

N-24 USMC H-1 UPGRADES

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: USMC H-1 Upgrades

AS OF DATE: December 31, 1997

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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 TOM CURTIS
AIR ASW ASSAULT AND SPECIAL MISSION Assigned: August 20, 1997
PROGRAMS, 47123 BUSE ROAD UNIT#IPT DSN 757-5500; COMM 301 757-5534
PATUXENT RIVER, MD 20670-1547 CURTISJT@AMENIMITZ.NAVY.MIL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603266N (Shared) (FY97) SUNK Project H2279

PE 0604245N Project H2279, H2419

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.

CLEARED
FOR OPEN PUBLICATION

MAR 24 1998 11

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

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No Security Objection
to Open Publication
(AS AMENDED)

98-02135
MAR 23 1998

Office of the Chief of
Naval Operations
Dept. of the Navy

98-C-0888

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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, control and assault support under day/night and adverse weather conditions. The USMC H-1 Upgrades effort involves conversion of both the AH-1W and UH-1N from a two-bladed rotor system to a four-bladed system, referred to as "4BW" and "4BN". Major modifications include a new rotor system with semi-automatic blade fold of the new composite rotor blades, new performance matched transmissions, a new four-bladed tail rotor and pylon structural modifications. The 4BW/4BN aircraft will have increased maneuverability, speed, and payload capability. Both aircraft will have fully integrated common cockpits/avionics that will reduce operator workload and improve situational awareness, thus increasing safety.

7. Executive Summary:

The Office for Naval Intelligence(ONI) published an Upgrades Joint System Threat Assessment Report (JSTAR) for V-22 OSPREY and H-1 aircrafts. The threats were analyzed and found to be similar. The Defense Intelligence Agency validated this assessment.

The USMC H-1 Upgrades Program was designated a major Defense Acquisition Program on July 31, 1995. An Integrated Baseline Review (IBR) was completed on February 7, 1997. A successful Preliminary Design Review (PDR) was held on June 22-25, 1997 at Bell Helicopter. All engineering design issues were addressed with no major issues. Bell Helicopter was given approval to proceed to detailed design.

The Fiscal Year 1998 Appropriations Act transferred \$5.6 million from UH-1N to USMC H-1 Upgrades (4BN/4BW) for the 4BN integrated cockpit; an additional \$8.8 million has been similarly transferred along with \$9.6 million from N88, totaling \$18.4, for the same purpose across the FYDP (FY99-FY03). An integrated 4BN cockpit allows concurrency, developmental efficiency, and commonality with the 4BW cockpit upgrades.

Bell Helicopter awarded a subcontract on August 18, 1997 to Litton Guidance and Control for the avionic and cockpit integration. Bell Helicopter released the Request for Proposal (RFP) for the Targeting Sensor System (TSS) on January 30, 1998.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	
Preliminary Design Review Complete	JUL 97	JUL 97	JUL 97	
Critical Design Review Complete	JUL 98	JUL 98	SEP 98	(Ch-1)
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	
Preliminary Design Review Complete	JUL 97	JUL 97	JUL 97	
Critical Design Review Complete	JUL 98	JUL 98	SEP 98	(Ch-1)
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	

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(CH-1) Critical Design Review Complete is rescheduled from JUL 98 to SEP 98 for both the 4BW and 4BN aircraft to match release of approved engineering drawings. Engineering program has been constrained by funding.

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	142	(Ch-1)
Payload (Hot Day) (lbs)	3500	3500 / 2500	TBD	2800	(Ch-1)
Weapon Stations					
Universal Mounts	6	6 / 4	TBD	4	(Ch-1)
Precision Guided Munitions	16	16 / 12	TBD	14	(Ch-1)
Maneuverability/ Agility (G's)	-0.5 to +2.5	-0.5 to / -0.5 to +2.5 / +2.5	TBD	-0.5 to +2.6	(Ch-1)
Mission Radius (nm)	200nm x 1 (Aux Fuel)	200nm x / 50nm x 2 1 (Aux / or 110nm Fuel) / x 1	TBD	130nm x 1	(Ch-1)
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	150	(Ch-1)
Payload (Hot Day) (lbs)	4500	4500 / 2800	TBD	3200	(Ch-1)
Weapon Stations	2 Univ. Mounts	2 Univ. / 2 Hard Mounts / Mounts	TBD	2 Hard Mounts	(Ch-1)
Maneuverability/ Agility (G's)	-0.5 to +2.5	-0.5 to / -0.5 to +2.5 / +2.5	TBD	-0.5 to +2.6	(Ch-1)
Mission Radius (nm)	200nm x 1 (Aux Fuel)	200nm x / 50nm x 2 1 (Aux / or 110nm Fuel) / x 1	TBD	121nm x 1	(Ch-1)

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10b. Performance Characteristics (Cont'd):

b. Current Change Explanations --

(CH-1) The current estimate reflects changes based on the Preliminary Design Review (PDR). The next update is expected to follow the Critical Design Review which is scheduled for September 1998.

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	555.5
Procurement	2254.7	2254.7	2254.6
Flyaway	(1892.2)		(1892.1)
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	2810.1
Escalation	755.0	755.0	620.4
Development (RDT&E)	(54.5)	(54.5)	(40.2)
Procurement	(700.5)	(700.5)	(580.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3547.5	3547.5	3430.5
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:

	UCR Baseline (OCT 96 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	2792.5	2810.2	
(2) Quantity	284	284	
(3) Unit Cost	9.833	9.895	+0.63
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	2254.7	2254.6	
(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	-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
Current Changes:				
Economic	-13.3	-151.3	-	-164.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+24.0	-	-	+24.0
Estimating	+0.1	-0.3	-	-0.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+10.8	-151.6	-	-140.8
Total Changes	+3.4	-120.4	-	-117.0
Current Estimate	595.7	2834.8	-	3430.5

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	537.8	2254.7	-	2792.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-4.8	-	-	-4.8
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-4.8	-	-	-4.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+22.4	-	-	+22.4
Estimating	+0.1	-0.1	-	0.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+22.5	-0.1	-	+22.4
Total Changes	+17.7	-0.1	-	+17.6
Current Estimate	555.5	2254.6	-	2810.1

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-13.3
Adjustment for Current and Prior Inflation. (Estimating)	+1.8	+1.8
Increase engineering cost for addition of common cockpit for 4BN aircraft. (Engineering)	+22.4	+24.0
Budget reduction for Small Business Innovated Research (SBIR) and other general reductions. (Estimating)	-1.7	-1.7
RDT&E Subtotal	+22.5	+10.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-151.3
Refinement of estimate for midpoint calculations using personal computer rather than mainframe model. (Estimating)	-0.1	-0.3
Procurement Subtotal	-0.1	-151.6

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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	-0.46	+0.01	-0.02	+0.08	--	--	-0.02	-0.41	12.08

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	-0.41	--	--	--	--	--	-0.02	-0.43	10.12

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	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	3430.6
Total Quantity	N/A	284	N/A	284
Prog Acq Unit Cost	N/A	12.49	N/A	12.08

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 --

EMD:

Bell Helicopter Textron, Fort Worth TX

N00019-96-C-0128, CPAF

Award: November 15, 1996

Definitized: November 15, 1996

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):

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
	\$0.0	\$0.0
Cumulative Variances To Date (11/30/97)	\$2.6	\$-3.4
Net Change	\$2.6	\$-3.4

Explanation of Change:

The net changes are attributed to the contractor's performance from November 1996 through November 1997. The contract is eight percent complete.

The positive cost variance \$2.6M is the result of cost efficiencies achieved on completed work. The unfavorable schedule variance \$-3.4M reflects an approximate three week delay based on missed milestones associated with the Air Vehicle and Air Vehicle/Weapons Integration Analysis and Integration (A&I). The Air Vehicle(A&I) late milestones resulted from late approvals of engineering drawings.

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> (FY97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-11)	<u>Total</u>
RDT&E	68.1	83.6	98.5	345.5	595.7
Procurement	-	-	-	2834.8	2834.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	68.1	83.6	98.5	3180.3	3430.5

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				66.3	68.1
1998				80.2	83.6
1999				93.0	98.5
2000				144.6	155.6
2001				97.5	106.7
2002				45.4	50.6
2003				17.6	20.0

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16b. 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 \$
2004				10.9	12.6
Subtotal	4			555.5	595.7

Excludes FY96 funds which were used for studies and analyses.

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		52.2	73.3	83.4
2003	17		148.7	209.5	243.4
2004	24		187.4	259.3	307.9
2005	36		256.9	320.3	388.7
2006	36		241.6	285.2	353.7
2007	36		232.1	261.9	332.0
2008	36		225.3	250.3	324.2
2009	36		220.0	242.1	320.6
2010	35		210.4	229.3	310.2
2011	19		117.5	123.4	170.7
Subtotal	280		1892.1	2254.6	2834.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	284		1892.1	2810.1	3430.5

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): \$ 51.3

Percent Total Program Expended: 1.5%

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USMC H-1 Upgrades, December 31, 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) estimated at 90 percent.

- 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, totaling 68 officers.

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

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

Operating and support cost estimations are based on organic three-levels of maintenance concept.

Aircraft will fly 23 flight hours per month.

The Operating and Support cost estimate is dated January 1998.

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

Cost Element	USMC H-1 Upgrades	
Mission Pay & Allowances	2081.0	N/A
Unit Level Consumption	2057.0	N/A
Intermediate Maintenance	721.0	N/A
Depot Maintenance	1118.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	370.0	N/A
Indirect Costs	136.0	N/A
	N/A	N/A
	N/A	N/A
Total	6483.0	N/A

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DoD-6 PATRIOT PAC-3

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: PATRIOT PAC-3

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): Guided Missile System, Air Defense (PATRIOT) PAC-3 Program

2. (U) DoD Component: BMDO

Joint Participants:

The Department of the Army is the Executing Agency

3. (U) Responsible Office and Telephone Number:

Project Manager	COL Stephen J. Kuffner
Patriot Project Office	Assigned: July 27, 1995
PO Box 1500	DSN 645-3240; COMM (205) 955-3240
Huntsville, AL 35807-3801	kuffner-md-pa@redstone.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)
(U) PE 0604216C (Shared)
(U) PE 0604225C (Shared)
(U) PE 0604865C
(U) PE 0604866C

AS AMENDED

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~~Classified by: PATRIOT Security Classification Guide dated Nov 94
Downgrade instructions: Regradeed and separated from CLASS sections
Declassify on: Originating Agency Determination Required (OADR)~~

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98-C-0848

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PATRIOT PAC-3, December 31, 1997

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

(U) PE 23801D036
PROCUREMENT:
(U) APPN 0300 ICN 0208060C (DCA/DNA) (Shared)
(U) APPN 0300 ICN 0208865C (DCA/DNA)
(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 fielded 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

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PATRIOT PAC-3, December 31, 1997

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

lethality to effectively defend against tactical missiles with conventional high explosive, biological, chemical, and nuclear 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 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 recommendation to proceed with development of the Extended Range Interceptor (ERINT), in lieu of the Multimode missile, as the PAC-3 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 (FUE). An Acquisition Program Baseline (APB) was approved on August 20, 1996 which implemented the OSD directed program restructure based on the FY97 President's Budget.

The first PAC-3 missile developmental flight test was successfully conducted on September 29, 1997, at White Sands Missile Range, New Mexico. Objectives of the mission included verifying that the PAC-3 missile could be integrated into and launched by the PATRIOT system; demonstrating missile flyout and maneuver; evaluating missile operation in a flight environment; and collecting data to support simulation verification and validation.

The second PAC-3 missile developmental flight test was successfully conducted on December 15, 1997. The objectives for this flight included demonstration of in-flight communication between the ground system and the missile and data collection to evaluate performance and response on a long range, low altitude flight trajectory. No intercept was attempted in either of the first two developmental flights.

Challenges associated with integrating the seeker into the missile and validating performance will delay the first intercept flight until the third quarter of FY98. A successful engagement against a threat representative target is one of several exit criteria which must be completed in order to

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

achieve authorization to start missile production. Therefore, the subsequent Low Rate Initial Production (LRIP) Defense Acquisition Board (DAB) decision will not occur by the milestone threshold date of March 1998. A Program Deviation Report was submitted on January 26, 1998 stating that the PAC-3 program will deviate from its current APB. A proposed APB will be submitted for approval concurrent with the LRIP DAB.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

Schedule - A Program Deviation Report was submitted on January 26, 1998 stating that the PAC-3 program will deviate from its approved Acquisition Program Baseline. The Project Manager's Current Estimate for the Low Rate Initial Production Decision (DAB) and Low Rate Initial Production Contract Award milestones exceeds the threshold dates of March 1998 and April 1998, respectively. Challenges associated with integrating the seeker into the missile and validating performance will delay the first intercept flight until the third quarter of FY98.

Cost - The Current Estimate for Procurement includes funding of \$50.4M for additional efforts beyond that approved in the Acquisition Program Baseline (APB). This funding was received for Integrated Diagnostics Support System, Joint Tactical Information Distribution System, and fifth Communications Relay Group. These modifications will be incorporated in the APB update planned for later this year. Therefore, the Current Estimate which exceeds the APB threshold, when calculated excluding these modifications, is below the APB Procurement cost threshold.

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9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
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	SEP 97	(Ch-1)
Complete	DEC 97	DEC 98	FEB 99	(Ch-2)
Low Rate Initial Production Decision (DAB)	JUN 97	SEP 97	AUG 98	(Ch-2)
Low Rate Initial Production Contract Award	JUL 97	OCT 97	AUG 98	(Ch-2)
Low Rate Production First Delivery	MAY 98	APR 99	AUG 99	(Ch-2)
IOT&E				
Start	JAN 98	FEB 99	MAR 99	(Ch-2)
Complete	JUN 98	MAR 99	MAY 99	(Ch-2)
Milestone III Production Decision	AUG 98	JUN 99	AUG 99	(Ch-2)
Full Rate Production Contract Award	AUG 98	OCT 99	OCT 99	
First Unit Equipped	SEP 98	JUL 99	SEP 99	(Ch-2)
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	
Confirmatory Test				
Configuration 1 First Unit Equipped	JUN 95	JUN 95	DEC 95	
Configuration 2 Follow On Test	DEC 95	DEC 95	MAY 96	
Configuration 2 First Unit Equipped	JUN 96	JUN 96	DEC 96	
Configuration 3 Follow On Test	JUN 98	FEB 99	MAR 99	(Ch-2)
Configuration 3 First Unit Equipped	SEP 98	JUL 99	SEP 99	(Ch-2)

(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 Units (FU), is equipped with thirty-two PAC-3 missiles per FU.

b. Current Change Explanations --

(U) (Ch-1) Current Estimate is actual accomplishment date. Service Final DT&E - Start, changed from JUN 97 to SEP 97.

(Ch-2) Delays in missile flight testing have impacted program schedule. Current Estimates for Low Rate Initial Production (LRIP) Decision (DAB) and Low Rate Initial Production Contract Award exceed approved milestone thresholds. Program restructure will be submitted in proposed Acquisition Program Baseline concurrent with LRIP DAB. Current Estimate changed for

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

Service Final DT&E - Complete, from DEC 98 to FEB 99; Low Rate Initial Production Decision (DAB), from DEC 97 to AUG 98; Low Rate Initial Production Contract Award, from JAN 98 to AUG 98; Low Rate Production First Delivery, from APR 99 to AUG 99; IOT&E - Start, from FEB 99 to MAR 99; IOT&E - Complete, from MAR 99 to MAY 99; Milestone III Production Decision, from JUN 99 to AUG 99; First Unit Equipped, from JUL 99 to SEP 99; Configuration 3 Follow On Test, from FEB 99 to MAR 99; and Configuration 3 First Unit Equipped, from JUL 99 to SEP 99.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
1) Range (plus and minus 60 degrees from primary target line) Theater Ballistic Missiles (TBMs) Keepout Range (km) Missile Threat Ranges (km) Air Breathing Threats (ABTs) First Intercept Capability (km) Altitude TBMs (Keepout) (km) ABTs (above ground level, given line of sight) Altitude (Min) (meters) Altitude (Max) (km) Single Shot Engagemen Kill Probability (SSEKP) TBMs ABTs Multiple Simultaneous Engagements TBMs (arriving within 10 seconds) ABTs (within 1 second while doing a TBM mission) System Effectiveness	(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
(S) TBMs (two shots)	(b)(1)			
(S) ABTs (one shot)				
(S) Missile Reliability (launch and flight to TBM intercept)				
(S) Operational Availability (Ao)				
Fire Unit Mean Time Between Failure (hrs)				
(S) Nuclear Hardening (EMP) missile in flight (kv/m)				

(S) (U) All performance parameters are for a PATRIOT Fire Unit unless otherwise stated.

(b)(1)

- /4 (U) System Effectiveness = $P(\text{DET}) \times [1 - (1 - P(\text{SSK}))^n]$, where n=number of shots, and SSK=Single Shot Kill
- /5 (U) Missile Reliability based on Reliability Growth Curve. Technical parameter which supports the key Joint Requirements Oversight Council validated characteristics.
- /6 (U) Technical parameter which supports the key JROC validated characteristics.

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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 --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	2015.6	2332.3	2458.9
Procurement	2783.2	3122.7	3287.9
Recurring Flyaway	(1498.8)		(3126.5)
Nonrecurring Flyaway	(1244.7)		(0.0)
Total Flyaway	(2743.5)		(3126.5)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(39.7)		(161.4)
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	5746.8
Escalation	1582.8	1798.4	1804.2
Development (RDT&E)	(420.2)	(528.5)	(562.9)
Procurement	(1162.6)	(1269.9)	(1241.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6381.6	7253.4	7551.0
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.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (AUG 96 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 88 BY\$)	5455.0	5746.8	
(2) Quantity	54	54	
(3) Unit Cost	101.019	106.422	+5.35
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 88 BY\$)	3122.7	3287.9	
(2) Quantity	54	54	
(3) Unit Cost	57.828	60.887	+5.29

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	-2.8	-135.5	-	-138.3
Quantity	-	-	-	-
Schedule	+296.6	-448.3	-	-151.7
Engineering	+52.6	+427.4	-	+480.0
Estimating	+136.7	+546.0	-	+682.7
Other	-	-	-	-
Support	-	+171.3	-	+171.3
Subtotal	+483.1	+560.9	-	+1044.0
Current Changes:				
Economic	-15.1	-65.0	-	-80.1
Quantity	-	-	-	-
Schedule	-	+54.0	-	+54.0
Engineering	+52.4	+50.2	-	+102.6
Estimating	+65.6	-10.9	-	+54.7
Other	-	-	-	-
Support	-	-5.8	-	-5.8
Subtotal	+102.9	+22.5	-	+125.4
Total Changes	+586.0	+583.4	-	+1169.4
Current Estimate	3021.8	4529.2	-	7551.0

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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	+40.9	+283.9	-	+324.8
Estimating	+101.3	+390.0	-	+491.3
Other	-	-	-	-
Support	-	+122.3	-	+122.3
Subtotal	+360.8	+420.9	-	+781.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+34.4	+33.1	-	+67.5
Estimating	+48.1	+51.3	-	+99.4
Other	-	-	-	-
Support	-	-0.6	-	-0.6
Subtotal	+82.5	+83.8	-	+166.3
Total Changes	+443.3	+504.7	-	+948.0
Current Estimate	2458.9	3287.9	-	5746.8

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-15.1
Increased requirements for Joint Tactical Information Distribution System. (Engineering)	+4.3	+5.9
Increased requirements for Post-Deployment Build software. (Engineering)	+30.1	+46.5
Adjustment for Current and Prior Inflation. (Estimating)	+10.0	+12.5
Revised estimate for Engineering Manufacturing Development (EMD) missiles. (Estimating)	+17.0	+23.1
Revised estimate for targets. (Estimating)	+13.8	+18.5
FY98 general Congressional reduction. (Estimating)	-7.3	-9.6
Supplemental Congressional funding for Anti-Cruise Missile for FY98. (Estimating)	+6.1	+8.1
Revised estimate for Reliability, Availability, and Maintainability modifications. (Estimating)	+8.5	+13.0
RDT&E Subtotal	+82.5	+102.9

(2) Procurement

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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	-104.6
Economic adjustment for negative program change. (Economic)	N/A	+39.6
Change in the buy profile for twelve missiles from FY98 and FY99 to FY04. (Schedule)	0.0	+54.0
Additional requirements for Joint Tactical Information Distribution System, Integrated Diagnostics and Support System, and Communications Relay Group. (Engineering)	+33.1	+50.2
Adjustment to cost estimate to reflect lower inflation projections. (Estimating)	+60.7	0.0
Adjustment for Current and Prior inflation. (Estimating)	+10.2	+13.5
Revised estimate for Reliability, Availability, and Maintainability modifications. (Estimating)	+23.8	+37.2
Refinement of estimate for FY98-FY03 Congressional and DoD reductions. (Estimating)	-64.0	-90.7
Restoration of funds to solve EMD shortfalls in FY98 and FY99. (Estimating)	+20.6	+29.1
Adjustment for Current and Prior inflation. (Support)	+0.8	+1.1
Revised estimate for initial spares requirement. (Support)	-1.4	-6.9
Procurement Subtotal	+83.8	+22.5

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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
118.18	-4.04	-0.01	-1.81	+10.79	+13.66	--	+3.06	+21.65	139.83

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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	
73.07	-3.71	--	-7.30	+8.84	+9.91	--	+3.06	+10.80	83.87

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	AUG 99
FUE/IOC	N/A	SEP 98	N/A	SEP 99
Total Cost	N/A	6381.6	N/A	7551
Total Quantity	N/A	54	N/A	54
Prog Acq Unit Cost	N/A	118.18	N/A	139.83

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

a. RDT&E --

(U) PAC-3 MISSILE EMD:
LORAL VOUGHT SYSTEMS, DALLAS, TX
DAAH01-95-C-0021, CPIF/AF
Award: October 26, 1994
Definitized: November 7, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$515.8	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$698.5	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$740.5	\$740.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-24.4	\$-11.5
Cumulative Variances To Date (12/31/97)	\$-45.6	\$-13.7
Net Change	\$-21.2	\$-2.2

Explanation of Change:

(U) The Current Contract Price increased due to a contract modification for design of special tooling and inspection equipment. The Estimated Prices at Completion increased based on the contractor's finalization of a revised estimate-to-complete and findings from a Government assessment of the contractors planning and revised estimate.

