lot 3.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

Total Program

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY85-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-08)</u>	<u>Total</u>
RDT&E	1358.9	-	-	-	1358.9
Procurement	975.1	525.3	609.2	4933.2	7042.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2334.0	525.3	609.2	4933.2	8401.7

Airframe Modifications

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY88-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-08)</u>	<u>Total</u>
RDT&E	597.5	-	-	-	597.5
Procurement	739.3	409.7	483.2	4483.2	6115.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1336.8	409.7	483.2	4483.2	6712.9

Fire Control Radar

a. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY85-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-06)</u>	<u>Total</u>
RDT&E	761.4	-	-	-	761.4
Procurement	235.8	115.6	126.0	450.0	927.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	997.2	115.6	126.0	450.0	1688.8

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16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- Airframe Modifications

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1988				22.9	18.7
1989				55.3	47.0
1990				78.1	68.9
1991				62.0	56.8
1992				78.1	73.2
1993				105.2	100.9
1994				88.9	86.9
1995				112.8	112.5
1996				21.6	22.0
1997				10.2	10.6
Subtotal				635.1	597.5

Appropriation: 2031 Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995		39.3		74.6	75.7
1996	24	116.4	189.3	333.8	346.2
1997	24	65.7	162.9	299.4	317.4
1998	44	11.0	248.7	379.6	409.7
1999	66	3.3	344.3	438.4	483.2
2000	74	0.5	369.5	490.4	552.2
2001	72		365.1	493.7	568.1
2002	72		375.0	478.2	563.2
2003	72	41.2	360.8	483.1	583.3
2004	72		359.3	433.9	537.5
2005	72		318.0	362.4	460.7
2006	72		313.4	357.9	466.7
2007	72		314.5	344.4	460.8
2008	22		176.9	211.8	290.7
Subtotal	758	277.4	3897.7	5181.6	6115.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	758	277.4	3897.7	5816.7	6712.9

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16b. (U) Program Funding Summary (Cont'd):

b. Annual Summary -- Fire Control Radar

Appropriation: 2040 Research, Development, Test + Eval, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1985				19.9	14.7
1986				39.7	30.2
1987				98.8	77.6
1988				101.6	83.0
1989				100.7	85.6
1990				106.0	93.5
1991				86.3	79.0
1992				82.2	77.0
1993				124.0	118.9
1994				82.2	80.3
1995				21.7	21.6
Subtotal				863.1	761.4

(U) Expenditures and obligations are as of 01/16/95.

Appropriation: 2031 Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995		13.9		40.7	41.3
1996	10	6.8	104.1	92.9	96.3
1997	10	10.4	82.9	92.6	98.2
1998	21	6.5	88.4	107.1	115.6
1999	40		98.9	114.3	126.0
2000	45		113.0	117.0	131.7
2001	44		108.4	113.7	130.8
2002	42		77.4	77.3	91.1
2003	19		22.3	32.4	39.1
2004		31.7		42.3	52.4
2005					
2006				3.8	4.9
Subtotal	227	69.3	695.4	834.1	927.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	227	69.3	695.4	1697.2	1688.8

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17. (U) Delivery/Expenditure Information:

Airframe Modifications

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 627.1

(U) Percent Total Program Expended: 9.3%

Fire Control Radar

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 789.6

(U) Percent Total Program Expended: 46.8%

18. (U) Operating and Support Costs:

Airframe Modifications

a. (U) Assumptions and Ground Rules --
Assumes 592 fielded aircraft each flying 14.5 hours per month. Maintenance concept is 2 level maintenance, contractor depot support. The airframe Mean Time Between Failure (MTBF) goal is 19.5 hours at Maturity (50,000 flight hours). Source: Army Cost Position Update (Feb 97). The Longbow aircraft system has no antecedent.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Longbow aircraft	Avg Annual Cost Per antecedent system
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	0.7	0.0
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Replenishment	473.5	0.0
Military Personnel	844.0	0.0
Other	227.6	0.0

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18b. (U) Operating and Support Costs (Cont'd):

Airframe Modifications

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Longbow aircraft	Avg Annual Cost Per antecedent system
Total	1545.8	0.0

Fire Control Radar

a. (U) Assumptions and Ground Rules --

Assumes 187 fielded Fire Control Radars each flying 14.5 hours per month. Maintenance concept is 2 level maintenance, contractor depot support. At maturity (50,000 flight hours), the Fire Control Radar Mean Time Between Failure (MTBF) goal is 150 hours. Source: Army Cost Position Update (Feb 97). The Longbow Fire Control Radar system has no antecedent.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Fire Control Radar	Avg Annual Cost Per antecedent system
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	0.0	0.0
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Replenishment	43.8	0.0
Other	22.6	0.0
Mission Pay & Allowances	N/A	N/A
Mission Pay & Allowances	N/A	N/A
Unit Level Consumption	N/A	N/A
Contractor Support	N/A	N/A
Intermediate Maintenance	N/A	N/A
Indirect Costs	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Total	66.4	0.0

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