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

The unfavorable cost variance is due to challenges in fabrication, integration, and testing of components for the flight test phase of the program. Initial flight testing was delayed until rigorous ground testing validated flight readiness. Schedule delays have occurred primarily in the missile seeker hardware and software integration which is the pacing item to conduct the first intercept flight test.

The EMD program is continuing to pursue an event driven schedule to better assure success during flight testing. Contract performance has impacted program schedule which has delayed flight testing. Additional funding has been programmed in FY99 as a result of the cost variance.

(U) <u>PAC-3 MSL INTEGRATION:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
RAYTHEON CO., BEDFORD, MA					
DAAH01-95-C-0022, CPIF/AF	\$104.8	N/A	0		
Award: October 31, 1994					
Definitized: October 23, 1995					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$136.1	N/A	0	\$133.5	\$136.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.1	\$-3.2
Cumulative Variances To Date (12/31/97)	\$0.8	\$-3.5
Net Change	\$-0.3	\$-0.3

Explanation of Change:

(U) The Current Contract Price and Estimated Prices at Completion decreased as a result of negotiating the contract modification associated with the overall program restructure, initiated by program funding changes, at less than the estimated value.

The schedule variance change is primarily due to delays in delivery of ground system hardware which impacted integration testing and extended system preparations associated with the delays in missile flight testing.

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

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

(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		
Target	Ceiling	Qty
\$66.5	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$66.5	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$66.8	\$66.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$-2.8
Cumulative Variances To Date (12/31/97)	\$1.7	\$-2.3
Net Change	\$1.7	\$0.5

Explanation of Change:

(U) The variance improvements are due to program progress in hardware design, manufacturing, integration and testing. Software development is the primary schedule variance driver.

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

(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		
Target	Ceiling	Qty
\$144.2	N/A	25

Current Contract Price		
Target	Ceiling	Qty
\$238.7	N/A	25

Estimated Price At Completion	
Contractor	Program Manager
\$226.6	\$226.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-5.4	\$-3.9
Cumulative Variances To Date (01/25/98)	\$-6.9	\$-0.1
Net Change	\$-1.5	\$3.8

Explanation of Change:

(U) The net change in cost and schedule is considered negligible.

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

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

b. Procurement --
 (U) RADAR ENH PH3 MOD KITS:
 Raytheon, Co., Bedford, MA
 DAAH01-95-C-0446, FFP
 Award: September 29, 1995
 Definitized: December 6, 1996

Initial Contract Price		
Target	Ceiling	Qty
\$201.3	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$251.0	N/A	0	\$251.0	\$251.0

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

Explanation of Change:

(U) The Radar Enhancement Phase 3 Modification Kits contract was initially awarded in September 1995 for limited procurement to support program test and evaluation. A full production decision was authorized in December 1995 for up to sixty-nine additional modification kits and spares to retrofit the balance of PATRIOT Fire Unit radars.

The Current Contract Price and Estimated Price at Completion changed due to contract modification for procurement of the FY 98 production buy.

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> (FY00-12)	<u>Total</u>
RDT&E	2581.3	218.2	146.6	75.7	3021.8
Procurement	1307.4	347.3	363.4	2511.1	4529.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3888.7	565.5	510.0	2586.8	7551.0

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

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				30.5	30.2
1988				17.6	18.0
1989				60.9	65.2
1990				34.5	38.3
1991				127.1	146.5
1992				258.5	306.0
1993				189.5	229.5
1994				175.0	216.2
1995				274.3	345.4
1996				293.2	375.9
1997				293.9	382.8
1998				148.7	196.5
1999				102.3	137.3
Subtotal				2108.0	2580.7

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				33.6	43.1
1997				34.6	45.1
1998				16.4	21.7
1999				6.9	9.3
2000				6.5	8.9
2001				5.6	7.8
2002				3.6	5.1
2003				3.5	5.1
2004				6.2	9.2
2005				5.4	8.2

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

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 \$
2006				5.3	8.2
2007				5.2	8.2
2008				3.1	5.0
2009				1.8	3.0
2010				1.8	3.0
2011				1.2	2.0
2012				1.1	2.0
Subtotal				350.9	441.1

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			20.6	20.6	24.9
1993			60.8	60.8	75.2
1994			95.9	95.9	120.1
1995			196.5	196.5	251.1
1996			220.2	220.2	286.0
1997			146.4	166.0	219.0
1998	48		222.1	251.4	336.6
1999	60		229.0	252.1	343.2
2000	180		308.2	322.5	446.7
2001	212		295.3	306.0	431.5
2002	220		281.1	290.8	418.0
2003	240		250.6	259.8	381.3
2004	240		258.4	264.2	396.2
2005			53.4	55.3	84.7
2006			51.8	53.0	83.0
2007			15.1	15.1	24.2
2008			6.2	6.2	10.2
Subtotal	1200		2711.6	2836.4	3932.1

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

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PATRIOT PAC-3, December 31, 1997

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

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY88 Dollars Nonrec	Flyaway FY88 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1994			14.8	20.2	25.4
1995			20.2	25.2	32.3
1996			5.2	7.9	10.2
1997			17.7	21.6	28.5
1998			5.8	7.8	10.5
1999			11.2	14.8	20.2
2000			19.0	21.7	30.1
2001			20.7	22.7	32.1
2002			13.3	13.9	20.0
2003			10.5	10.5	15.4
2004			7.7	10.8	16.2
2005			32.0	33.7	51.8
2006			26.4	28.1	44.1
2007			14.3	15.9	25.6
Subtotal			414.9	451.5	597.1

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	1200		2711.6	4944.4	6512.8
Army			414.9	802.4	1038.2
Grand Total	1200		3126.5	5746.8	7551.0

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): \$ 2503.6

(U) Percent Total Program Expended: 33.2%

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PATRIOT PAC-3, December 31, 1997

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-21 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, 1997

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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
Patuxent River, MD 20670-1547	DSN 757-6332; COMM 301-757-6332

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

RD&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)

CLEARED
FOR OPEN PUBLICATION
AS AMENDED AS AMENDED
MAR 25 1998 9

No Security Objection
to Open Publication
(AS AMENDED)

98-C-0758
MAR 25 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

~~Derived from: OPNAVINST S5513.2B
Downgrade instructions: OPNAVINST S513.2B
Declassification: X3~~

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TOMAHAWK (R/UGM-109), December 31, 1997

5. (U) References:

SAR Baseline (Development Estimate):

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

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated July 3, 1997.

6. (U) Mission and Description:

(U) 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.

7. (U) Executive Summary:

(U) Development of the Tomahawk 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 full 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 FY 92 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

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TOMAHAWK (R/UGM-109), December 31, 1997

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

configuration. In addition, a nominal 200 new missiles per year were manufactured in the new Block III configuration through FY 95. FY 96 new production deliveries (164) have begun. FY 97 Block III new production quantity planned is 120. 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. Additional remanufactures were bought in FY 96 (130) and FY 97 (55).

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. Since Desert Storm, an additional 112 missiles were launched in support of Operations Southern Watch, Bushwacker, Deliberate Force and Desert Strike.

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, FY 94 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. On Dec 18, 1997, HMSC was merged into the Raytheon Systems Company (RSC) segment of the Raytheon Company. Raytheon Systems Company is now the Tomahawk All-Up-Round prime contractor.

We are proceeding forward with an unsolicited offer from Raytheon Systems Company for Tactical Tomahawk which incorporates producibility enhancements to the missile and reduces the unit price. This offer enables the implementation of tactical responsiveness enhancements required by the sponsor. During the December 18, 1997 Navy Program Decision Meeting, ASN(RD&A) approved the slow down of TBIP pending Congressional approval of Tactical Tomahawk reprogramming. We are actively seeking Congressional support for Tactical Tomahawk. If the budget is reprogrammed, TBIP will be terminated and a new EMD effort for Tactical Tomahawk will commence immediately yielding an IOC in FY 03. If the budget is not reprogrammed, an additional \$16M to \$24M and 4 months to 6 months will be required to bring TBIP back to a full-scale effort.

Nine Operational Test Launches (OTLs) were conducted during calendar year 1997. Five flights were successful, two flights failed during boost phase, and two flights were evaluated as "NO TESTS" due to failures in test unique equipment. The Operational Test Launch (OTL) program supported the continued testing of Tomahawk Land Attack Missile Performance Testing (OTL-203, OTL-202, OTL-198, OTL-207Q, OTL-201, OTL-199, OTL-199R, OTL-200V, OTL-208Q), supported Opeval for CSS MK2 Block 1A/B (OTL-203, OTL-202), FOT&E for TMPC 2.4 (OTL-198), Opeval for ATWCS TCGR (OTL-201), continued testing for Tomahawk In-Flight Position Reporting System (TIPRS) (OTL-199, OTL-199R), and continued testing in support of the Quality Assurance Service Test (QAST) program (OTL-207Q, OTL-208Q). As the Tomahawk program is over 90% expended, this report addresses only the

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TOMAHAWK (R/UGM-109), December 31, 1997

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

ACAT IC TBIP portion of Tomahawk.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 IV/II Development Contract Award	N/A	SEP 94	SEP 94	
Tomahawk Multi-Mission Missile (TMMM)				
Development Flight Test				
Start	SEP 97	AUG 98	NOV 98	(Ch-1)
Complete (DT/OT)	JUN 99	SEP 99	SEP 99	
Operational Flight Test				
Start	NOV 99	OCT 99	OCT 99	
Complete (OT)	MAR 00	JAN 00	JAN 00	
LRIP Authorization	APR 98	SEP 98	JAN 99	(Ch-1)
Tomahawk Hard Target Penetrator (THTP)				
Development Flight Test				
Start	APR 00	N/A	N/A	(Ch-2)
Complete (DT/OT)	OCT 00	N/A	N/A	(Ch-2)
Operational Flight Test				
Start	JAN 01	N/A	N/A	(Ch-2)
Complete (OT)	JUN 01	N/A	N/A	(Ch-2)
Milestone III	SEP 00	JUL 00	JUL 00	
FRP Contract Award	OCT 00	JUL 00	NOV 00	(Ch-1)
Initial Operational Capability (TMMM)	SEP 00	AUG 00	OCT 00	(Ch-3)
Full Operational Capability (TMMM)	SEP 01	SEP 01	SEP 01	

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TOMAHAWK (R/UGM-109), December 31, 1997

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Follow on Test & Evaluation	N/A	N/A	N/A
Start	N/A	SEP 00	FEB 00
Complete	N/A	DEC 00	JAN 01

b. Current Change Explanations --

- (U) (Ch-1) Current estimate dates were adjusted to reflect the July 3, 1997 approved APBA of the restructured program. Dates shown reflect program manager's projections prior to TBIP slowdown.
- (Ch-2) Tomahawk Hard Target Penetrator and associated Operational Flight Test terminated when TBIP restructure was approved in 1996.
- (Ch-3) Added with the approval of the new APB dated July 3, 1997.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Accuracy Land Attack CEP (ft)	(b)(1)			
Penetration Capability (FT) (THTP)				
ECCM Jam Resistance				
GPS/Navigation (dBW)				
Mission Reliability (%)				
Cruise Reliability (%)				
Range Operational (km)				

(Ch-1)

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

b. Current Change Explanations --

- (U) (Ch-1) Based on August 5, 1996 TBIP restructure, Penetration Capability was moved into Phase II of the TBIP program. This occurred due to CINC requirement changes.

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TOMAHAWK (R/UGM-109), December 31, 1997

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	288.8	221.9	221.0
Procurement	544.2	418.0	445.2
Flyaway	(440.0)		(351.9)
Other Procurement Costs	(51.3)		(49.8)
Peculiar Support	(32.2)		(31.8)
Initial Spares	(20.7)		(11.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 77 Base-Year \$	833.0	639.9	666.2
Escalation	1781.3	1261.0	1272.8
Development (RDT&E)	(456.9)	(320.3)	(313.6)
Procurement	(1324.4)	(940.7)	(959.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2614.3	1900.9	1939.0

(U) Note: procurement quantities consist of re-manufacture of Block II missiles. Ninety-nine (99) of the 1253 missiles are Low Rate Initial Production in FY 99. This does not represent more than 10% of the planned procurement buy.

b. (U) Quantity --

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

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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TOMAHAWK (R/UGM-109), December 31, 1997

12. (U) Unit Cost Summary:

	UCR Baseline (JUL 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 77 BY\$)	639.9	666.2	
(2) Quantity	1253	1253	
(3) Unit Cost	0.511	0.532	+4.11
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 77 BY\$)	418.0	445.2	
(2) Quantity	1253	1253	
(3) Unit Cost	0.334	0.355	+6.29

13. (U) Cost Variance Analysis:

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	-33.6	-146.4	-	-180.0
Quantity	-	+49.7	-	+49.7
Schedule	+83.5	+181.4	-	+264.9
Engineering	-259.3	-630.5	-	-889.8
Estimating	+5.9	+31.9	-	+37.8
Other	-	-	-	-
Support	-	+4.1	-	+4.1
Subtotal	-203.5	-509.8	-	-713.3
Current Changes:				
Economic	-2.1	-15.4	-	-17.5
Quantity	-	-	-	-
Schedule	-	+39.2	-	+39.2
Engineering	-	-	-	-
Estimating	-5.5	+15.3	-	+9.8
Other	-	-	-	-
Support	-	+6.5	-	+6.5
Subtotal	-7.6	+45.6	-	+38.0
Total Changes	-211.1	-464.2	-	-675.3
Current Estimate	534.6	1404.4	-	1939.0

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TOMAHAWK (R/UGM-109), December 31, 1997

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

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	288.8	544.2	-	833.0
Previous Changes:				
Quantity	-	+21.5	-	+21.5
Schedule	+30.5	+52.7	-	+83.2
Engineering	-92.5	-182.2	-	-274.7
Estimating	-4.9	-2.8	-	-7.7
Other	-	-	-	-
Support	-	-12.6	-	-12.6
Subtotal	-66.9	-123.4	-	-190.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+10.3	-	+10.3
Engineering	-	-	-	-
Estimating	-0.9	+15.7	-	+14.8
Other	-	-	-	-
Support	-	+1.7	-	+1.7
Subtotal	-0.9	+27.7	-	+26.8
Total Changes	-67.8	-95.7	-	-163.5
Current Estimate	221.0	448.5	-	669.5

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-2.1
General budget reductions. (Estimating)	-3.2	-7.6
Adjustment to cost estimate to reflect lower inflation projections. (Estimating)	+2.3	+2.1
RD&E Subtotal	-0.9	-7.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-15.4
Re-phasing of procurement profile to later years. (Schedule)	+10.3	+39.2
Adjustment to cost estimate to reflect lower inflation projections. (Estimating)	+15.7	+15.3
Revised estimate of program support requirements. (Support)	+1.7	+6.5
Procurement Subtotal	+27.7	+45.6

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TOMAHAWK (R/UGM-109), December 31, 1997

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	
2.21	-0.16	-0.08	+0.24	-0.71	+0.04	--	+0.01	-0.66	1.55

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	
1.58	-0.13	-0.06	+0.18	-0.50	+0.04	--	+0.01	-0.46	1.12

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	OCT 00
Total Cost	N/A	2614.3	N/A	1939
Total Quantity	N/A	1181	N/A	1253
Prog Acq Unit Cost	N/A	2.21	N/A	1.55

(U) Program restructure August 1996.

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

a. Procurement --

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TOMAHAWK (R/UGM-109), December 31, 1997

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

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

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$240.9	N/A	0	\$275.2	\$275.2

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (01/22/98)	\$0.0	\$0.0
Net Change	\$-1.5	\$-5.2
	\$-1.5	\$-5.2

Explanation of Change:

(U) Cumulative Variances to Date were reported in error in the December 1995 and 1996 SARs. In December 1995, the 3.7 (Cost) and 1.0 (Schedule) were transposed and a negative sign was omitted. In December 1996, the December 1995 data error was repeated and the December 1996 data should have been reported as 0.0 (cost) and 0.0 (schedule) because the contract was in the process of being restructured to reflect the termination of the seeker, hard target penetrator, aircraft data link and anti-ship capabilities. A summary of the correct Cumulative Variances to Date for the last three reports is:

	<u>Cost Variance</u>	<u>Schedule Variance</u>
December 1995	1.0	-3.7
December 1996	0.0	0.0
December 1997	-1.5	-5.2

This contract is currently under a partial stop work order issued on Feb 9, 1998. Under the provisions of the partial stop work order Raytheon Missile Systems Company (RMSC) will be limited to no more than \$12M for the next 90 days, for very specific tasks which have been allowed to continue. Those tasks which are continuing will have applicability to the Tactical Tomahawk program, should it be approved by Congress.

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TOMAHAWK (R/UGM-109), December 31, 1997

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 (FY00-06)</u>	<u>Total</u>
RDT&E	352.9	80.9	58.9	41.9	534.6
Procurement	11.4	24.8	161.9	1206.3	1404.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	364.3	105.7	220.8	1248.2	1939.0

b. Annual Summary -- TOMAHAWK TBIP

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>
1994				10.3	23.6
1995				30.3	71.0
1996				57.4	137.0
1997				50.0	121.3
1998				32.9	80.9
1999				23.6	58.9
2000				13.0	32.9
2001				2.2	5.6
2002				0.6	1.6
2003				0.7	1.8
Subtotal				221.0	534.6

Appropriation: 1507 Weapons Procurement, 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>
1999	99	10.5	28.8	42.9	128.0
2000	109	8.2	26.9	38.6	117.2
2001	100	7.4	23.8	35.6	110.0
2002	81	6.7	19.2	30.2	95.2
2003	196	6.3	36.7	48.2	155.3
2004	223	11.8	48.0	67.4	221.7
2005	223	11.4	46.7	65.4	220.1
2006	222	11.7	47.8	67.1	230.6
Subtotal	1253	74.0	277.9	395.4	1278.1

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TOMAHAWK (R/UGM-109), December 31, 1997

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

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				4.7	11.4
1998				10.0	24.8
1999				13.4	33.9
2000				11.2	28.8
2001				10.5	27.4
Subtotal				49.8	126.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1253	74.0	277.9	666.2	1939.0

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): \$ 384.7

(U) Percent Total Program Expended: 19.8%

18. (U) Operating and Support Costs:

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 Tomahawk 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.

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TOMAHAWK (R/UGM-109), December 31, 1997

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

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 (UH-60L)

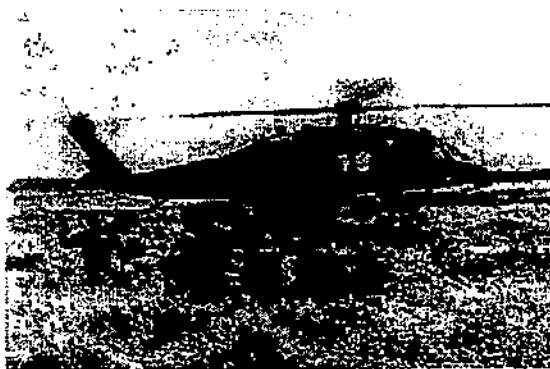
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: UH-60L BLACK HAWK

AS OF DATE: December 31, 1997

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1. Designation and Nomenclature (Popular Name):

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Utility Helicopters Project Mgr Off COL Thomas M Harrison
ATTN: AMSAM-DSA-UH Assigned: May 27, 1997
Building 5308 DSN 746-6821; COMM (205) 876-6821
Redstone Arsenal, AL 35898-5280

4. Program Elements/Procurement Line Items:

RDT&E:

PE 23744
PE 64206
PE 64217

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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DEPARTMENT OF DEFENSE

98-C-0924

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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:

A multiyear, multiservice Airframe production contract for the procurement of 108 H-60 aircraft (58 for the Army, 42 for the Navy, and 8 for the Air Force) was signed on July 18, 1997. This contract contains option clauses for the procurement of mission kits as well as additional aircraft. The FY 1998 procurement appropriation provided funding to procure 10 additional aircraft in FY 1998 over that requested in the President's Budget, for a total of 28 aircraft. The FY99 President's Budget provides Army funding to procure 22 UH-60s in FY 1999 and 10 aircraft per year in FY 2000 thru FY 2003, an addition of 10 aircraft per year over the previous budget.

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UH-60L BLACK HAWK, December 31, 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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
Multiyear Airframe Contract Award (FY 88-91)	JAN 88	JAN 88	JAN 88
Multiyear Engine Contract Award (FY 89-93)	NOV 88	NOV 88	NOV 88
Approval of Revised UH-60 Procurement Objective (2253)	FEB 89	FEB 89	FEB 89
DA IPR for Type Class of UH-60L	SEP 89	SEP 89	SEP 89
Incorp of GE T701C Engine	OCT 89	OCT 89	OCT 89
Multiyear Airframe Contract Award (FY90)	NOV 89	NOV 89	NOV 89
Multiyear Engine Contract Award (FY90)	NOV 89	NOV 89	NOV 89
Multiyear Airframe Contract Award (FY91)	NOV 90	NOV 90	DEC 90
Multiyear Engine Contract Award (FY91)	NOV 90	NOV 90	DEC 90
Deployment Plan			
TXNG -- Austin, TX	NOV 89	NOV 89	NOV 89
2/229 Aslt -- Ft Rucker	JAN 90	JAN 90	JAN 90
1/6th AHB -- Ft Hood	MAR 90	MAR 90	MAR 90
4/6th AHB -- Ft Hood	MAR 90	MAR 90	MAR 90
3rd ACR -- Ft Bliss	APR 90	APR 90	APR 90
3/6 AHB -- Ft Hood	MAY 90	MAY 90	MAY 90
1/3rd AHB -- Ft Hood	MAY 90	MAY 90	MAY 90
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, 1997

9a. Schedule (Cont'd):

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

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
Mission Reliability Probability of Success	.991	.991 / .987	.987	.987

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UH-60L BLACK HAWK, December 31, 1997

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>
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.

b. Current Change Explanations -- None

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UH-60L BLACK HAWK, December 31, 1997

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	1090.5
Airframe	(1449.6)		(715.1)
Engine	(304.4)		(144.0)
Avionics	(74.0)		(29.1)
Other recurring flyaway	(196.8)		(80.4)
Nonrecurring flyaway	(40.1)		(13.0)
Total Flyaway	(2064.9)		(981.6)
OWS-Data	(25.7)		(13.5)
OWS-Training	(53.7)		(9.6)
Other	(0.0)		(40.9)
Total Other Wpn Sys	(79.4)		(64.0)
Peculiar Support	(23.6)		(2.6)
Initial Spares	(48.7)		(42.3)
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	1093.3
Escalation	8498.6	8610.3	3436.0
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(8498.6)	(8607.5)	(3428.3)
Construction (MILCON)	(0.0)	(2.8)	(7.7)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	10715.2	10870.8	4529.3

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	607
Total	1277	1268	607

c. Foreign Military Sales --
UH-60L BLACK HAWK (Israel)

15 Ea \$140.4M

d. Nuclear Costs -- None.

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UH-60L BLACK HAWK, December 31, 1997

12. Unit Cost Summary:

	UCR Baseline (JUL 93 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 71 BY\$)	2260.5	1093.3	
(2) Quantity	1268	607	
(3) Unit Cost	1.783	1.801	+1.01
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 71 BY\$)	2257.8	1090.5	
(2) Quantity	1268	607	
(3) Unit Cost	1.781	1.797	+0.90

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	-	-457.3	+0.7	-456.6
Quantity	-	-3123.8	-	-3123.8
Schedule	-	+220.8	-	+220.8
Engineering	-	-62.1	+27.5	-34.6
Estimating	-	-3047.2	-17.7	-3064.9
Other	-	+1.4	-	+1.4
Support	-	-273.0	-	-273.0
Subtotal	-	-6741.2	+10.5	-6730.7
Current Changes:				
Economic	-	-17.7	-	-17.7
Quantity	-	+498.6	-	+498.6
Schedule	-	-0.7	-	-0.7
Engineering	-	-	-	-
Estimating	-	-2.8	-	-2.8
Other	-	-	-	-
Support	-	+67.4	-	+67.4
Subtotal	-	+544.8	-	+544.8
Total Changes	-	-6196.4	+10.5	-6185.9
Current Estimate	-	4518.8	10.5	4529.3

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UH-60L BLACK HAWK, December 31, 1997

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	-	-606.2	-	-606.2
Schedule	-	-0.2	-	-0.2
Engineering	-	-5.4	+7.8	+2.4
Estimating	-	-578.5	-5.0	-583.5
Other	-	-	-	-
Support	-	-57.0	-	-57.0
Subtotal	-	-1247.3	+2.8	-1244.5
Current Changes:				
Quantity	-	+107.3	-	+107.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-0.3	-	-0.3
Other	-	-	-	-
Support	-	+14.2	-	+14.2
Subtotal	-	+121.2	-	+121.2
Total Changes	-	-1126.1	+2.8	-1123.3
Current Estimate	-	1090.5	2.8	1093.3

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-17.7
Quantity increase of 60 aircraft from 547 to 607. (Quantity)	+107.3	+498.6
Revised procurement profile. (Schedule)	0.0	-0.7
Decrease in estimated procurement cost. (Estimating)	-3.0	-15.0
Adjustment for current and prior year inflation. (Estimating)	+2.7	+12.2
Increased data costs due to quantity increase. (Support)	+0.1	+0.6
Increased support equipment (PGSE) cost due to quantity increase. (Support)	+0.4	+1.8
Increased PM Administration and Fielding cost due to quantity increase. (Support)	+13.3	+62.6
Increased Initial Spares cost due to quantity increase. (Support)	+0.3	+1.0
Adjustment for current and prior year inflation. (Support)	+0.1	+1.4
Procurement Subtotal	+121.2	+544.8

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UH-60L BLACK HAWK, December 31, 1997

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	-0.78	+4.94	+0.36	-0.06	-5.05	--	-0.34	-0.93	7.46

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	-0.78	+4.93	+0.36	-0.10	-5.02	--	-0.34	-0.95	7.44

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	OCT89	OCT 89
Total Cost	N/A	N/A	10715.2	4529.3
Total Quantity	N/A	N/A	1277	607
Prog Acq Unit Cost	N/A	N/A	8.39	7.46

Milestones I, II, and III were previously reported on the UH-60A BLACK HAWK program.

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
\$1762.9	N/A	335

Estimated Price At Completion

Contractor	Program Manager
N/A	\$1762.9

Explanation of Change:

None.

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UH-60L BLACK HAWK, December 31, 1997

15. Contract Information (Cont'd):

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

<u>Engine SY with options:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Electric, Lynn, MA					
DAAJ09-94-C-0044, FFP			\$115.4	N/A	188
Award: April 15, 1994					
Definitized: April 15, 1994					

<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>
\$316.1	N/A	625	N/A	\$316.1

Explanation of Change:

None.

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

<u>Airframe MYC V:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
United Technologies, Stratford, CT					
DAAJ09-97-C-0005, FFP			\$745.2	\$	108
Award: July 18, 1997					
Definitized: July 18, 1997					

<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>
\$887.1	\$	123	N/A	\$1251.2

Explanation of Change:

None.

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

<u>Engine IDIQ:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Electric, Lynn, MA					
DAAJ09-97-D-0196, FFP			\$21.4	\$	36
Award: September 4, 1997					
Definitized: September 4, 1997					

<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>
\$48.1	N/A	82	N/A	\$150.8

Explanation of Change:

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UH-60L BLACK HAWK, December 31, 1997

15. Contract Information (Cont'd):

None.

Cost and Schedule variance reporting 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)

<u>Appropriation</u>	<u>Prior Years (FY87-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	3612.9	292.8	220.8	392.3	4518.8
MILCON	10.5	-	-	-	10.5
O&M	-	-	-	-	-
Total	3623.4	292.8	220.8	392.3	4529.3

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		12.1	12.1	51.6
Subtotal	45		72.9	72.9	295.4

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	1.6	97.2	124.6	502.5
1993	52	2.3	71.7	86.6	356.9
1994	63	0.1	92.5	101.3	425.0
1995	60	1.3	88.6	74.0	315.8
1996	60	1.2	91.3	92.5	401.8
1997	34		61.9	66.1	291.8
1998	28		68.3	65.5	292.8

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UH-60L BLACK HAWK, December 31, 1997

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

Appropriation: 2031 Aircraft Procurement, Army

Fiscal Year	Qty	Flyaway FY71 Dollars Nonrec	Flyaway FY71 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	22		49.6	48.9	220.8
2000	10		18.8	22.8	104.4
2001	10		16.7	20.6	96.3
2002	10		16.2	20.2	96.0
2003	10		15.7	19.7	95.6
Subtotal	562	13.0	895.7	1017.6	4223.4

Recurring flyaway cost may exceed total base year dollars in years when the advance procurement credits inherent in multiyear contracting are significantly greater than the advance procurement funding for future years.

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		72.9	72.9	295.4
Army	562	13.0	895.7	1020.4	4233.9
Grand Total	607	13.0	968.6	1093.3	4529.3

17. Delivery/Expenditure Information:

a. Deliveries To Date

Plan

Actual

RDT&E

0

0

Procurement

501

501

Percent Total Program Quantities Delivered: 82.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 3302.4

Percent Total Program Expended: 72.9%

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UH-60L BLACK HAWK, December 31, 1997

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 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-5 CVN 68

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

AS OF DATE: December 31, 1997

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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 0604 67N Project S2301
PROCUREMENT:
(U) APPN 1611 ICN 32200100 (Navy)

AS AMENDED
FOR OPEN PUBLICATION
MAR 24 1998 9

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

No Security Objection
to Open Publication
(AS AMENDED)
98-0-0150
MAR 24 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

~~Derived from
Downgrade instruction 1, Division 3 dated February 1996
Declassify on: X2~~

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CVN-68 Class, December 31, 1997

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, 1997

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. The FY 98 appropriation bill included \$50M for CVN 77 Advance Procurement and Advance Component construction. This action was taken to reflect support of the "Smart Buy" proposal from the shipbuilder. The Navy has accelerated the buy from FY 02 to FY 01.

CVN 74/75 program funding is 90% expended. This is the final CVN 74/75 SAR.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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, 1997

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

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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, 1997

9. (U) Schedule:

CVN-74/75

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (AFB)</u>	<u>Current Estimate</u>
CVN-74			
Definitization of Contract	AUG 88	JUN 88	JUN 88
Start Production	JAN 89	NOV 88	OCT 88
Lay Keel	OCT 91	DEC 90	MAR 91
Launch	JAN 94	DEC 93	NOV 93
Target Delivery	N/A	DEC 95	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

CVN-76

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (AFB)</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 (AFB)</u>	<u>Current Estimate</u>
CVN 77			
Definitization of Contracts	DEC 00	JUN 01	JAN 01 (Ch-1)
Start Production	NOV 01	NOV 01	MAR 01 (Ch-1)
Lay Keel	DEC 03	DEC 03	FEB 02 (Ch-1)
Launch	DEC 06	DEC 06	MAR 06
Delivery	DEC 08	DEC 08	JAN 08

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CVN-68 Class, December 31, 1997

9b. (U) Schedule (Cont'd):
CVN-77

b. Current Change Explanations --

(U) Ch-1 Acceleration of CVN 77 procurement from FY 02 to FY 01 moved Contract Definitization from DEC 01 to JAN 01, Start of Production from MAR 02 to MAR 01 and Lay Keel from MAR 03 to FEB 02.

10. (U) Performance Characteristics:

CVN-74/75

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
Propulsion	NUCLEAR	NUCLEAR / NUCLEAR	NUCLEAR	NUCLEAR
Shaft Horsepower	(b)(1)			
Trial Speed (kts)				
Endurance (at 20 kts)				
Stores (days)	75	75 / 75	75	75
Close In Weapon Systems	4	4 / 4	4	4
NATO Sea Sparrow Missile Systems	3	3 / 3	3	3
Aviation Strike Ordnance (long tons)	2400	2400 / 2400	2451	2451
Ave. fuel (gals)	(b)(1)			
Operational Number of Aircraft (deck multiple in A4 Equivalents)	151	151 / 151	151 3/	151
Core Life (yrs)	13	N/A / N/A	-- 2/	20
Number of Reactors	2	N/A / N/A	2	2
Crew (Including Air Wing)	6280	N/A / N/A	6040	6048

(U) 1/ Actual based on CVN 68 Class standardization trials.

2/ Requires extensive operational data and is dependent on actual core life. The USS NIMITZ, the first CVN 68 class ship, was delivered in 1975 and will not be refueled until 1998.

3/ The operational number of aircraft (deck multiple) in A7 equivalents is

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CVN-68 Class, December 31, 1997

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

156.

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	97337
Propulsion	NUCLEAR	NUCLEAR / NUCLEAR	NUCLEAR	NUCLEAR
Shaft Horsepower	(b)(1)			
Trial Speed (kts)				
Endurance (at 20 kts)				
Stores (days)	75	75 / 75	75	75
Close In Weapon Systems	4	4 / 4	4	4
NATO Sea Sparrow Missile Systems	3	3 / 3	3	3
Aviation Strike Ordnance (long tons)	2400	2400 / 2400	2451	2451
Ave. fuel (gals)	(b)(1)			
Operational Number of Aircraft (deck multiple in A4 Equivalents)	151	151 / 151	151 3/	151
Core Life (yrs)	13	N/A / N/A	-- 2/	20
Number of Reactors	2	N/A / N/A	2	2
Crew (Including Air Wing)	6280	N/A / N/A	6040	6048

(U) 1/ Actual based on CVN 68 Class standardization trials.

2/ Requires extensive operational data and is dependent on actual core life. The USS NIMITZ, the first CVN 68 class ship, was delivered in 1975 and will not be refueled until 1998.

3/ The operational number of aircraft (deck multiple) in A7 equivalents is 156. The CVN 76 is a modified repeat of the CVN 74/75. RDT&E funding became available in FY 1991 to begin contract design for CVN 76 which continued through to FY 95.

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CVN-68 Class, December 31, 1997

10b. (U) Performance Characteristics (Cont'd):
CVN-76

b. Current Change Explanations -- None

CVN-77

a. Performance --

	Production Estimate (SAR)	Approved Program (AFB) Obj/Threshold		Demon- strated Perf	Current Estimate
	1092	1092	/ 1092	1092	1092
Length Overall			/		
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
Propulsion	Nuclear	Nuclear / Nuclear		Nuclear	Nuclear
Shaft Horsepower	(b)(1)				
Trial Speed (kts)					
Endurance (at 20 kts)	(b)(1)				
Store (days)					
Close in Weapons Systems	4	4	/ 4	4	4
NATO Sea Sparrow Missile Systems	3	3	/ 3	3	3
Aviation Strike Ordnance (Long Tons)	2451	2400	/ 2400	2451	2451
Average Fuel (gals)	(b)(1)				
Operational Number of Aircraft (Deck Multiple in A4 Equivalents)					
Core Life (yrs)	15	N/A	/ N/A	-- 2/	20
Number of Reactors	2	N/A	/ N/A	2	2
Crew (Including Air Wing)	6048	N/A	/ N/A	6040	6048

(U) 1/ Actual based on CVN 68 Class standardization trials.

2/ Requires extensive operational data and is dependent on actual core life. The USS NIMITZ, the first CVN 68 class ship, was delivered in 1975 and will not be refueled until 1998.

3/ The operational number of aircraft (deck multiple) in A7 equivalents is 156.

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CVN-68 Class, December 31, 1997

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

b. Current Change Explanations -- None

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0.0	0.0	0.0
Procurement	5911.0	6528.4	6525.3
Basic	(3744.9)		(4728.3)
Government Furnished Eq	(1998.1)		(1629.2)
Other Costs	(28.1)		(49.7)
OF/PD	(139.9)		(118.1)
Total Sailaway	(5911.0)		(6525.3)
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 88 Base-Year \$	5911.0	6528.4	6525.3
Escalation	1055.0	576.9	496.4
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(1055.0)	(576.9)	(496.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6966.0	7105.3	7021.7
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, 1997

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

CVN-76

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	48.1	48.1	38.2
Procurement	3862.7	4488.6	4229.9
Basic	(2458.7)		(2839.3)
Government Furnished Eq	(1311.7)		(1279.0)
Other	(18.6)		(25.7)
OE/PD	(73.7)		(85.9)
Total Sailaway	(3862.7)		(4229.9)
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 \$	3910.8	4536.7	4268.1
Escalation	386.4	433.2	144.2
Development (RDT&E)	(-1.1)	(-1.1)	(-0.8)
Procurement	(387.5)	(434.3)	(145.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4297.2	4969.9	4412.3
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1	1	1
Total	1	1	1

c. Foreign Military Sales -- None.

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

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CVN-68 Class, December 31, 1997

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

CVN-77

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	0.0	145.7	167.3
Procurement	4557.1	4719.2	3968.8
Basic	(2901.1)		(2916.4)
Government Furnished Eq	(1547.8)		(939.4)
Other Costs	(21.9)		(25.8)
OF/PD	(86.3)		(87.2)
Total Sailaway	(4557.1)		(3968.8)
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	4136.1
Escalation	983.7	1037.0	612.8
Development (RDT&E)	(0.0)	(17.3)	(16.6)
Procurement	(983.7)	(1019.7)	(596.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5540.8	5901.9	4748.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1	1	1
Total	1	1	1

c. Foreign Military Sales -- None.

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

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CVN-68 Class, December 31, 1997

12. (U) Unit Cost Summary:

CVN-74/75

	UCR Baseline (OCT 92 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 88 BY\$)	6528.4	6525.3	
(2) Quantity	2	2	
(3) Unit Cost	3264.200	3262.650	-0.05
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 88 BY\$)	6528.4	6525.3	
(2) Quantity	2	2	
(3) Unit Cost	3264.200	3262.650	-0.05

CVN-76

	UCR Baseline (OCT 92 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	4536.7	4268.1	
(2) Quantity	1	1	
(3) Unit Cost	4536.700	4268.100	-5.92
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	4488.6	4229.9	
(2) Quantity	1	1	
(3) Unit Cost	4488.600	4229.900	-5.76

CVN-77

	UCR Baseline (JAN 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	4864.9	4136.1	
(2) Quantity	1	1	
(3) Unit Cost	4864.900	4136.100	-14.98
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	4719.2	3968.8	
(2) Quantity	1	1	
(3) Unit Cost	4719.200	3968.800	-15.90

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CVN-68 Class, December 31, 1997

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	6966.0	-	6966.0
Previous Changes:				
Economic	-	-99.1	-	-99.1
Quantity	-	-	-	-
Schedule	-	-644.4	-	-644.4
Engineering	-	-	-	-
Estimating	-	+799.1	-	+799.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+55.6	-	+55.6
Current Changes:				
Economic	-	-4.7	-	-4.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+4.8	-	+4.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+0.1	-	+0.1
Total Changes	-	+55.7	-	+55.7
Current Estimate	-	7021.7	-	7021.7

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	-	5911.0	-	5911.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-124.1	-	-124.1
Engineering	-	-	-	-
Estimating	-	+734.6	-	+734.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+610.5	-	+610.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+3.8	-	+3.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+3.8	-	+3.8
Total Changes	-	+614.3	-	+614.3
Current Estimate	-	6525.3	-	6525.3

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CVN-68 Class, December 31, 1997

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u> (Schedule)	0.0	0.0
	RDT&E Subtotal	<u>0.0</u>	<u>0.0</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-4.7
	Adjustment for Current and Prior Inflation. (Estimating)	+2.1	+2.6
	Outfitting and Post Delivery Costs (Estimating)	+1.7	+2.2
	Procurement Subtotal	<u>+3.8</u>	<u>+0.1</u>

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	-162.0	-	-161.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.4	+283.7	-	+273.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.6	+121.7	-	+112.1
Current Changes:				
Economic	-	-94.0	-	-94.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+97.0	-	+97.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+3.0	-	+3.0
Total Changes	-9.6	+124.7	-	+115.1
Current Estimate	37.4	4374.9	-	4412.3

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CVN-68 Class, December 31, 1997

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	-9.9	+273.7	-	+263.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.9	+273.7	-	+263.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+93.5	-	+93.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+93.5	-	+93.5
Total Changes	-9.9	+367.2	-	+357.3
Current Estimate	38.2	4229.9	-	4268.1

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-94.0
Adjustment for Current and Prior Inflation. (Estimating)	+85.2	+88.3
Revised Shipbuilder cost estimate. (Estimating)	+4.5	+4.7
Revised Outfitting and Post Delivery Cost Estimate (Estimating)	+3.8	+4.0
Procurement Subtotal	+93.5	+3.0

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CVN-68 Class, December 31, 1997

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	-1.3	-145.5	-	-146.8
Quantity	-	-	-	-
Schedule	-	+235.3	-	+235.3
Engineering	+88.8	-311.0	-	-222.2
Estimating	+30.2	-25.3	-	+4.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+117.7	-246.5	-	-128.8
Current Changes:				
Economic	-2.6	-165.2	-	-167.8
Quantity	-	-	-	-
Schedule	-	-376.7	-	-376.7
Engineering	+68.5	-168.0	-	-99.5
Estimating	+0.3	-19.4	-	-19.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+66.2	-729.3	-	-663.1
Total Changes	+183.9	-975.8	-	-791.9
Current Estimate	183.9	4565.0	-	4748.9

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CVN-68 Class, December 31, 1997

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	+79.2	-249.5	-	-170.3
Estimating	+25.9	-66.6	-	-40.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+105.1	-247.8	-	-142.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-207.2	-	-207.2
Engineering	+62.0	-122.8	-	-60.8
Estimating	+0.2	-10.5	-	-10.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+62.2	-340.5	-	-278.3
Total Changes	+167.3	-588.3	-	-421.0
Current Estimate	167.3	3968.8	-	4136.1

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.6
Increased R&D estimate to include process and design changes to reduce manning and high maintenance drivers on CVN 68 Class. (Engineering)	+62.0	+68.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.3
RDT&E Subtotal	+62.2	+66.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-241.8
Economic adjustment for negative program change. (Economic)	N/A	+76.6
Vendor and shipbuilder efficiencies achieved with acceleration of CVN 77 procurement. (Schedule)	-207.2	-318.6
Economic Adjustment associated with Schedule Acceleration. (Schedule)	0.0	-58.1

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CVN-68 Class, December 31, 1997

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decrease to Engineering due to rescoping of Government Furnished Equipment(GFE) baseline and use of refurbished(GFE). (Engineering)	-122.8	-152.5
Economic Adjustment associated with Engineering Variance. (Engineering)	0.0	-15.5
Revised Outfitting and Post Delivery Cost Estimate (Estimating)	+2.3	+3.1
Revised Cost Estimate for Advance Procurement and Advance Component Construction (Estimating)	-12.8	-22.5
Procurement Subtotal	-340.5	-729.3

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	-51.90	--	-322.20	--	+401.95	--	--	+27.85	3510.85

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	-51.90	--	-322.20	--	+401.95	--	--	+27.85	3510.85

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CVN-68 Class, December 31, 1997

14c. (U) Unit Cost and Other History (Cont'd):
CVN-74/75

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	7021.7
Total Quantity	N/A	N/A	2	2
Prog Acq Unit Cost	N/A	N/A	3483	3510.85

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	-255.20	--	--	--	+370.30	--	--	+115.10	4412.30

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	-256.00	--	--	--	+380.70	--	--	+124.70	4374.90

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	4412.3
Total Quantity	N/A	N/A	1	1
Prog Acq Unit Cost	N/A	N/A	4297.2	4412.3

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CVN-68 Class, December 31, 1997

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

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	-314.60	--	-141.40	-321.70	-14.20	--	--	-791.90	4748.90

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	-310.70	--	-141.40	-479.00	-44.70	--	--	-975.80	4565.00

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	4748.9
Total Quantity	N/A	N/A	1	1
Prog Acq Unit Cost	N/A	N/A	5540.8	4748.9

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

a. Procurement --

(U) CVN-74/75 Construction:

Tenneco, Newport News, VA

N00024-88-C-2055, FPIF

Award: June 30, 1988

Definitized: June 30, 1988

Initial Contract Price		
Target	Ceiling	Qty
\$3674.0	\$4318.6	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$3678.0	\$4553.4	2	\$3927.3	\$3946.2

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CVN-68 Class, December 31, 1997

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-77.6	\$-25.1
Cumulative Variances To Date (12/31/97)	\$-95.6	\$-41.4
Net Change	\$-18.0	\$-16.3

Explanation of Change:

(U) The net change in both cost and schedule variances is less than 1% of the progress earned to date and is considered insignificant.

(U) <u>Nuclear Components:</u> 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			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$354.6	N/A	0	\$354.6	\$354.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
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 for this FFP contract.

(U) <u>CVN-76 Construction:</u> 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			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$2551.9	\$2923.7	1	\$2551.7	\$2572.3

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CVN-68 Class, December 31, 1997

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.2	\$-7.3
Cumulative Variances To Date (11/23/97)	\$-18.5	\$-5.8
Net Change	\$-20.7	\$1.5

Explanation of Change:

(U) The net change in both cost and schedule variances is less than 1% of the progress earned to date and is considered insignificant.

(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		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$865.2	N/A	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$867.2	N/A	0	\$867.2	\$867.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$	\$
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 this FFP contract.

(U) Nuclear Components: Westinghouse Electric Co., Monroeville PA N00024-88-C-4007, FFP/CPFF Award: February 1, 1988 Definitized: February 1, 1988	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$814.0	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>
\$845.1	N/A	0	\$845.1	\$845.1

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CVN-68 Class, December 31, 1997

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:

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

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>
RDT&E	37.4	33.8	38.5	111.6	221.3
Procurement	11247.2	57.6	160.8	4496.0	15961.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	11284.6	91.4	199.3	4607.6	16182.9

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>
RDT&E	-	-	-	-	-
Procurement	6976.5	8.9	36.3	-	7021.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6976.5	8.9	36.3	-	7021.7

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CVN-68 Class, December 31, 1997

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

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>
RDT&E	37.4	-	-	-	37.4
Procurement	4270.7	-	-	104.2	4374.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4308.1	-	-	104.2	4412.3

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	-	33.8	38.5	111.6	183.9
Procurement	-	48.7	124.5	4391.8	4565.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	-	82.5	163.0	4503.4	4748.9

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		6525.3	6348.3	6799.7
1992				65.9	78.9
1993				10.8	13.1
1994				15.7	19.6
1995				16.7	21.1
1996				29.5	37.8
1997				4.8	6.3
1998				6.7	8.9
1999				26.9	36.3
Subtotal	2		6525.3	6525.3	7021.7

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CVN-68 Class, December 31, 1997

16b. (U) Program Funding Summary (Cont'd):
CVN-74/75

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2		6525.3	6525.3	7021.7

b. Annual Summary -- 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 \$
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
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				831.0	829.4
1994					
1995	1		4229.9	3311.2	3441.3
1999					
2000					
2001				17.3	19.9
2002				16.2	19.1
2003				52.4	63.0
2004				1.8	2.2
Subtotal	1		4229.9	4229.9	4374.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		4229.9	4268.1	4412.3

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CVN-68 Class, December 31, 1997

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

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				31.8	33.8
1999				35.7	38.5
2000				34.2	37.5
2001				33.0	36.9
2002				23.7	26.9
2003				8.9	10.3
Subtotal				167.3	183.9

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 \$
1998				44.7	48.7
1999				112.3	124.5
2000				675.9	763.4
2001	1		3968.8	3048.6	3511.1
2002					
2006				11.8	15.1
2007				11.1	14.5
2008				17.6	23.6
2009				46.8	64.1
Subtotal	1		3968.8	3968.8	4565.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		3968.8	4136.1	4748.9

17. (U) Delivery/Expenditure Information:

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CVN-68 Class, December 31, 1997

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

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): \$ 6367.5

(U) Percent Total Program Expended: 90.7%

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): \$ 1619.1

(U) Percent Total Program Expended: 36.7%

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:

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CVN-68 Class, December 31, 1997

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

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. 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

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

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CVN-68 Class, December 31, 1997

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

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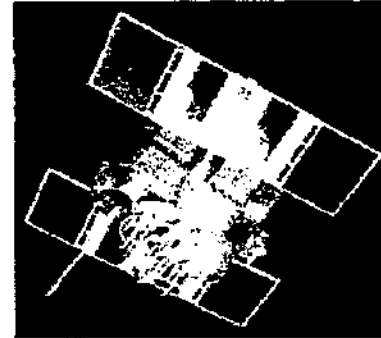
SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)

PROGRAM: NAVSTAR GPS

AS OF DATE: December 31, 1997

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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
El Segundo, CA 90245-5500	ARMORJB@GPS1.LAAFB.AF.MIL

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

RDT&E:

(U)	PE 0306626M
(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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AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

OAE/EAC

98 - - 0283

CONGRESSIONAL

~~Classified by GPS Security Classification Guide August 1993~~
~~Downgrade Instructions: No Subject to Automatic Downgrade~~
~~Security on: Originating Agency's Determination Required~~

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NAVSTAR GPS, December 31, 1997

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

(U) PE 0604777N

(U) PE 0604778A

(U) PE 0604778F

PROCUREMENT:

(U) APPN 3010 ICN 000000 (Air Force)

(U) APPN 3080 ICN 836730 (Air Force)

(U) APPN 3080 ICN 836790 (Air Force)

(U) APPN 3080 ICN 86190A (Air Force)

(U) APPN 1810 ICN BLI265700 (Navy)

(U) APPN 2035 ICN K47800 (Army)

(U) APPN 3020 ICN MGPS00 (Air Force)

(U) APPN 1611 ICN N/A (Navy)

(U) APPN 1506 ICN OSIP 17-88 (Navy)

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) AFAE 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, communications, and intelligence, precision munition guidance, and ground/sea

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NAVSTAR GPS, December 31, 1997

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

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. Twelve developmental Block I satellites were built, one satellite was lost as a result of an Atlas-Centaur launch vehicle failure, and one was modified to become the qualification model for the first production satellite build.

In 1983, the NAVSTAR GPS JPO awarded a production contract for 28 Block II satellites. The JPO successfully launched the first production satellite in February 1989. Initial operational capability (IOC) of the Global Positioning System was declared on 8 December 1993 in a joint announcement by the Department of Defense (DoD) and Department of Transportation (DOT). The Air Force Space Command (AFSPC) declared full operational capability (FOC) in July 1995 after the deployment of 24 Block II/IIA satellites and completion of operational testing. The last Block IIA satellite was launched on 5 November 1997.

The JPO's on-going analysis of constellation health indicates that the predicted life of the Block IIA satellites is currently underestimated. Block IIA satellite reliability will be updated to reflect actual on-orbit performance.

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. On 17 January 1997, a Delta II launch vehicle carrying the first Block IIR satellite exploded after launch from Cape Canaveral Air Station, FL. The second Block IIR satellite was successfully launched on 22 July 1997, and on-orbit testing continued through January 1998. On-orbit testing identified a problem with the satellites' crosslink data transfer receiver. Radio signal interference affects the satellite's ability to exchange data with other GPS satellites. This problem has no adverse effect on the navigation signal. While the navigation signal is good and the satellite can work with daily uploads, the interference problem corrupts all crosslink data. If not corrected, the space segment will not meet extended navigation requirements, and until corrected, the IIR satellites will not meet some other users' requirements. The JPO is working to implement

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

corrections on the Block IIR satellites to support launch opportunities early next year.

In April 1996, the JPO awarded a sustainment contract for six production satellites (Block IIF), with priced options for blocks of 15 and 12 additional satellites. Preliminary satellite design was completed on 21 February 1997.

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 and achieved depot IOC in March 1993. 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.

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 command and 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.

In 1995, 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 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 March 1996, the President approved a comprehensive national policy of the future management and use of the Global Positioning System and related U.S. Government augmentations. Recognizing the nation's reliance on GPS as an issue of national security and economic well being, the Presidential Decision Directive established policy guidelines which addressed a broad range of military, civil, commercial, and scientific interests, both national and international. In response to this policy guidance, the Air Force Chief of Staff directed AFSPC to develop a GPS Capstone Requirements Document (CRD) and the Air Force Materiel Command to develop an overarching GPS Acquisition Master Plan (AMP). The AMP provides a road map to modernize GPS by providing an updated system architecture and signal structure that meets the needs of the civil and military user communities. The final draft AMP was released on 23 August 1997. The evaluation of Modernization and Navwar options is currently under way by AFSPC and Air Combat Command led Analysis of Alternatives, which are synchronized to support a comprehensive milestone decision in August 1998 for space and control, user and prevention program segment.

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NAVSTAR GPS, December 31, 1997

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

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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NAVSTAR GPS, December 31, 1997

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:

NAVSTAR GPS Satellite

a. Milestones --

	Development Estimate (SAR)	Approved Program (APR)	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

NAVSTAR GPS User Equip

a. Milestones --

	Development Estimate (SAR)	Approved Program (APR)	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

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

b. Current Change Explanations --
(U) None

10. (U) Performance Characteristics:

NAVSTAR GPS Satellite

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
3-D System Positioning Accuracy (meters) (Spherical Error Probable (SEP))	16	16 / 16	10	16
3-D System Positioning Accuracy for 180 days after last Nav Update				
Block II SEP (km)	N/A	10 / 10	TBD	10
Block IIR SEP (m)	N/A	16 / 16	TBD	16
Block II Satellite Mean Mission Duration (MMD) (yrs)	6	6 / 6	5.35 / A	8.45
System Availability % (minimum of 21 satellites are operational at any time)	98	98 / 98	99.49 / B	98
Satellite: (Block II) 13-49 - Survivability	N/A	N/A / N/A	TBD	
Gamma Dose Rate (rad (Silicon))	N/A			
X-ray Fluence (cal/cm2)	N/A			
Neutron (n/cm2)	N/A			
Satellite: (Block IIR) 41-50 - Survivability	N/A			
Gamma Dose Rate (rad (Silicon))	N/A			
X-ray Fluence (cal/cm2)	N/A			
Neutron (n/cm2)	N/A			
Total Dose (mega rad (Silicon))	N/A			

(b)(1)

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NAVSTAR GPS, December 31, 1997

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

	Development Estimate (SAK)	Approved Program (APB) Obj. Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Spaced Based Laser Threat (w/cm2)	N/A	4480 / 4480	4480	4480
Satellite Maximum Weight (lbs) (Delta II)				
Expected Ground Power (End of Life) (dbw)				
L1 (C/A)	-160	-160 / -160	-160	-160
L1 (Precision Code)	-163	-163 / -163	-163	-163
L2 (Precision Code)	-166	-166 / -166	-166	-166
Cesium Clock Stability (f/f)	2x10 ⁻¹³ -13	2x10 ⁻¹³ / 2x10 ⁻¹³	1x10 ⁻¹³	1x10 ⁻¹³
Time Transfer (Universal Coordinated Time) (nsec)	+/-100	+/- 100 / +/- 100	+/-25	+/-100
Block II Satellite Design Life (yrs)	N/A	7.5 / 7.5	5.35 / A	7.5
Block I Satellite Expected Ground Power (End of Life (dbw)			TBD	
L1 (C/A)	-160	N/A / N/A	-155	-160
L1 (Precision Code)	-163	N/A / N/A	-158	-163
L2 (Precision Code)	-166	N/A / N/A	-159	-166
Cesium Clock Stability f/f 2/	2x10 ⁻¹³ -13	N/A / N/A	2x10 ⁻¹³	2x10 ⁻¹³

(U) A/ Current demonstrated performance reflects Block II only. Reliability model projections incorporating actual on-orbit experience averaged over the constellation, as of October 1997 indicate an expected Mean Mission Duration (MMD) of 8.45 years versus the required MMD of 6.0 years and Demonstrated Performance of 5.35 years versus 4.69 years in the last report. The additional MMD is due mostly to longer solar array life. The reliability model will be updated to reflect changes in the constellation. The Air Force Space Command (AFSPC) and the Joint Program Office (JPO) are currently working on an approval and update plan for reliability modeling. Demonstrated performance will continue to change based on experience with on-orbit satellites.

(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.

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NAVSTAR GPS, December 31, 1997

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

NAVSTAR GPS Satellite

b. Current Change Explanations: -- None

NAVSTAR GPS User Equip

a. Performance --

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

(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 (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	967.6	1563.3	1467.3
Procurement	623.4	3026.9	2807.5
Flyaway	(583.6)		(2801.3)
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 S	1599.4	4594.9	4279.5
Escalation	707.3	6798.0	5297.7
Development (RDT&E)	(204.9)	(1389.2)	(1093.8)
Procurement	(496.1)	(5406.2)	(4201.3)
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 S	2306.7	11392.9	9577.2
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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NAVSTAR GPS, December 31, 1997

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

NAVSTAR GPS User Equip

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	941.8	1005.3	1138.7
Procurement	1613.1	2143.3	2101.6
Flyaway	(1115.9)		(1474.9)
Other Weapon Systems	(497.2)		(552.5)
Peculiar Support	(0.0)		(32.0)
Initial Spares	(0.0)		(42.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>0.0</u>	<u>54.3</u>
Total FY 79 Base-Year \$	2554.9	3148.6	3294.6
Escalation	2320.9	3492.9	3616.4
Development (RDT&E)	(441.9)	(593.7)	(727.9)
Procurement	(1879.0)	(2899.2)	(2827.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(61.4)</u>
Total Then Year \$	4875.8	6641.5	6911.0
b. (U) Quantity --			
Development (RDT&E)	129	248	248
Procurement	<u>27210</u>	<u>119695</u>	<u>233417</u>
Total	27339	119943	233665

(U) Notes: 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.

On September 1990, the Defense Acquisition Board approved the low rate initial production (LRIP) quantities for Receivers 3A and 3S of 900 units (FY90) and 1,000 units (FY91).

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NAVSTAR GPS, December 31, 1997

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

c. (U) Foreign Military Sales --

Country	Dollars	Quantities Ancillary/Receivers/Security Devices
Australia	\$.8M	0/38/1337
Belgium	\$.2M	0/0/474
Canada	\$ 2.8M	1745/243/9553
Denmark	\$.9M	0/0/3478
Finland	\$.1M	0/0/350
France	\$ 2.1M	9/3/7815
Germany	\$ 11.2M	29/100/8245
Greece	\$ 1.9M	36/45/225
Israel	\$ 3.2M	22/8/7523
Italy	\$.5M	0/0/1715
Japan	\$ 6.0M	12/77/636
Korea	\$ 5.6M	87/142/916
Luxembourg	\$.0M	109/18/0
Netherlands	\$ 1.0M	0/0/4312
New Zealand	\$.0M	0/0/280
Norway	\$.5M	0/38/1314
Singapore	\$ 1.2M	28/24/30
Spain	\$.6M	1790/0/47
Switzerland	\$.0M	0/0/195
Turkey	\$ 4.3M	187/307/1128
United Kingdom	\$ 2.8M	0/0/8956
Mid-Life Update	\$ 12.3M	259/325/1625

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.

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NAVSTAR GPS, December 31, 1997

12. (U) Unit Cost Summary:

NAVSTAR GPS Satellite

	UCR Baseline (MAY 96 APR)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 79 BYS)	4594.9	4279.5	
(2) Quantity	118	118	
(3) Unit Cost	38.940	36.267	-6.86
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 79 BYS)	3026.9	2807.5	
(2) Quantity	106	106	
(3) Unit Cost	28.556	26.486	-7.25

NAVSTAR GPS User Equip

	UCR Baseline (MAY 96 APR)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 79 BYS)	3148.6	3294.6	
(2) Quantity	119943	233665	
(3) Unit Cost	0.026	0.014	-46.15
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 79 BYS)	2143.3	2101.6	
(2) Quantity	119695	233417	
(3) Unit Cost	0.018	0.009	-50.00

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NAVSTAR GPS, December 31, 1997

13. (U) Cost Variance Analysis:

NAVSTAR GPS Satellite

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

	RDTE	PROC	MILCON	TOTAL
Development Estimate	1172.5	1119.5	14.7	2306.7
Previous Changes:				
Economic	-161.5	-633.2	-1.4	-796.1
Quantity	-	+5198.7	-	+5198.7
Schedule	+37.9	+580.1	-	+618.0
Engineering	+291.6	+308.8	-	+600.4
Estimating	+896.0	+478.0	+0.5	+1374.5
Other	-	-	-	-
Support	+339.6	-22.1	-6.5	+311.0
Subtotal	+1403.6	+5910.3	-7.4	+7306.5
Current Changes:				
Economic	-55.8	-224.3	-	-280.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+1.1	+10.6	-	+11.7
Estimating	+39.7	+192.7	-	+232.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-15.0	-21.0	-	-36.0
Total Changes	+1388.6	+5889.3	-7.4	+7270.5
Current Estimate	2561.1	7008.8	7.3	9577.2

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

	RDTE	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	+226.1	-	+386.7
Estimating	+183.4	+287.1	+0.4	+470.9
Other	-	-	-	-
Support	+122.6	-33.6	-4.1	+84.9
Subtotal	+484.7	+2116.0	-3.7	+2597.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+0.5	+4.8	-	+5.3
Estimating	+14.5	+63.3	-	+77.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+15.0	+68.1	-	+83.1
Total Changes	+499.7	+2184.1	-3.7	+2680.1
Current Estimate	1467.3	2807.5	4.7	4279.5

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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>
(1) <u>RDT&E</u>		
Revised escalation indices (Economic)	N/A	-58.0
Economic adjustment for negative program change (Economic)	N/A	+2.2
Funds added for GPS Modernization (FY97) (Engineering)	+0.5	+1.1
Adjustment for Current and Prior Inflation (Estimating)	+0.8	+1.7
Reduction for Quadrennial Defense Review and Congressionally directed Air Force reductions (FY98-FY02) (Estimating)	-3.2	-7.9
Reduction for Bosnia Supplemental (FY96-FY97) (Estimating)	-0.1	-0.2
Funds added for GPS auto-nav test capability (FY97) (Estimating)	+0.3	+0.7
Inflation decrease in Air Force data base (FY99-FY03) (Estimating)	-2.4	-6.0
Funds reprogrammed for higher Air Force priorities (FY96-FY99) (Estimating)	-1.9	-4.9
Revised estimate to reflect change in Department of Defense (DoD) economic assumptions without matching funding changes (FY99-FY16) (Estimating)	+21.0	+56.3
RDT&E Subtotal	+15.0	-15.0
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-230.4
Economic adjustment for negative program change (Economic)	N/A	+6.1
Increase of funds for Crosslink Transponder Data Unit fix (FY93) (Engineering)	+4.8	+10.6
Adjustment for Current and Prior Inflation (Estimating)	+2.0	+4.8
Reductions for Quadrennial Defense Review and Congressionally directed Air Force reductions (FY98-FY02) (Estimating)	-5.6	-15.9
Reprogrammed for Nuclear Detonation (NUDET) Detection System (NDS) Augmentation Payload (NAP) (FY95-FY96) (Estimating)	-2.3	-6.0
Funds added for test assets upgrade (FY95) (Estimating)	+2.2	+5.0
Inflation decrease in Air Force data base (FY99-FY03) (Estimating)	-5.8	-16.8

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NAVSTAR GPS, December 31, 1997

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Funds reprogrammed for higher Air Force priorities (FY95-FY97) (Estimating)	-1.8	-4.7
Funds reprogrammed to Air Force Space Command O&M for IIA satellite support (FY99) (Estimating)	-1.2	-3.4
Funds reprogrammed from Sensor & IIF Nuclear Detonation Detection System Integration (FY99) (Estimating)	+1.6	+4.0
Revised estimate to reflect change in Department of Defense (DoD) economic assumptions without matching funding changes (FY99-FY16) (Estimating)	+74.2	+225.7
Procurement Subtotal	+68.1	-21.0

NAVSTAR GPS User Equip

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	1383.7	3492.1	-	-	4875.8
Previous Changes:					
Economic	-39.6	-313.9	-	-9.0	-362.5
Quantity	-	-347.5	-	-20.0	-367.5
Schedule	+20.7	+586.1	-	-	+606.8
Engineering	+83.2	-46.8	-	-	+36.4
Estimating	+441.9	+568.7	-	+107.4	+1118.0
Other	-	-	-	-	-
Support	-17.8	+609.6	-	+9.0	+600.8
Subtotal	+488.4	+1056.2	-	+87.4	+1632.0
Current Changes:					
Economic	-10.5	-9.8	-	-0.7	-21.0
Quantity	-	+2560.0	-	-	+2560.0
Schedule	-	+215.2	-	-	+215.2
Engineering	-	-	-	-	-
Estimating	+5.0	-2178.3	-	-	-2173.3
Other	-	-	-	-	-
Support	-	-206.7	-	+29.0	-177.7
Subtotal	-5.5	+380.4	-	+28.3	+403.2
Total Changes	+482.9	+1436.6	-	+115.7	+2035.2
Current Estimate	1866.6	4928.7	-	115.7	6911.0

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NAVSTAR GPS, December 31, 1997

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	-	-243.2	-	-10.0	-253.2
Schedule	+10.6	+121.3	-	-	+131.9
Engineering	+38.1	-21.3	-	-	+16.8
Estimating	+151.0	+273.9	-	+49.1	+474.0
Other	-	-	-	-	-
Support	-5.1	+180.4	-	+3.4	+178.7
Subtotal	+194.6	+311.1	-	+42.5	+548.2
Current Changes:					
Quantity	-	+1097.2	-	-	+1097.2
Schedule	-	+78.1	-	-	+78.1
Engineering	-	-	-	-	-
Estimating	+2.3	-947.0	-	-	-944.7
Other	-	-	-	-	-
Support	-	-50.9	-	+11.8	-39.1
Subtotal	+2.3	+177.4	-	+11.8	+191.5
Total Changes	+196.9	+488.5	-	+54.3	+739.7
Current Estimate	1138.7	2101.6	-	54.3	3294.6

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices (Economic)	N/A	-10.5
Adjustment for Current and Prior Inflation	+0.7	+1.7
(FY98-FY01) - Navy & Air Force (Estimating)		
Revised estimate for development of GPS	0.0	-0.2
Enhancements (FY97-FY01) - Army (Estimating)		
Increased estimate for development of GPS	+0.3	+0.5
Enhancements (FY98-FY01) - Navy (Estimating)		
Increased estimate for development of GPS	+1.3	+3.0
Enhancements (FY96-FY97) - Air Force		
(Estimating)		
RDT&E Subtotal	+2.3	-5.5
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-9.8
Increased quantity of 485 aircraft sets from	+10.9	+25.2
3932 to 4417 (FY97-FY04) - Navy (Quantity)		
Revised Army UE requirements from 193,327	+49.3	+115.9
to 158,680 (34,647) with increased hand-held		
sets (FY97-FY12) - Army (Quantity)		

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NAVSTAR GPS, December 31, 1997

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

NAVSTAR GPS User Equip

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase quantity of 6,725 aircraft sets from 5,272 to 11,997 (FY00-FY06) due to Navwar and a reduction of 2,441 handheld receivers from 18,402 to 15,961 (FY97-FY08) - Air Force (Quantity)	+1037.0	+2418.9
Increase to recurring unit cost of handheld sets due to an acceleration in schedule - Army (Schedule)	+39.9	+114.8
Increase to recurring unit cost of aircraft sets due to a delay in schedule - Navy (Schedule)	+1.7	+4.3
Increase to recurring unit cost of aircraft sets due to an acceleration in schedule and a decrease to recurring unit cost of handheld sets due to an acceleration in schedule - Air Force (Schedule)	+36.5	+96.1
Revised estimate for Line Replaceable Units (LRU) Average Unit Costs for ground and aircraft sets due to Navwar (FY97-FY12) - Army (Estimating)	-84.5	-214.8
Revised estimates for Line Replaceable Units (LRU) average unit costs (FY94-FY04) - Navy (Estimating)	-11.3	-21.5
Revised estimates for Line Replaceable Unit (LRU) average unit costs - Air Force (Estimating)	-856.8	-1955.4
Adjustment for Current and Prior Inflation - Air Force & Army (Estimating)	+5.6	+13.4
Adjustment for Current and Prior Inflation - Navy (Support)	+0.3	+1.1
Revised estimates for Program Support of ground and aircraft sets (FY97-FY12) - Army (Support)	-0.1	-10.7
Revised estimates for program support - (FY01-FY03) Air Force (Support)	-77.2	-257.2
Revised estimates for program support (FY95-FY04) - Navy (Support)	+26.1	+60.1
Procurement Subtotal	+177.4	+380.4

(3) O&M

Revised escalation indices (Economic)	N/A	-0.7
Increased estimate for UE support (FY02-FY03) - Navy (Support)	+0.1	+0.2

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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 (FY98-FY03) +11.7 +28.8
- Air Force (Support)

O&M Subtotal +11.8 +28.3

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	-9.12	+5.92	+5.24	+5.19	+13.62	--	+2.64	+23.49	81.16

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	
39.98	-8.09	+19.63	+5.47	+3.01	+6.33	--	-0.21	+26.14	66.12

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	9577.2
Total Quantity	N/A	40	N/A	118
Prog Acq Unit Cost	N/A	57.67	N/A	81.16

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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	--	-0.15	--	--	--	--	--	-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	--	-0.10	--	--	-0.01	--	--	-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	6911
Total Quantity	N/A	273339	N/A	233665
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/FP/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 Estimated Price At Completion
Target Ceiling Qty Contractor Program Manager
 \$109.0 \$50.3 0 \$154.7 \$157.7

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.0	\$-3.4
Cumulative Variances To Date (12/26/97)	<u>\$0.5</u>	<u>\$-4.0</u>
Net Change	\$1.5	\$-0.6

Explanation of Change:

(U) 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 \$18.9M 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.

The CLIN 4AA replan, which packages Phase 2 separately from Phase 3 and combines Phases 3 and 4, is complete. Furthermore, the Over Target Baseline (OTB) is reflected for CLIN 4AA as of the August 1997 Cost Performance Report (CPR).

The Air Force approved an OTB which zeroed out the cumulative cost variance. Since then, Lockheed Martin Federal System (LMFS) has reported a favorable cost variance. The cost variance (+\$0.5M) results primarily from the slow staffing ramp up of the Millennium Task on CLIN 2AA FY97 and billing lags on CLIN 2AF, CLIN 7AB, CLIN 7AJ, CLIN 7AL and CLIN 7AN. These underruns offset overruns on several CLINs.

Since the last SAR, the schedule variance has deteriorated by \$-0.6M. The schedule variance (-\$4.0M) is due primarily to CLIN 7AB Monitor Station Receiver Element (MSRE) modification, CLIN 4AA and the Simulator (CLIN 4AD) effort. CLIN 7AB slips are due to a delay in the receipt of receivers from the subcontractor which have caused a considerable delay in the Factory Acceptance Test (FAT) on both the first and second article. The program impacts include a delay to the overall internal schedule for MSRE and a risk to Monitor Station Test Simulator (MSTS) for pre-launch test. The schedule variance associated with CLIN 4AA results from delays in the development of Phase 2 activities, GOSC/IIF Period 1 Integration activities which diverted architects and engineers away from Phase 3/4, delays in the receipt of hardware and software and delays in User Guide development as resources were focused on completing Drop 7 code. The Contractor claims to have identified engineers that will concentrate on Phase 3/4 activities and to have reorganized Integrated Product Teams (IPTs) to balance workloads between Phase 2 and Phase 3/4. In addition, LMFS recently submitted an Equitable Adjustment Proposal (EAP) for the Block IIF impacts in which the Contractor requested an additional month for the Phase 3/4 schedule. If adjustments are made, LMFS believes it will meet the delivery schedule. The delays associated with hardware and software are projected to have no

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NAVSTAR GPS, December 31, 1997

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

impact to the program as all hardware and software has been ordered and the Contractor is in close contact with vendors to ensure the delivery schedule is maintained. The schedule variance on CLIN 4AD results from delays in scheduled purchases in order to meet Government funding requirements. The contractor claims to be maintaining the remaining purchase requirements on a monthly basis, with purchases identified as critical path items being ordered during that month.

The current contract price \$109.0M, which reflects an increase of \$41.2M since the last SAR, is due to the additions of the Station Computer System Replacement (SCSR) Option three and four efforts, the Accuracy Improvement Initiative (AII) effort for CLIN 4AA and the Simulator, the Five Projects Engineering Change Proposal (ECP) for CLIN 4AA and CLIN 4AD, the Millennium effort, the Psuedo Random Noise (PRN) Ranging effort, Fiscal Year (FY) 98 budget for the software maintenance effort and the Cost Funds Status Report (CFSR) effort.

Furthermore, the Contract Budget Baseline (CBB) is \$155.2M which is \$46.2M above the target price due to the incorporation of OTB budgets for CLIN 4AA, as well as, the additions to the Estimated Cost of Authorized/Unpriced Work (ECAUW) which include the Block IIF Period I impact estimate and a contract change proposal for CLIN 4AD (4AA replan).

(U) <u>BLK IIF SAT DEV/PROD/MOSC:</u>			<u>Initial Contract Price</u>		
BOEING NORTH AMERICAN, SEAL BEACH CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F04701-95-C-0025, FFP/AF/EPA/CPAF			\$382.4	N/A	6
Award: April 22, 1996					
Definitized: April 22, 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>
\$387.1	N/A	6	\$428.0	\$430.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (01/02/98)	\$0.0	\$-0.1
Net Change	\$0.0	\$-0.1

Explanation of Change:

(U) Since the last SAR, contract F04701-96-C-0025 has been consolidated into one cost report. Because cost and schedule variance reporting is not required on a firm fixed price contract, the cost and schedule variances only pertain to the Cost Plus Award Fee (CPAF) efforts of the contract.

In the last SAR, we incorrectly indicated the initial contract target price as \$385.5M. The correct initial contract target price is \$382.4M.

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NAVSTAR GPS, December 31, 1997

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

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.

The current contract price has increased by \$4.7M to fund the system simulator development, additional launch operations support, and advanced integration studies. The negative schedule variance of -\$1M is primarily due to the System Engineering cost elements as a result of three factors: OCS, Command Control Segment (CCS), and Integrated Mission Operations Support Center (IMOSC).

The PM's best estimate is \$426.0M which is based on the assumption that the Contractor will be able to implement the current plan at a cost less than the current Operational Control Segment (OCS) development proposal. The current estimate of \$430.0M is based on the assumption that Boeing North American will maintain cost and make up schedule variance upon definitization of current contract modifications. The Contractor has prepared a proposal for the Block IIF OCS development effort, adjusted for the GPS OCS Support Contract (GOSC) development replan. The proposal is currently being evaluated with contract modification completion expected by May 1998. The worst estimate of \$437.5M includes the full amount of the proposal, and \$7.5M for the Firm Fixed Price (FFP) variance.

b. Procurement --
(U) BLOCK IIF SATELLITE PROD:
LOCKHEED MARTIN ASTRO SP.; VALLEY FORGE PA
FO4071-89-C-0073, FFP
Award: June 1, 1989
Definitized: October 31, 1990

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$580.4	N/A	20

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$738.5	N/A	21	\$791.0	\$828.8

Explanation of Change:

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

The current contract price of \$738.5M reflects a \$68.3M increase from last year's SAR due to the incorporation of the Nuclear Detonation (NUDET) Detection System (NDS) Augmentation Payload (NAP) and the Rubidium Atomic Frequency Standard (RAFS) on the GPS IIR vehicles. The NAP will augment

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NAVSTAR GPS, December 31, 1997

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

the existing Nuclear Detonation (NUDET) Detection System (NDS) on the GPS IIR vehicles by down linking data currently discarded by the existing NDS to detect low-yield and evasively tested nuclear weapon detonations. In addition, the RAPS modification funded an extended RAPS life testing at the Naval Research Laboratory.

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

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	2872.7	174.0	195.6	1185.4	4427.7
Procurement	4804.6	494.8	502.1	6136.0	11937.5
MILCON	7.3	-	-	-	7.3
O&M	56.8	4.4	4.2	50.3	115.7
Total	7741.4	673.2	701.9	7371.7	16488.2

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>
RDT&E	1398.1	92.0	83.8	987.2	2561.1
Procurement	2501.7	157.6	174.8	4174.7	7008.8
MILCON	7.3	-	-	-	7.3
O&M	-	-	-	-	-
Total	3907.1	249.6	258.6	5161.9	9577.2

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

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>
RDT&E	1474.6	82.0	111.8	198.2	1866.6
Procurement	2302.9	337.2	327.3	1961.3	4928.7
MILCON	-	-	-	-	-
O&M	56.8	4.4	4.2	50.3	115.7
Total	3834.3	423.6	443.3	2209.8	6911.0

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
1978				56.3	50.2
1979				56.0	53.3
1980				53.9	56.0
1981				88.3	101.9
1982				78.8	100.7
1983				100.6	137.4
1984				67.3	96.2
1985				67.8	100.7
1986				49.0	75.2
1987				28.7	45.1
1988				21.3	35.0
1989				15.3	25.9
1990				25.7	45.4
1991				18.0	32.9
1992				24.8	46.9
1993				26.3	51.3
1994				28.3	56.2
1995				18.1	36.7
1996				17.1	35.2
1997				20.8	43.6
1998				36.2	77.3
1999				42.5	92.0
2000				38.1	83.8
2001				16.9	37.7

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NAVSTAR GPS, December 31, 1997

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 \$
2001				14.1	32.0
2002				11.2	26.0
2003				10.0	23.6
2004				13.2	31.9
2005				13.1	32.3
2006				19.8	49.8
2007				28.6	73.7
2008				45.6	120.0
2009				40.6	109.1
2010				34.8	95.8
2011				34.4	96.7
2012				28.2	80.9
2013				16.3	47.9
2014				12.3	36.8
2015				11.7	36.0
2016				18.2	57.0
Subtotal	12			1467.3	2561.1

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
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	84.1	90.7	200.2
1994	4	8.4	71.1	74.7	168.3
1995	5	9.2	88.9	92.2	210.0
1996	4	8.4	72.4	65.0	150.4
1997	3	7.3	78.8	83.8	197.0
1998	3	8.7	68.6	65.9	157.6
1999		8.1	31.9	71.8	174.8

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NAVSTAR GPS, December 31, 1997

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 \$
2000	3	8.0	74.9	91.6	226.8
2001	3	7.9	65.3	76.5	192.9
2002	3	7.2	58.8	52.5	134.8
2003	3	6.3	59.6	52.1	136.5
2004	3	6.3	64.7	87.8	235.3
2005	3	6.4	68.1	73.8	202.1
2006	3	6.4	67.9	69.7	195.0
2007	3	6.5	70.0	64.1	183.3
2008	3	6.5	63.3	87.0	254.2
2009	3	6.6	124.9	115.0	343.5
2010	3	6.6	102.8	107.0	326.9
2011	3	6.7	103.2	97.0	302.8
2012	3	6.7	83.9	90.6	288.8
2013	3	6.6	48.4	88.7	289.1
2014	3	6.5	103.2	84.2	280.6
2015	3	6.3	80.1	84.6	287.9
2016	3	6.2	85.8	84.6	294.2
Subtotal	108	204.1	2597.2	2801.3	6997.9

(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

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

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NAVSTAR GPS, December 31, 1997

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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	118	204.1	2597.2	4279.5	9577.2

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				2.0	4.2
1998				1.8	3.9
1999				0.1	0.3
Subtotal				9.1	18.6

(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 FY89-FY94 and Department of Defense 0400 Research Development and Test for FY96-FY99.

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

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NAVSTAR GPS, December 31, 1997

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 \$
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				14.4	30.7
1998				15.7	34.1
1999				19.9	43.9
2000				2.6	5.8
Subtotal	89			524.9	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
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

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NAVSTAR GPS, December 31, 1997

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 \$
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	0.4
2001				0.2	0.4
Subtotal	13			118.4	151.6

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
1988				17.2	28.3
1989				22.4	37.8
1990				21.7	38.3
1991				18.0	32.8
1992				6.7	12.6
1993				7.6	14.7

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NAVSTAR GPS, December 31, 1997

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 \$
1993				10.2	20.3
1994				9.7	19.7
1995				7.2	14.9
1996				9.0	19.0
1997				15.8	33.8
1998				20.1	43.6
1999				30.5	67.2
2000				20.2	45.1
2001				9.7	22.1
2002				6.6	15.3
2003				6.7	15.9
2004				6.8	16.5
2005				6.9	16.9
2006				7.7	19.5
2007				7.7	19.9
2008				7.8	20.4
Subtotal	146			486.3	825.2

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

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

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NAVSTAR GPS, December 31, 1997

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 \$
1992	215		10.8	17.3	38.0
1993	200		11.3	7.0	15.5
1994	537	0.5	10.7	17.5	39.5
1995	352	0.3	6.1	18.9	43.5
1996	522	0.3	8.8	18.7	43.8
1997	495	0.3	7.5	16.5	39.1
1998	560	0.3	10.1	26.4	63.6
1999	378	0.3	5.8	20.2	49.4
2000	184	0.3	0.9	7.6	18.9
2001	212	0.3	0.6	12.8	32.6
2002	198	0.4	0.9	10.1	26.2
2003	162	0.3	0.9	18.7	49.5
2004	107	0.3	0.9	18.7	50.5
Subtotal	4417	3.8	86.3	224.1	538.0

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				2.3	5.5
1999				2.4	6.0
2000				1.6	4.0
Subtotal	76		3.9	14.9	34.5

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NAVSTAR GPS, December 31, 1997

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	34	0.1	2.0	3.8	7.3
1992	130	0.1	8.6	8.5	16.9
1993	1840	0.1	4.1	4.4	8.9
1994				2.3	4.8
1995				7.5	15.7
1996				0.7	1.4
1997				2.2	4.8
1998				2.3	5.0
1999				4.4	9.9
2000				4.3	9.8
2001				4.5	10.6
2002				4.8	10.9
2003				4.6	11.1
2004				4.9	12.1
Subtotal	2618	16.4	37.7	102.2	204.4

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 Nontec	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

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NAVSTAR GPS, December 31, 1997

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 \$
1992	37	9.3	1.3	13.6	27.1
1993	11014	4.3	8.2	13.5	27.4
1994	14318	0.3	12.5	15.6	32.3
1995	15317	0.1	9.7	15.2	32.0
1996	21777	1.3	15.3	22.6	48.5
1997	15074		6.1	12.0	26.1
1998				2.4	5.4
1999				3.1	6.9
2000	112	0.1	0.2	2.9	6.7
2001	9082	0.4	9.6	13.8	32.2
2002	9112	0.4	9.4	13.8	32.7
2003	14428	0.6	14.6	20.5	49.8
2004	6111	0.3	6.1	13.3	33.0
2005	6414	0.3	6.4	12.6	32.0
2006	8043	0.4	8.0	12.4	32.0
2007	10870	0.7	10.6	12.1	32.0
2008	10000	0.7	9.7	11.8	32.0
2009	10000	0.7	9.6	11.6	32.0
2010	10000	0.7	9.6	11.3	32.0
2011	10000	0.7	9.5	11.1	32.0
2012	10000	0.7	9.4	10.8	32.0
Subtotal	193327	47.1	183.9	300.9	697.4

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	58.8
1991	36	4.1	8.0	12.8	27.8
1992	65	20.5	9.1	47.4	103.9
1993	207	16.3	4.6	41.8	92.9
1994	194	36.8	15.2	70.1	158.5
1995	262	33.3	28.9	78.3	180.2
1996	571	52.8	64.1	119.5	279.4
1997	714	20.9	98.1	107.6	255.1
1998	860	13.6	94.7	105.7	254.6

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NAVSTAR GPS, December 31, 1997

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 \$
1999	362	4.5	92.5	103.6	253.7
2000	400	5.6	102.6	112.3	280.0
2001	289	1.9	13.0	69.2	175.7
2002	714	3.4	12.3	42.4	109.8
2003	1362	11.3	17.9	52.1	137.8
2004	1716	23.4	20.2	46.6	126.0
2005	2059	26.3	20.9	51.6	142.6
2006	1132	26.1	10.6	38.7	109.2
2007		8.8		35.0	101.1
2008				34.9	103.1
Subtotal	11997	358.1	685.1	1379.1	3297.6

(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	2.7	5.5
1994	1702		1.4	2.2	4.6
1995	795		0.7	1.8	3.7
1996	812		2.0	2.2	4.7
1997	800		0.4	1.3	2.8
1998	650		0.3	1.4	3.1
1999				0.6	1.4
2000	1000		1.2	1.7	3.8
2001	1000		1.3	1.6	3.8
2002	1000		1.1	1.8	4.2
2003	1000		1.1	1.8	4.3
2004	1000		1.1	1.6	4.0

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NAVSTAR GPS, December 31, 1997

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 \$
2005	1000		1.0	1.6	4.1
2006	500		0.5	0.7	1.7
2007	500		0.5	0.6	1.7
2008				0.7	1.8
Subtotal	15961	2.0	33.2	60.1	119.2

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				1.1	2.5
Subtotal				32.7	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	1.2

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NAVSTAR GPS, December 31, 1997

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 \$
1999				0.9	2.0
2000				1.1	2.4
2001				1.1	2.6
2002				1.2	2.7
2003				1.2	2.8
2004				2.4	5.8
2005				2.4	5.8
2006				2.4	6.1
2007				2.4	6.2
2008				2.4	6.4
Subtotal				21.6	51.0

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				9.1	18.6
Navy	12021	20.1	132.7	905.1	1725.1
Army	193540	52.0	191.7	433.3	874.3
USAF	28104	360.1	718.3	1947.1	4293.0
Grand Total	233665	432.2	1042.7	3294.6	6911.0

17. (U) Delivery/Expenditure Information:

NAVSTAR GPS Satellite

a. (U) Deliveries To Date	Plan	Actual
RDTE	12	12
Procurement	34	34

(U) Percent Total Program Quantities Delivered: 39.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 3410.3

(U) Percent Total Program Expended: 35.6%

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

NAVSTAR GPS User Equip

NAVSTAR GPS User Equip

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	248	248
Procurement	107151	107151

(U) Percent Total Program Quantities Delivered: 46.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1089.1

(U) Percent Total Program Expended: 15.8%

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. The Sustaining Support cost includes the Material Support Division (MSD) Direct Costs. Costs reflect updates for the fiscal year (FY)98 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	0.8	0.0
Unit Level Consumption	0.0	N/A
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.7	N/A

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NAVSTAR GPS, December 31, 1997

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

b. (U) Costs -- (FY 1979 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per NAVSTAR GPS Sat	Avg Annual Cost Per Antecedent
Contractor Support	0.1	N/A
Sustaining Support	0.1	N/A
Indirect Costs	N/A	N/A
Total	1.7	0.0

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)98 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	0.0	0.0
Unit Level Consumption	0.0	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	1.6	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.0	0.0
Indirect Costs	0.0	0.0
SUSTAINING INVESTMENT	25.5	0.0
SYSTEM/PROJECT MGT	4.3	0.0
Total	31.4	0.0

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AF-10 EELV

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SELECTED ACQUISITION REPORT (RCS: DD-AET(O&A)823)
PROGRAM: EELV

AS OF DATE: December 31, 1997

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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 Col Richard W. McKinney
2420 Vela Way, Suite 1467/A2 Assigned: June 27, 1995
El Segundo, CA 90245-4659 DSN 833-4614; COMM (310) 336-4614
richard.mckinney@losangeles.af.mil
4. Program Elements/Procurement Line Items:
RDT&E:
PE 63853F
PE 64853F
PE 0603853F
PE 0604853F

The previous SAR (Dec 96) included 3600 funding from PE 0305953F. In accordance with 10 USC Sec. 2432, this has been removed from this SAR because the 3600 funding is not applicable to Development. PE 0305953F 3600 funding is applicable to Operations and Support which will be in effect after Milestone II. Reporting on these funds will occur after Milestone II.

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CONGRESSIONAL

98-C-0710

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EELV, December 31, 1997

5. References:

SAR Baseline (Planning Estimate):

Approved SAR dated December 31, 1996

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated December 11, 1996.

6. Mission and Description:

The mission of the Evolved Expendable Launch Vehicle is to partner with industry to develop a national launch capability that satisfies the Government's national mission model requirements and reduces the cost of space launch by at least 25%. The EELV system includes the launch vehicles, infrastructure, support systems, and interfaces. EELV will be a family of launch vehicles evolved from current expendable launch systems or components thereof. EELV will support military, intelligence, and civil mission requirements in the National Mission Model (NMM) through 2020 currently serviced by Titan II, Delta II, Atlas II, and Titan IV.

7. Executive Summary:

A new acquisition strategy for EELV was approved by USD(A&T) on November 3, 1997. The previous strategy was to award a development contract and a launch services contract to only one EELV contractor. The new approach allows two contractors to enter the Engineering and Manufacturing Development (EMD)/Initial Launch Services (ILS) phase. The strategy also maintains competition throughout the life of the program, leverages the growing commercial launch market, caps the Government's EMD costs, allows partnering with industry, while still reducing the Government's overall cost to launch the National Mission Model (NMM) by at least 25% over existing systems. The EMD/ILS contract(s) will be awarded in the Summer of 1998.

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.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 --

1. (Ch-1) As noted in the Dec 96 SAR, two schedule Milestones in the approved Acquisition Program Baseline (APB) had incorrect dates in the SAMP. The correct dates are:

	Objective	Threshold
Tailored Critical Design Review (TCDR)	Dec 98	Jun 99
First System Test Flight (MLV)	Jun 01	Dec 01

The rationale for these corrected dates are as follows:

Jul 98 and Dec 98 as objective and threshold dates for TCDCR were incorrect. A Jul 98 objective date would have required a TCDCR to be accomplished simultaneously with contract award. The correct TCDCR objective date is Dec 98 and the correct TCDCR threshold date is Jun 99.

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9b. Schedule (Cont'd):

II. As a result of the change to the acquisition approach approved by USD(A&T) in Tab A of a November 3, 1997 memo, there will be no dedicated system test flights procured during EELV system development. System performance objectives will be verified by analysis of test data collected from a combination of commercial launches (which may precede the first government launch) and early government operational launches procured via the Initial Launch Services contract. An updated APB reflecting a revised acquisition approach and removal of the dedicated system test flights from EELV System Development will be submitted for formal approval prior to the Milestone II review.

10. Performance Characteristics:

a. Performance --

	<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>
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 (%) Standardization	>98	>98 / 98	TBD	98

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10a. Performance Characteristics (Cont'd):

	Planning <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Launch Pads	Standard ized and able to launch all configs of EELV for that site	standard/ ized and/ able to / launch / all / configs / of / EELV for/ that / site /	Standard TBD ized and able to launch all configs of EELV for that site Std TBD	Standard ized and able to launch all configs of EELV for that site Std payload interfac e for each vehicle class (add'l inter- face rqmts met by payload adapter)
Payload interfaces	One std payload inter- face	One std / payload / inter- / face / face / for each / vehicle / class / (add'l / inter- / face / rqmts / met / by / payload / adapter)	TBD	

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):

	Planning <u>Estimate (SAR)</u>	Approved <u>Program (APR)</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	1700.0	1700.0	1356.8
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 \$	1700.0	1700.0	1356.8
Escalation	300.0	300.0	131.3
Development (RDT&E)	(300.0)	(300.0)	(131.3)
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	1488.1
b. Quantity --			
Development (RDT&E)	2	2	0
Procurement	N/A	N/A	N/A
Total	2	2	0

The Development Quantities reflect the realignment of the two system test flights to operational flights.

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	2000.0	-	-	2000.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.0	-	-	-1.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.0	-	-	-1.0
Current Changes:				
Economic	-37.4	-	-	-37.4
Quantity	-211.1	-	-	-211.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-262.4	-	-	-262.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-510.9	-	-	-510.9
Total Changes	-511.9	-	-	-511.9
Current Estimate	1488.1	-	-	1488.1

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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	+39.3	-	-	+39.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+39.3	-	-	+39.3
Current Changes:				
Quantity	-182.7	-	-	-182.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-199.8	-	-	-199.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-382.5	-	-	-382.5
Total Changes	-343.2	-	-	-343.2
Current Estimate	1356.8	-	-	1356.8

The TYS in the Current Change Explanations of Section 13 differ slightly from the actual TYS in the EELV budget. According to the CARS software managers, in a February 11, 1998 letter of explanation, this is due to "application of 'Economic Adjustment for Negative Program Change' and 'Adjustment for Current/Prior Inflation' to each estimating change explanation."

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices (Economic)	N/A	-57.5
Economic adjustment for negative program change (Economic)	N/A	+20.1
Transfer of two launches from development to production (Quantity)	-182.7	-211.1
Adjustment for Current and Prior Inflation (Estimating)	+2.3	+2.4
Previous report did not include FY94 ARPA funds (Estimating)	+9.8	+10.3
Removal from report of RDT&E funding (PE 0305953F) used for launch operations and not for development program (Estimating)	-11.9	-14.0
Other funding changes (Increases of Below Threshold Reprogramming in FY96 and FY97 and decrease of National User funding in FY98) (Estimating)	+3.9	+4.3

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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>
AF Withhold to cover Congressional requirements (Estimating)	-4.3	-4.9
AF Withdrawal to cover other higher priority AF programs (Estimating)	-7.4	-8.4
AF Quadrennial Defense Review Acquisition Stability Reserve Fund (Estimating)	-9.8	-11.5
Change in EELV Acquisition Strategy -- two contractors cost sharing in Development and providing commercial launch services (AR) (Estimating)	-182.4	-240.6
RDTE Subtotal	-382.5	-510.9

AR = Acquisition Reform related changes.

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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	N/A	N/A	DEC 96
Milestone II	JUN 98	N/A	N/A	JUN 98
Milestone III	JUL 03	N/A	N/A	JUL 03
FUE/IOC	TBD	N/A	N/A	TBD
Total Cost	2000	N/A	N/A	1488.1
Total Quantity	2	N/A	N/A	0
Prog Acq Unit Cost	1000	N/A	N/A	0

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

Previous SAR incorrectly reported a quantity of 1 for these contracts. There are no hardware or services items being procured under these contracts.

a. RDT&E --
EELV Pre-EMD:
Lockheed Martin Corp. Denver, CO
F04701-97-C-0003, FFP
Award: December 20, 1996
Definitized: December 20, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$60.0	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>
\$60.0	N/A	0	\$60.0	\$60.0

Explanation of Change:

None.

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

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	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>
\$60.0	N/A	0	\$60.0	\$60.0

Explanation of Change:

None.

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

Contract Comments:

* McDonnell Douglas Corp. is a wholly owned subsidiary of the Boeing Co.

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EELV, December 31, 1997

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 (FY00-03)</u>	<u>Total</u>
RD&E	213.4	91.2	280.3	903.2	1488.1
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	213.4	91.2	280.3	903.2	1488.1

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 \$
1994		9.8		9.8	9.8
1995		29.5		29.5	30.0
1996		107.0		107.0	110.7
1997		59.8		59.8	62.9
1998		85.5		85.5	91.2
1999		258.6		258.6	280.3
2000		307.0		307.0	338.3
2001		272.6		272.6	305.6
2002		214.3		214.3	244.5
2003		12.7		12.7	14.8
2004					
Subtotal		1356.8		1356.8	1488.1

National User Funding Breakout (TY\$M) (Included in above)

FY96: 72.3

FY97: 18.6

FY98: 4.2

ARPA Funding (TY\$M) (Included in above)

FY94: 9.8

This is an RD&E only SAR -- Limited reporting authorized

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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		1356.8		1356.8	1488.1

17. Delivery/Expenditure Information:

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

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 218.5

Percent Total Program Expended: 14.7%

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: TRIDENT II MISSILE

AS OF DATE: December 31, 1997

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- (U) Designation and Nomenclature (Popular Name): Sea Launched Ballistic Missile-UGM 133A TRIDENT II (D-5) Missile
- (U) DoD Component: Navy
- (U) Responsible Office and Telephone Number:
STRATEGIC SYSTEMS PROGRAMS RADM GEORGE P. NANOS
DEPARTMENT OF THE NAVY Assigned: June 30, 1994
WASHINGTON, DC 20376-5002 DSN 327-0456; COMM (703) 607-0453
- (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
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98-5-0143
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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, 1997

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

year in FY 1988 and FY 1989 to the new facilitized rate of 24 missiles per year in FY 1994, to 12 per year in FY 1998 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 is in accordance with Presidential Decision Directive/NSC-30 of September 21, 1994. 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.

The FY 1998 DoD Appropriations Act reduced TRIDENT II WPN funding by \$65 million in order to slow the production rate of TRIDENT missiles that are required for backfit submarines. This reduction has impacted the acquisition strategy discussed above by forcing the Navy to break production in FY 1998 for post boost control systems, nose fairing jettison motors, MK-6 guidance electronic assemblies and HMX (rocket motor propellant). Funding requested in the FY 1999 President's budget is sufficient to restart three of the four broken production lines (MK-6 guidance electronic assemblies, post boost control systems and nose fairing jettison motors). The Department is addressing the additional outyear funding requirements required to requalify and restart the fourth broken production line and reprocur all of the hardware deleted from FY 1998 in order to ensure that the inventory objective of 434 missiles is achieved.

Since last year the SSBN 742 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, the SSBN 740 in June 1995 and the SSBN 741 in July 1996.

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TRIDENT II MISSILE, December 31, 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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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

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TRIDENT II MISSILE, December 31, 1997

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Max Range Full Payload (nm)	(b)(1)			
System Circular Error Probable (CEP) (ft)				
System Reliability				
Max Payload - Yield				

b. Current Change Explanations --

(CH-1) System Circular Error Probable changed from (b)(1) based on current Commander-in-Chief (CINC) evaluation submarine launch data and other representative data sources.

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	12022.2
Flyaway	(14471.2)		(8843.7)
Other weapon systems	(3082.9)		(3039.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(34.4)		(138.7)
Construction (MILCON)	532.9	363.2	362.1
Acquisition O&M	0.0	0.0	0.0
Total FY 83 Base-Year \$	26556.3	20882.6	20799.1
Escalation	8962.2	7286.9	6652.3
Development (RDT&E)	(1018.3)	(998.9)	(996.5)
Procurement	(7808.4)	(6221.4)	(5588.2)
Construction (MILCON)	(135.5)	(66.6)	(67.6)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	35518.5	28169.5	27451.4

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 cost (b)(1) (Then-Year \$).

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TRIDENT II MISSILE, December 31, 1997

12. (U) Unit Cost Summary:

	UCR Baseline (MAY 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 83 BY\$)	20882.6	20799.1	
(2) Quantity	462	462	
(3) Unit Cost	45.200	45.020	-0.40
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 83 BY\$)	12098.9	12022.2	
(2) Quantity	434	434	
(3) Unit Cost	27.878	27.701	-0.63

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	9453.2	25396.9	668.4	35518.5
Previous Changes:				
Economic	-21.5	-115.2	-10.8	-147.5
Quantity	-48.0	-9776.2	-	-9824.2
Schedule	-	+1568.9	+25.6	+1594.5
Engineering	-	-	-	-
Estimating	+27.6	+316.8	-254.3	+90.1
Other	-	-	-	-
Support	-	+317.2	-	+317.2
Subtotal	-41.9	-7688.5	-239.5	-7969.9
Current Changes:				
Economic	-	-170.2	-0.3	-170.5
Quantity	-	-	-	-
Schedule	-	+15.9	-	+15.9
Engineering	-	-	-	-
Estimating	-	+35.4	+1.1	+36.5
Other	-	-	-	-
Support	-	+20.9	-	+20.9
Subtotal	-	-98.0	+0.8	-97.2
Total Changes	-41.9	-7786.5	-238.7	-8067.1
Current Estimate	9411.3	17610.4	429.7	27451.4

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TRIDENT II MISSILE, December 31, 1997

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

(U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RD&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	-163.6	-171.5	-315.2
Other	-	-	-	-
Support	-	+46.8	-	+46.8
Subtotal	-20.1	-5602.9	-171.5	-5794.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+22.2	+0.7	+22.9
Other	-	-	-	-
Support	-	+14.4	-	+14.4
Subtotal	-	+36.6	+0.7	+37.3
Total Changes	-20.1	-5566.3	-170.8	-5757.2
Current Estimate	8414.8	12022.2	362.1	20799.1

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) Procurement

Revised escalation indices. (Economic)	N/A	-170.2
Stretchout of annual procurement buy profile. (Schedule)	0.0	+15.9
Adjustment for Current and Prior Inflation. (Estimating)	+8.1	+12.8
Revised estimates based on contract experience. (Estimating)	+14.1	+22.6
Adjustment for Current and Prior Inflation. (Support)	+4.7	+7.5
Change in Initial Spares (Support)	+3.5	+7.2
Increased costs associated with requalifying vendors from FY 1998 broken production lines. (Support)	+8.5	+14.2
Revision of estimates associated with production support. (Support)	-2.3	-8.0
Procurement Subtotal	+36.6	-98.0

(2) MILCON

Revised escalation indices. (Economic)	N/A	-0.3
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TRIDENT II MISSILE, December 31, 1997

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

b. (U) Current Change Explanations --

(Dollars in Millions)

	Base-Year	Then-Year
Revised construction estimates. (Estimating)	+0.7	+1.1
MILCON Subtotal	+0.7	+0.8

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 Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
42.03	-0.69	+13.59	+3.49	--	+0.27	--	+0.73	+17.39	59.42

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	-0.66	+4.84	+3.65	--	+0.81	--	+0.78	+9.42	40.58

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	27451.4
Total Quantity	N/A	740	845	462
Prog Acq Unit Cost	N/A	50.87	42.03	59.42

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

a. Procurement --

(U) MISSILE FOLLOW-ON PROD:
 LOCKHEED MARTIN, SUNNYVALE, CA
 N00030-94-C-0094, CPIF/FF
 Award: October 1, 1993
 Definitized: October 20, 1993

Initial Contract Price		
Target	Ceiling	Qty
\$832.1	N/A	24

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$924.5	N/A	24	\$906.6	\$920.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$2.6	\$-7.3
Cumulative Variances To Date (06/29/97)	\$9.7	\$0.0
Net Change	\$7.1	\$7.3

Explanation of Change:

(U) The \$7.1 million change in cost variance is attributable to the favorable performance at the Joint Venture rocket motor manufacturer.

The \$7.3 million favorable schedule variance change is due to subcontractor billings and disbursements recovering to plan.

This will be the last report on this contract.

(U) MISSILE FOLLOW-ON PROD:
 LOCKHEED MARTIN, SUNNYVALE, CA
 N00030-95-C-0095, CPIF/FF
 Award: November 3, 1994
 Definitized: September 29, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$827.7	N/A	18

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$831.4	N/A	18	\$816.2	\$820.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$13.9	\$-4.5
Cumulative Variances To Date (11/30/97)	\$19.7	\$-3.8
Net Change	\$5.8	\$0.7

Explanation of Change:

(U) The \$5.8 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 \$.7 million schedule improvement is due to the Joint Venture rocket motor manufacturer recovery.

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

(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>
\$642.6	N/A	6	\$638.6	\$640.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.0	\$-0.1
Cumulative Variances To Date (11/30/97)	\$1.0	\$1.0
Net Change	\$0.0	\$1.1

Explanation of Change:

None.

(U) MISSILE FOLLOW- ON PROD:			Initial Contract Price		
LOCKHEED MARTIN, SUNNYVALE, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00030-96-C-0097, CPIF/FF			\$588.1	N/A	14
Award: October 1, 1996					
Definitized: November 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>
\$594.5	N/A	14	\$594.5	\$590.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/30/97)	\$-1.3	\$4.6
Net Change	\$-1.3	\$4.6

Explanation of Change:

(U) 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	13470.6	269.4	329.0	3541.4	17610.4
MILCON	420.6	-	-	9.1	429.7
O&M	-	-	-	-	-
Total	23302.5	269.4	329.0	3550.5	27451.4

b. Annual Summary -- TRIDENT II (D-5) MISSILE

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY83 Dollars Nonrec</u>	<u>Flyaway FY83 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY83 Dollars Nonrec</u>	<u>Flyaway FY83 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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		555.9	745.8	1096.9
1993	21		480.4	652.9	978.1
1994	24		647.2	720.1	1100.7
1995	18		390.1	428.4	666.0
1996	6		118.1	323.5	510.7
1997	7		130.5	197.4	316.4
1998	5		93.4	165.5	269.4
1999	5		105.7	198.8	329.0
2000	12		198.7	305.0	513.6
2001	12		194.8	294.0	503.9
2002	12		256.3	289.0	505.1
2003	12		269.7	297.5	530.9
2004	12		168.6	267.8	488.4
2005	14		244.4	232.4	433.2
2006				54.8	104.4
2007				237.3	461.9
Subtotal	434		8843.7	12022.2	17610.4

(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					

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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 \$
1996					
1997					
1998					
1999					
2000				2.8	4.5
2001				0.5	0.9
2002				0.6	1.4
2003					
2004					
2005				0.4	0.7
2006				0.9	1.6
Subtotal				362.1	429.7

(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		8843.7	20799.1	27451.4

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	28	28
Procurement	334	337

(U) Percent Total Program Quantities Delivered: 79.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 22370.6

(U) Percent Total Program Expended: 81.5%

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TRIDENT II MISSILE, December 31, 1997

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 1999 President's Budget through FY 2003 and extended through FY 2027. The intermediate maintenance 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, modification kits and spare parts for shipboard systems. 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	64.7	0.0
Contractor Support	N/A	N/A
Sustaining Support	351.1	N/A
Indirect Costs	15.3	N/A
Total	489.0	0.0

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N-6 DDG 51

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

PROGRAM: DDG 51 DESTROYER

AS OF DATE: December 31, 1997

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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 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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MAR 25 1998 9

No Security Objection
to Open Publication
(AS AMENDED)
98-03147
MAR 25 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

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DDG 51 DESTROYER, December 31, 1997

5. (U) References:

SAR Baseline (Production Estimate):

(U) DCP #1337 Rev 1, Change 1 of 22 August 1986.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated March 27, 1997.

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 Theater Ballistic Missile Defense (TBMD).

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DDG 51 DESTROYER, December 31, 1997

7. (U) Executive Summary:

(U) Funding for the lead ship, ARLEIGH BURKE, was provided in FY85 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 FY89 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).

An Acquisition Decision Memorandum (ADM) was signed on 2 February 1994 approving Flight IIA introduction in FY94 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 FY94, and ISI was awarded the second, the first FY95 ship.

In July 1995, the Under Secretary of Defense (Acquisition and Technology) redesignated the DDG 51 Destroyer Class from an ACAT ID to an ACAT IC program.

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 completed construction \$122M (FY 83\$) below the \$700M (FY 83\$) SECNAV average unit cost threshold.

Affordability continues to be a top priority for the DDG 51 Destroyer Class Program. The Program Manager is aggressively pursuing the identification and implementation of cost reduction and cost avoidance changes to ships. In execution and planning, the Program Manager is committed to acquiring capable warships, tailored to extant world threat conditions, for an affordable price. Major reform initiatives include innovative contracting methods such as the Profit Related to Offers (PRO) concept, promoting expanded BIW-ISI cooperation in the area of joint procurement, and multiyear acquisition plans.

PRO was successfully implemented on the FY96/97 shipbuilding procurements and was again used in awarding the multiyear procurement (MYP) ship construction contracts (FY98-01). The PRO concept fosters a competitive environment whereby the shipbuilders bid for maximum profit, not maximum work. Encouraging shipyard cooperation allows the program to take advantage of volume discounts on material and Class Standard Equipment items. The FY97 Authorization and Appropriation Acts, provided the program authority to enter into MYP contracts, at a rate of three ships per year using FY96 and FY97 funds. The long term commitment provided under this MYP stabilizes the industrial base for both shipbuilders and hundreds of equipment manufacturers that provide critical systems to the program. These type of efforts have allowed the Program to procure more capable warships while holding costs steady.

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

The FY98 Authorization and Appropriation Acts provided an additional FY98 ship (\$720M) to take advantage of MYP pricing. The marginal cost of the 4th ship in FY98 is approximately 25% less than the average unit cost of the 12 ship MYP. This will result in additional average unit cost savings of \$234M across the multiyear period providing an Acquisition Reform total savings (FY1998-FY2001) of \$1.4B.

The FY99 President's Budget Estimates reflect over \$2.5B in savings from the FY98/99 Biennial Budget Estimates. These savings are the result of further leveraging of MYP savings, acceleration of the shipbuilding profile to take advantage of MYP pricing, and lowered inflation estimates.

The FY98 Congressional undistributed reductions and inflation reduced the DDG 51 Program \$220M across the MYP. These reductions impacted the Program's ability to award the MYP contracts with the originally planned scope. Subsequent decisions, including the redefinition of planned upgrades, were made to resolve this issue to ensure a fully funded MYP. However, program budgets across the MYP are aggressively priced. Approximately 75% of the MYP budget consists of firm and option forward priced shipbuilding and GFE contracts for which negotiations are in process or contracts already in place. No additional savings in price to Government will be realized on these contracts as a result of changes to inflation and/or changes in policy. The Navy's ability to sustain marks while in MYP execution will be severely limited and will likely require capability descopes.

The Navy has entered into multiyear Economic Order Quantity (EOQ) procurements for the Sonar Dome Rubber Window (SDRW), AEGIS Weapon System components and with the two shipbuilders using FY96 and FY97 Advanced funding. The Navy's ship construction Request for Proposals for a 12 ship (FY98-01) MYP contained provisions for procuring two option ships, one in FY98 and one in FY01. The 12 ship MYP ship construction contracts plus one option were awarded on 6 March 1998. ISI was awarded 7 ships and BIW 6 ships. To date, 51 of 57 Destroyers have been awarded. The second option to the SDRW MYP contract was awarded on 12 February 1998. The AEGIS Weapon System MYP contracts are planned for award in March.

DDG 51 Class construction has achieved numerous production milestones since the last report. The more significant are the following:

DDG 80 (ROOSEVELT) started fabrication 10 March 1997
DDG 81 (WINSTON CHURCHILL) started fabrication 6 April 1997
DDG 70 (HOPPER) ship custody transfer occurred 11 April 1997
DDG 71 (ROSS) ship custody transfer occurred 18 April 1997
USS THE SULLIVANS (DDG 68) commissioned 19 April 1997
DDG 75 (DONALD COOK) launched 3 May 1997
USS ROSS (DDG 71) commissioned 28 June 1997
DDG 72 (MAHAN) ship custody transfer occurred 22 August 1997
USS HOPPER (DDG 70) commissioned 6 September 1997
DDG 76 (HIGGINS) launched 4 October 1997
DDG 82 (LASSEN) started fabrication 3 November 1997

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

DDG 78 (PORTER) launched 12 November 1997
 DDG 83 (HOWARD) started fabrication 14 November 1997
 USS MAHAN (DDG 72) commissioned 14 February 1998
 DDG 74 (McFAUL) ship custody transfer occurred 20 February 1998

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
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
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

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate	
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	JUL 94	(Ch-1)
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	N/A	N/A	(Ch-2)
SH-60B Hellfire IOC	N/A	DEC 97	DEC 97	
DDG 51 Flight IIA Delivery	N/A	SEP 99	FEB 00	(Ch-1)
DDG 51 Flight IIA IOC	N/A	OCT 00	OCT 00	
Propulsion Engine P3I Engine Support	N/A	N/A	N/A	(Ch-2)
Capability Date				
ESSM IOC	N/A	AUG 02	AUG 02	

b. Current Change Explanations --

(U) The DDG 51 Class schedule adjustments are as follows:

(CH-1)

	FROM	TO
DDG 51 Flight IIA Contract Award	Mar 94	Jul 94
DDG 51 Flight IIA Delivery	Sep 99	Feb 00

The DDG 51 Flight IIA Contract Award and Delivery dates were changed to reflect the actual contract award.

(CH-2)

	FROM	TO
Propulsion Engine P3I Initial ship	Mar 02	N/A
Propulsion Engine P3I Engine Support	Mar 07	N/A

The FY 98/99 Biennial Budget Estimate reflected installation of the P3I Engine on the last seven ships beginning with the FY02 ship. Amortizing a large investment in non-recurring costs for seven ships over the life of the DDG 51 Program was not considered to be cost effective. As a result, P3I Engines were removed from the DDG 51 Class baseline on 27 March 97.

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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
Endurance (@ 20 Knots) (nm)	(b)(1)			TBD	(b)(1)
ANTI-AIR WARFARE: CONDUCT SUCCESSFUL AAW ENGAGEMENT:					
Probability of Successful Engage- ment-ESSM	N/A	TBD	/ 0.75	TBD	0.75
ANTI-SURFACE WARFARE: CONDUCT SUCCESSFUL ASUW ENGAGEMENT:					
Probability of Suc- cessful Engagement		(b)(1)			(b)(1)
HELO	N/A			TBD	
NAVAL SURFACE FIRE SUPPORT					
Probability of Suc- cessful Engagement					
HELO	N/A			TBD	
ANTI-SUBMARINE WARFARE: CONDUCT SUCCESSFUL ASW ENGAGEMENT:					
Figure of Merit:					
Probability of Achieving Attack Criteria	N/A			TBD	
Number VLS Missiles	N/A			TBD	(1)
MINE WARFARE:					
Detection Range of Moored/Floating Mine (YDS)	N/A	1000	/ 800	TBD	800
SIGNATURE:					
Radar Cross section (dbsm)	N/A	(b)(1)		TBD	(b)(1) (2)

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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>
SURVIVABILITY/ VULNERABILITY:				
Nuclear		(b)(1)		(b)(1)
Airblast	N/A		TBD	(3)
Overpressure (psi)				
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/ 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/ DBSM 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):

	Production Estimate (SAR)	Approved Program (AFB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	979.8	1905.8	2115.0
Procurement	15948.3	39092.2	38766.6
Basic Ship Costs	(5383.6)		(16440.1)
HM&E and Combat Systems	(9427.9)		(20169.0)
Other Costs	(621.9)		(726.9)
OF/PD	(514.9)		(1430.6)
Total Sailaway	(15948.3)		(38766.6)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	25.6	34.8	35.0
Acquisition O&M	0.0	0.0	0.0
Total FY 87 Base-Year \$	16953.7	41032.8	40916.6
Escalation	3163.8	15780.3	12964.7
Development (RDT&E)	(-63.2)	(335.4)	(342.3)
Procurement	(3224.8)	(15438.7)	(12616.4)
Construction (MILCON)	(2.2)	(6.2)	(6.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	20117.5	56813.1	53881.3
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	23	57	57
Total	23	57	57

c. (U) Foreign Military Sales --

There are 33 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:

	UCR Baseline (MAR 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 87 BY\$)	41032.8	40916.6	
(2) Quantity	57	57	
(3) Unit Cost	719.874	717.835	-0.28
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 87 BY\$)	39092.2	38766.6	
(2) Quantity	57	57	
(3) Unit Cost	685.828	680.116	-0.83

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	-66.3	-2949.0	+0.2	-3015.1
Quantity	-	+31714.7	-	+31714.7
Schedule	+98.6	+1179.2	-	+1277.8
Engineering	-	+1965.7	-	+1965.7
Estimating	+1577.9	+2864.3	-	+4442.2
Other	-	-	-	-
Support	-	-	+13.0	+13.0
Subtotal	+1610.2	+34774.9	+13.2	+36398.3
Current Changes:				
Economic	-31.2	-1166.9	-	-1198.1
Quantity	-	-	-	-
Schedule	-53.8	-252.8	-	-306.6
Engineering	+15.5	-	+13.2	+28.7
Estimating	-	-1145.3	-	-1145.3
Other	-	-	-	-
Support	-	-	-13.2	-13.2
Subtotal	-69.5	-2565.0	-	-2634.5
Total Changes	+1540.7	+32209.9	+13.2	+33763.8
Current Estimate	2457.3	51383.0	41.0	53881.3

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

(U) Summary (FY 1987 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	979.8	15948.3	25.6	16953.7
Previous Changes:				
Quantity	-	+21363.6	-	+21363.6
Schedule	+61.7	-	-	+61.7
Engineering	-	+1293.2	-	+1293.2
Estimating	+1096.8	+732.1	-	+1828.9
Other	-	-	-	-
Support	-	-	+9.2	+9.2
Subtotal	+1158.5	+23388.9	+9.2	+24556.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-34.4	-	-	-34.4
Engineering	+11.1	-	+9.3	+20.4
Estimating	-	-570.6	+0.2	-570.4
Other	-	-	-	-
Support	-	-	-9.3	-9.3
Subtotal	-23.3	-570.6	+0.2	-593.7
Total Changes	+1135.2	+22818.3	+9.4	+23962.9
Current Estimate	2115.0	38766.6	35.0	40916.6

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation rates (Economic)	N/A	-31.2
Revised program funding as a result of planned MYP procurements (AR) (Schedule)	-34.4	-53.8
Revised Program Funding for the definitization of Baseline 7 Phase II Integration (Engineering)	+11.1	+15.5
RDT&E Subtotal	-23.3	-69.5
(2) <u>Procurement</u>		
Revised escalation rates (Economic)	N/A	-1166.9
Change in profile for the 57 ships previously submitted from 3,3,3,3,1,2,2,2 (FY98-05) to 4,3,3,3,3,3 as a result of planned MYP procurements (FY98-03) (AR) (Schedule)	N/A	-252.8
Revised MYP acquisition strategy, and GFE and Basic Construction Repricing for follow on MYP (AR) (Estimating)	-608.0	-1191.9

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

b. (U) Current Change Explanations --

(Dollars in Millions)

Revisions to current (FY97) and prior year
(FY85-FY96) program due to (BY 87\$) cost
adjustments for ship construction escalation
recovery and estimating (Estimating)

Base-Year Then-Year
+37.4 +46.6

Procurement Subtotal -570.6 -2565.0

(3) MILCON

Correction to previous SAR - Funding moved
from Support to Engineering (Engineering)

+9.3 +13.2

Correction to previous SAR - funding moved
from Support to Engineering (Support)

-9.3 -13.2

Revised pricing (Estimating)

+0.2 0.0

MILCON Subtotal +0.2 0.0

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 Init 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	-73.92	+34.67	+17.04	+34.99	+57.84	--	--	+70.62	945.29

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

Initial SAR Baseline to Current SAR Baseline

PUC Init 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

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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	
833.61	-72.21	+59.16	+16.25	+34.49	+30.16	--	--	+67.85	901.46

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	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	53881.3
Total Quantity	9	14	23	57
Prog Acq Unit Cost	1217.06	1065.04	874.67	945.29

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

a. Procurement --		Initial Contract Price		
(U) DDG 73,75,76 CONSTRUCTIO:		Target	Ceiling	Qty
BATH IRON WORKS, BATH, ME				
N00024-93-C-2800, FPI		\$777.0	\$865.8	3
Award: January 19, 1993				
Definitized: January 19, 1993				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$813.0	\$904.1	3	\$870.4	\$900.1
Previous Cumulative Variances		Cost Variance	Schedule Variance	
Cumulative Variances To Date (12/31/97)		\$3.8	\$-3.1	
Net Change		\$11.2	\$-15.2	
		\$7.4	\$-12.1	

Explanation of Change:

(U) Cost improvement is driven by overhead performance. Schedule variance is due to labor and overhead performance.

(U) Contract Comments:

Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$155.6M).

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

(U) DDG 77,79,81 CONSTRUCTIO:
BATH IRON WORKS, BATH, ME
N00024-94-C-2808, FPI
Award: July 20, 1994
Definitized: January 4, 1995

			Initial Contract Price		
	Target	Ceiling	Qty		
	\$964.5	\$1077.2	3		

Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$1011.8	\$1128.9	3	\$1066.8	\$1096.0	

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-10.5	\$1.2
Cumulative Variances To Date (12/31/97)	\$-43.3	\$2.3
Net Change	\$-32.8	\$1.1

Explanation of Change:

(U) Cost variance is driven by labor. Schedule improvement is due to material.

(U) Contract Comments:

Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$150.3M).

(U) DDG 78,80,82 CONSTRUCTIO:
INGALLS SHIPBUILDING, INC., PASCAGOULA MS
N00024-94-C-2800, FPI
Award: July 20, 1994
Definitized: January 4, 1995

			Initial Contract Price		
	Target	Ceiling	Qty		
	\$993.8	\$1107.5	3		

Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$1027.7	\$1145.3	3	\$1056.6	\$1058.9	

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-17.9	\$31.9
Cumulative Variances To Date (12/31/97)	\$-43.0	\$6.0
Net Change	\$-25.1	\$-25.9

Explanation of Change:

(U) Cost variance is driven by overhead and labor. Schedule variance is driven by material.

(U) Contract Comments:

Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future change estimates, nor

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

escalation compensation commitments (\$123.7M).

(U) DDG 84,86,88 CONSTRUCTION:
INGALLS SHIPBUILDING, INC, PASCAGOULA MS
N00024-96-C-2304, FPI
Award: June 20, 1996
Definitized: December 13, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1034.9	\$1165.8	3

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1041.4	\$1173.0	3

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$1032.4	\$1101.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.1	\$-3.8
Cumulative Variances To Date (12/31/97)	\$0.1	\$-8.4
Net Change	\$0.0	\$-4.6

Explanation of Change:

(U) Schedule variance deterioration is driven by material.

(U) Contract Comments:

Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$61.7M). This contract is forward priced, incorporating escalation compensation in the basic contract.

(U) DDG 83,85,87 CONSTRUCT:
BATH IRON WORKS, BATH, ME
N00024-96-C-2305, FPI
Award: June 20, 1996
Definitized: December 13, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1071.3	\$1219.7	3

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1076.7	\$1225.3	3

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$1068.2	\$1107.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$2.2	\$0.7
Cumulative Variances To Date (12/31/97)	\$8.6	\$28.0
Net Change	\$6.4	\$27.3

Explanation of Change:

(U) Cost and Schedule variance performance are driven by material.

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DDG 51 DESTROYER, December 31, 1997

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

(U) Contract Comments: /

Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements nor future changes estimates (\$30.0M). This contract is forward priced, incorporating escalation compensation in the basic contract.

(U) AWS PRODUCTION:	Initial Contract Price		
LOCKHEED MARTIN, MOORESTOWN, NJ	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-93-C-5108, FPI	\$622.9	\$673.8	11
Award: January 10, 1993			
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>
\$638.8	\$689.1	11	\$637.4	\$637.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$5.4	\$-4.2
Cumulative Variances To Date (12/31/97)	\$2.9	\$-1.5
Net Change	\$-2.5	\$2.7

Explanation of Change:

(U) Cost and Schedule variances are not significant in relation to the current contract target price.

(U) Contract Comments:

Target Price, Ceiling Price, and Estimated Price at Completion do not include future changes estimates (\$19.0M).

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> (FY80-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-09)	<u>Total</u>
RDT&E	1586.6	80.7	115.0	675.0	2457.3
Procurement	32443.4	3521.9	2758.6	12659.1	51383.0
MILCON	27.8	13.2	-	-	41.0
O&M	-	-	-	-	-
Total	34057.8	3615.8	2873.6	13334.1	53881.3

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DDG 51 DESTROYER, December 31, 1997

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

b. Annual Summary -- DDG 51 Destroyer

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 \$
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				80.9	102.7
1995				69.2	89.6
1996				66.3	87.3
1997				61.6	82.5
1998				59.4	80.7
1999				83.4	115.0
2000				100.5	141.0
2001				66.7	95.2
2002				66.1	95.9
2003				66.2	97.9
2004				58.3	88.1
2005				44.4	68.6
2006				31.0	49.0
2007				18.2	29.4
2008				6.0	9.9
Subtotal				2115.0	2457.3

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	899.0	1177.8	1145.8
1986					98.1
1987	3	143.6	2186.4	2255.0	2484.7
1988				4.0	9.6

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DDG 51 DESTROYER, December 31, 1997

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

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 \$
1989	4		2570.8	2474.9	2873.6
1990	5	11.2	3109.3	3014.4	3623.5
1991	4	2.9	2578.6	2533.5	3170.7
1992	5	29.7	3186.0	3143.1	4056.7
1993	4	6.1	2570.7	2630.1	3406.8
1994	3	64.7	2067.6	2141.5	2782.4
1995	3	9.4	2026.4	2032.9	2730.6
1996	2	37.3	1504.5	1583.2	2340.4
1997	4	30.7	2554.5	2524.9	3642.0
1998	4	83.1	2572.5	2583.0	3521.9
1999	3	45.4	2006.4	2028.5	2758.6
2000	3	30.9	1997.5	2015.3	2817.0
2001	3		1988.6	1990.1	2994.5
2002	3	3.8	1982.6	1960.6	2778.9
2003	3		2158.8	2150.4	3282.7
2004				119.8	172.0
2005				85.8	125.9
2006				107.3	160.8
2007				88.4	135.4
2008				101.1	158.4
2009				21.0	33.5
Subtotal	57	806.4	37960.2	38766.6	51383.0

(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.

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					

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DDG 51 DESTROYER, December 31, 1997

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 \$
1998				9.5	13.2
Subtotal				35.0	41.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	57	806.4	37960.2	40916.6	53881.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	22	22

(U) Percent Total Program Quantities Delivered: 38.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 24663.1

(U) Percent Total Program Expended: 45.8%

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. This estimate is based almost exclusively on DDG 51 actual operating experience. The average annual cost per ship for Operating and Support costs, over the 40 year projected service life, is estimated at \$35.4M in FY87 dollars. The Operating and Support Cost estimates were prepared in February 1998. 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 1992).

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

b. (U) Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Average Annual Cost Per Ship (FY87\$)	Average Annual Cost Per Ship
Mission Pay & Allowances	10.1	0.0
Unit Level Consumption	8.1	0.0
Intermediate Maintenance	0.1	0.0
Depot Maintenance	9.3	0.0
Contractor Support	0.0	0.0
Sustaining Support	7.0	0.0
Indirect Costs	0.8	0.0
Total	35.4	0.0

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AF-2 AMRAAM

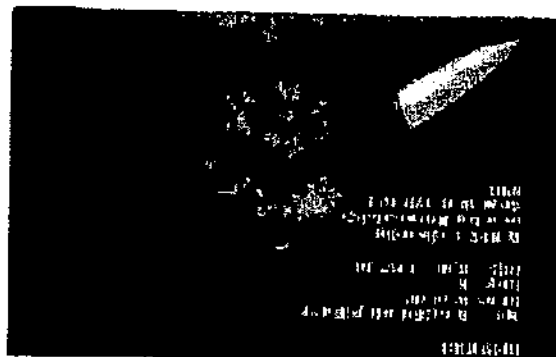
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)8231)
PROGRAM: AMRAAM (AIM-120)

AS OF DATE: December 31, 1997

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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:

Air-to-Air Joint Systems Program	GM-15 JUDY A. STOKLEY
Office (JSP0)	Assigned: June-10, 1997
ASC/YA	DSN 872-3531; COMM (850) 882-3531
Eglin AFB, FL 32542-6844	stokley@eglin.af.mil

(U) Navy Program Director	RICHARD T. CALANO
Air-to-Air Joint Systems Program	Assigned: October 26, 1997
Office (ASC/YA)	AV 872-2412 COMM (904) 882-2412
EGLIN AFB, FL 32542-6844	calanor@eglin.af.mil

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

RDT&E:

(U)	PE 0207163F	
(U)	PE 0207163N	Project E0981 (Shared)
(U)	PE 0603316F	
(U)	PE 0603370F	
(U)	PE 0603370N	Project W0981

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 DEPARTMENT OF DEFENSE

~~Classified by: AMRAAM SECURITY CLASSIFICATION GUIDE, 30 APR 97~~
~~Downgrade instructions: E.O. 12958, Section 1.5.(e)~~
~~Declassify on: NOT SUBJECT TO AUTOMATIC DOWNGRADE~~

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

(U) PE 0604314F
(U) PE 0604314N Project E0981 (Shared)
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. In January 1989 Full Scale Development flight testing was completed by the Hughes Aircraft Company and the Raytheon Company completed second-source qualification. 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 April 1992 a follow-up to the DAB Milestone IIIB review authorized Full-Rate production for the FY93 procurement. Successful completion of the Navy Operational Evaluation occurred in March 1994. The first missile incorporating the Phase 1 Pre-Planned Product Improvement (P3I) missile design was delivered in November 1995, providing increased Electronic Protection Capability and a compressed air frame for F-22 internal carriage. The Lot XI production option was competitively awarded to Hughes and Raytheon on January 28, 1997.

Raytheon and Hughes merged in December 1997 and AMRAAM missile efforts are now being accomplished by Raytheon Systems Company - Bedford Operations (formerly Raytheon Electronic Systems) and Raytheon Systems Company - Tucson Operations (formerly Hughes Missile Systems Company). AMRAAM production will be consolidated at the Tucson facility at some future date.

As part of the merger approval, the Department of Justice required that a price agreement be reached for the AMRAAM missile hardware. On October 15, 1997, the Air Force and Raytheon signed a price agreement for the next four years of

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

production. This agreement represents price savings over four years and will be finalized contractually in the Lot XII contract award scheduled for 31 March 1998.

The missile unit price continues to be improved as a result of leveraging off of Foreign Military Sales (FMS). Seventy-two percent of the Lot XI production award went to foreign sales (133 Air Force, 100 Navy, and 595 FMS).

The AMRAAM program's new acquisition strategy is to establish a long term agreement with the single producer. The agreement will be founded on price-based procurement and the contractor's assumption of Total System Performance Responsibility (TSPR). TSPR is the acceptance of responsibility to do what is necessary and sufficient to deliver, warrant, and support missiles that are affordable, combat capable, and readily available. The merger and new acquisition strategy have decreased FY98 and later costs by sixteen percent with additional savings anticipated in the future.

The National Disclosure Policy Committee met on October 9 and October 30, 1997 to consider exceptions to policy that will allow the AMRAAM system to be acquired by foreign companies through Direct Commercial Sales (DCS). Agreement was obtained to approve such sales on a case-by-case basis. The first AMRAAM DCS case for the United Kingdom will be sent to the committee for approval mid February 1998.

Under the P3I program, Tape 7A was completed and fielded in June 1997. This tape provides a substantial improvement in weapon effectiveness in an Electronic Protection (EP) environment for the warfighter. This capability is backward compatible to the Phase 1 missile through reprogramming in the field.

The P3I improved warhead is under contract and will be implemented in the Lot XI deliveries beginning in FY99. The P3I kinematics improvements with a + 5 inch rocket motor and additional EP improvements will be part of the Lot XII production contract award in March 1998. P3I Phase 2 has been restructured as a result of budget reductions and is scheduled to be completed in FY98. The P3I Phase 3 program is on schedule to begin in FY99 and will provide greater improvements in EP environments through electronics and software modernization.

The AMRAAM program accomplished 146 AIM-120 launches from January 1997 through December 1997. The launches demonstrated 81% missile success and 74% system success.

Rather than transitioning to organic depot repair as originally intended, the AMRAAM program will continue to use the Prime Contractor as the source of repair. On June 17, 1997, the Deputy Under Secretary of Defense (Logistics) approved retention of maintenance of the AMRAAM system at the contractor facility. Presently, AMRAAM is under contractor interim contractor support through mid-FY 99. Beginning mid-FY 99, full contractor source of repair will be in place.

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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
-- OEM	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 Equipage	DEC 90	DEC 90	DEC 90
Initial Operational Capability (IOC) Air Force	MAR 91	MAR 91	SEP 91
Milestone IIIB (DAB) (Lot IV Full Go-Ahead Rate Production)	APR 91	APR 91	MAY 91
DAB Program Review Full Rate Production Approval	MAR 92	MAR 92	APR 92
Full Operational Capability (FOC) 1st F-16 Unit Fully Operational w/AMRAAMs	MAR 92	MAR 92	JAN 92
Complete FOT&E (OPEVAL) (Navy)	MAR 92	JAN 94	MAR 94
Complete AF FOT&E Phase I	MAR 92	FEB 93	APR 93
P3I Phase 1 CDR Complete	OCT 92	OCT 92	JAN 93
Initial Operational Capability (IOC) (Navy)	SEP 92	SEP 93	SEP 93

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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
P31 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 Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
Weight (lbs)	327	327 / 350	344	345
F-Pole at 25NM Range	9.0	9.0 / 7.5	7.8	7.8
A-Pole at 25NM Range	20	20 / 17	17.9	17.9
Probability of Kill	0.79	.79 / .67	.74	.67
Look-Down Shoot-Down Target alt (ft) over:				
Land	50	50 / 50	39	50
Water	28	28 / 50	50	50
Reliability				
Ready Storage (hrs)	60000	60000 / 45000	N/A	45000
(mature msl - 90K operational flight hours)				
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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10a. (U) Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
1 All-Aspect Launch & Track	(b)(1)			
Aircraft Compatibility	F-15, F-16, F-14, F/A-18	F-15, / F-15, F-16, / F-16, F-14, / F-14, F/A-18 / F/A-18	F-15, F-16, F/A-18	F-15, F-16, F-14, F/A-18
All-Up Round	Control Surfaces field in- stalled	Control / Control Surfaces/ Surfaces field / field in- / in- stalled / stalled	Control Surfaces field in- stalled	Control Surfaces field in- stalled
1 ECCM Capability	(b)(1)			
1 Terminal Mode Acquisition & Launch	(b)(1)			
Target Discrimination (cluster target): Attack Multiple Targets which are unresolved by friendly fighter A/C radars Range (ft) Range Rate (ft/sec) Angle (deg)	(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. Current Change Explanations --
(U) 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)	1725.7	2097.2	2133.1
Procurement	10552.5	10205.7	8102.2
Flyaway	(10038.5)		(7652.7)
Other Weapon Cost	(378.0)		(0.0)
Peculiar Support	(0.0)		(340.4)
Initial Spares	(136.0)		(109.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 92 Base-Year S	12278.2	12302.9	10235.3
Escalation	834.2	1025.0	150.5
Development (RDT&E)	(-375.1)	(-275.7)	(-281.1)
Procurement	(1209.3)	(1300.7)	(431.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year S	13112.4	13327.9	10385.8

(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 (2% of the production estimate total quantity). This resulted from two actions: (1) the planned total procurement decreased from 24,320 missiles at Milestone IIIA to

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

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.

c. ~~(S)~~ 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
\$115.1M PURPOSE: 300 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
\$50.1M PURPOSE: 140 AMRAAMs (Lot XI,XII)
- (U) ISRAEL (IS-D-YEO) Case signed 6 February 1997
\$12.2M PURPOSE: 16 AMRAAMs (Lot X,XI) and support
- (U) ITALY (IT-D-YAC) Case signed 1 December 1997
\$40.6M PURPOSE: 93 AMRAAMs (Lot XII-XV) and support
- (U) NETHERLANDS (NE-D-YME) Case signed 29 September 1995
\$87.1M PURPOSE: 200 AMRAAMs (Lots X,XI) 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-YGQ) Case signed 28 August 1995
\$38.4M PURPOSE: 100 AMRAAMs (Lot X). Missile procurement will be FMS administered direct commercial sales
- (U) SOUTH KOREA (KS-D-YGP) Case signed 13 March 1997
\$48.0M PURPOSE: 100 AMRAAMs (Lot XII). 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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AMRAAM (AIM-120), December 31, 1997

11c. ~~(S)~~ 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: 103 AMRAAMs (Lots X,XII) and support. Missile procurement will be FMS administered direct commercial sales
- (U) TURKEY (TK-D-YDU) Case signed 1 December 1994
\$33.2M PURPOSE: 80 AMRAAMs (Lot X) and support
- (U) TURKEY (TK-D-YDV) Case signed 24 November 1997
\$58.5M PURPOSE: 138 AMRAAMs (Lot XII) and support
- (U) SOUTH KOREA (KS-D-YGL) Case signed 24 October 1991
\$70.5M PURPOSE: 96 AMRAAMs (Lot VII), 560 MRLs and support
- (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) UNITED KINGDOM (UK-D-YDR) Case signed 13 March 1992
\$104.9M PURPOSE: 210 AMRAAMs (Lots VII,VIII) and support
- (U) NATO EUROPEAN FIGHTER MANAGEMENT AGENCY (NEFMA) (M1-D-YAA)
Case signed 5 November 1991
\$9.0M PURPOSE: 6 AMRAAMs (Lot VII)
- (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) SOUTH KOREA (KS-D-YGN) Case signed 27 December 1993
\$133.3M PURPOSE: 190 AMRAAMs (Lot IX) and support

(b)(1)

- (U) TURKEY (TK-D-YDT) Case signed 25 October 1993
\$22.6M PURPOSE: 60 AMRAAMs (Lot IX)

d. Nuclear Costs -- None.

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AMRAAM (AIM-120), December 31, 1997

12. (U) Unit Cost Summary:

	UCR Baseline (Sep 96 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BYS)	12302.9	10235.3	
(2) Quantity	13038	10917	
(3) Unit Cost	0.944	0.938	-0.64
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BYS)	10205.7	8102.2	
(2) Quantity	13038	10917	
(3) Unit Cost	0.783	0.742	-5.24

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	-30.3	-316.3	-	-346.6
Quantity	-	-2977.1	-	-2977.1
Schedule	-18.3	+1750.1	-	+1731.8
Engineering	+440.0	+86.4	-	+526.4
Estimating	+136.1	-1123.1	-	-987.0
Other	-	-	-	-
Support	-	-11.6	-	-11.6
Subtotal	+527.5	-2591.6	-	-2064.1
Current Changes:				
Economic	-12.3	+21.6	-	+9.3
Quantity	-	-	-	-
Schedule	+11.0	-	-	+11.0
Engineering	-	+21.0	-	+21.0
Estimating	-24.8	-650.4	-	-675.2
Other	-	-	-	-
Support	-	-28.6	-	-28.6
Subtotal	-26.1	-636.4	-	-662.5
Total Changes	+501.4	-3228.0	-	-2726.6
Current Estimate	1852.0	8533.8	-	10385.8

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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	-	-1965.1	-	-1965.1
Schedule	-16.8	+791.9	-	+775.1
Engineering	+357.2	+56.7	-	+413.9
Estimating	+80.3	-858.4	-	-778.1
Other	-	-	-	-
Support	-	-45.6	-	-45.6
Subtotal	+420.7	-2020.5	-	-1599.8
Current Changes:				
Quantity	-	-	-	-
Schedule	+6.7	-	-	+8.7
Engineering	-	+18.0	-	+18.0
Estimating	-22.0	-428.9	-	-450.9
Other	-	-	-	-
Support	-	-18.9	-	-18.9
Subtotal	-13.3	-429.8	-	-443.1
Total Changes	+407.4	-2450.3	-	-2042.9
Current Estimate	2133.1	8102.2	-	10235.3

(U) Note: In the procurement category for current changes a schedule change was calculated for the Navy of -6.7 in then year dollars, the Air Force calculated schedule change was +6.7 in then year dollars, when added together the net effect was zero.

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

ECONOMIC

Revised escalation indices. (Economic)	N/A	-12.2
Economic adjustment for negative program change. (Economic)	N/A	-0.1

ESTIMATING

Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.7
--	------	------

Increased cost at Naval Air Warfare Centers military and civilian pay (Estimating)	+0.5	+0.5
--	------	------

Omnibus / below threshold reprogramming (Estimating)	-13.2	-14.9
--	-------	-------

Congressional General Reductions (Estimating)	-9.9	-11.1
---	------	-------

	0.0	0.0
--	-----	-----

SCHEDULE	0.0	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>
Rephasing of the P3I program due to budget cuts (Schedule)	+8.7	+11.0
RDT&E Subtotal	-13.3	-26.1

(2) Procurement

ECONOMIC		
Revised escalation indices. (Economic)	N/A	-80.7
Economic adjustment for negative program change. (Economic)	N/A	+102.3
ENGINEERING		
Processor Modernization (Engineering)	+18.0	+21.0
ESTIMATING		
Adjustment for Current and Prior Inflation. (Estimating)	+5.0	+5.5
Decrease in cost due to increase in FMS quantities FY04-FY07 (Estimating)	-186.1	-249.8
Reductions due to various Acquisition Reform activities (AR) (Estimating)	-245.7	-309.8
Internal Navy below threshold reprogramming (Estimating)	-0.4	-0.5
Adjustment for prior year actuals (Estimating)	-10.6	-11.9
Adjustment to P3I Implementation due to a delay in the Phase 3 start (Estimating)	+8.9	+11.2
Estimating adjustment due to negative program change (Estimating)	N/A	-95.1
SUPPORT		
Adjustment for Current and Prior Inflation. (Support)	+0.9	+0.9
Decrease in Initial Spares requirements (Support)	-0.6	-0.9
Decrease due to change from an organic support depot to contractor support. (Support)	-19.2	-28.6
Procurement Subtotal	-429.8	-636.4

AR = Acquisition Reform related changes.

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AMRAAM (AIM-120), December 31, 1997

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 Init 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	-0.15	--	--	+0.10	0.95

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

Initial SAR Baseline to Current SAR Baseline

PUC Init 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

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	-0.16	--	--	+0.02	0.78

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	10385.8
Total Quantity	N/A	24335	15450	10917
Prog Acq Unit Cost	N/A	0.48	0.85	0.95

(U) The SAR Development Estimate data is for the Air Force only and does not

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

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		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$89.6	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>
\$113.9	N/A	0	\$97.8	\$99.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.0	\$-5.4
Cumulative Variances To Date (11/21/97)	\$-0.2	\$-1.2
Net Change	\$2.8	\$4.2

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:

The negative cost and schedule variances are primarily due to software complexities, test challenges, and the restructure of the contract.

This contract is being restructured as a result of budget reductions in FY97 and FY98. Work is progressing in relation to the descope program. New cost reports will be available in May 1998.

b. Procurement --

(U) HUGHES LYTS VII/VIII:

HUGHES AIRCRAFT COMPANY, TUCSON AZ
 F08626-93-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			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$616.2	N/A	1362	\$616.2	\$616.2

Explanation of Change:

(U) This contract will not be reported again, contract deliveries are over 90%

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

complete.

The net change in current target price from initial contract target price is due to the addition of contract modifications and exercising the Lot VIII option.

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

(U) RAYTHEON LOTS VII/VIII:
RAYTHEON COMPANY, BEDFORD, MA
F08626-93-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>
\$550.3	N/A	1383

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$550.3	\$550.3

Explanation of Change:

(U) This contract will not be reported again, contract deliveries are over 90% complete.

The net change in current target price from initial contract target price is due to the addition of contract modifications and exercising the Lot VIII option.

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

(U) HUGHES LOTS IX/X:
HUGHES AIRCRAFT COMPANY, TUCSON AZ
F08626-94-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		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$366.7	N/A	1161

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$366.7	\$366.7

Explanation of Change:

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

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

(U) <u>RAYTHEON LOTS IX/X:</u> RAYTHEON COMPANY, BEDFORD, MA F08626-94-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>
\$306.5	N/A	1268	\$306.5	\$306.5

Explanation of Change:

(U) 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.

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

(U) <u>HUGHES LOTS XI/XII:</u> HUGHES AIRCRAFT COMPANY, TUCSON AZ F08626-97-C-0001, FFP Award: January 28, 1997 Definitized: January 28, 1997	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$134.3	N/A	439

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$135.6	N/A	439	\$135.6	\$135.6

Explanation of Change:

None.

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

(U) Contract Comments:

(U) This is the first time this contract has been reported in the SAR.

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

(U) RAYTHEON LOTS XI/XII:
 RAYTHEON SYSTEMS COMPANY, BEDFORD MA
 F08626-97-C-0002, FFP
 Award: January 28, 1997
 Definitized: January 28, 1997

Initial Contract Price		
Target	Ceiling	Qty
\$124.3	N/A	390

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$124.9	N/A	390	\$124.9	\$124.9

Explanation of Change:

None.

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

(U) Contract Comments:

(U) This is the first time this contract has been reported in the 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> (FY77-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-07)	<u>Total</u>
RDT&E	1441.0	45.6	50.0	315.4	1852.0
Procurement	6717.9	160.7	180.6	1474.6	8533.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	8158.9	206.3	230.6	1790.0	10385.8

b. Annual Summary -- AMRAAM (AIM-120)

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 \$
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

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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 \$
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				5.0	5.7
1999				4.2	4.9
2000				3.9	4.6
2001				3.7	4.4
2002				3.6	4.4
2003				3.6	4.5
Subtotal				258.1	201.1

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

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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 \$
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				8.6	9.7
1998				35.0	39.9
1999				39.0	45.1
2000				40.2	47.3
2001				34.9	41.8
2002				30.4	37.0
2003				22.5	27.9
2004				27.0	34.3
2005				27.2	35.3
2006				27.5	36.4
2007				27.7	37.5
Subtotal				1875.0	1650.9

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	98.5	105.1
1994	75	19.8	24.4	52.2	56.8
1995	106	22.4	36.6	68.1	75.0
1996	115	25.6	31.2	65.9	73.7
1997	100	14.4	26.4	46.1	52.5
1998	120	9.3	31.1	48.1	55.6
1999	115	16.5	30.2	53.8	63.3
2000	115	18.7	29.5	52.1	62.3
2001	100	15.0	25.3	46.6	56.7
2002	150	17.8	42.1	65.8	81.7
2003	125	14.7	34.7	56.0	70.9
2004	132	15.1	36.2	57.7	74.7
2005	132	12.7	35.8	54.2	71.7
2006	133	10.8	35.8	51.7	70.0
2007	134	9.4	36.1	82.1	113.5

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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 \$
Subtotal	2419	347.0	906.1	1454.8	1656.2

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	556.0	593.3
1994	983	74.9	318.6	410.4	446.9
1995	412	68.8	111.6	209.4	230.5
1996	291	19.5	129.9	160.7	179.7
1997	133	9.6	82.0	98.9	112.6
1998	173	12.1	76.5	90.8	105.1
1999	180	20.0	75.7	99.7	117.3
2000	230	14.4	73.2	91.9	109.9
2001	230	12.4	71.7	88.4	107.7
2002	230	23.1	77.7	105.0	130.3
2003	230	17.1	77.9	99.4	125.9
2004	230		76.9	80.2	103.8
2005	230		76.6	79.5	105.3
2006	230		76.0	79.2	107.1
2007	159		57.1	60.1	83.1
Subtotal	8498	1554.2	4845.4	6647.4	6877.6

(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 1998.

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	2419	347.0	906.1	1712.9	1857.3
USAF	8498	1554.2	4845.4	8522.4	8528.5
Grand Total	10917	1901.2	5751.5	10235.3	10385.8

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDTEE	0	0
Procurement	6872	6881

(U) Percent Total Program Quantities Delivered: 63.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 7693.1

(U) Percent Total Program Expended: 74.1%

(U) Hughes is ahead of scheduled deliveries by 47 missiles, and Raytheon is 38 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 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 will be returned to the contractor 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, 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 1997.

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

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	1.9	N/A
Unit Level Consumption	12.1	0.0
Intermediate Maintenance	0.3	0.0
Depot Maintenance	9.6	0.0
Contractor Support	0.3	0.0
Sustaining Support	10.5	0.0
Indirect Costs	0.1	0.0
Total	34.8	0.0

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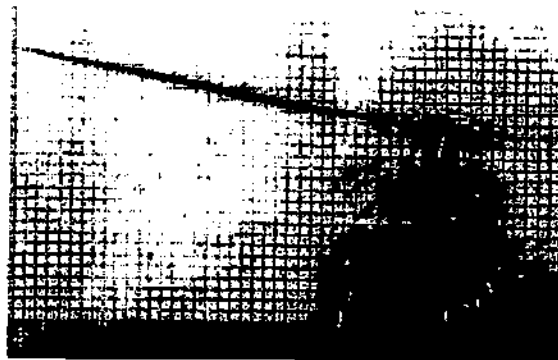
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SH-60R

AS OF DATE: December 31, 1997

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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 Program CAPT Larrie Cable
(PMA-299) 47123 Buse Rd
Unit IPT, Suite 156
Patuxent River, MD 20670-1547
Assigned: May 25, 1995
DSN 757-5409; COMM 301-757-5409
cablelg.ntrprs@navair.navy.mil
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0604212N Project H0485, H1707
PROCUREMENT:
(U) APPN 1506 ICN 018200 (Navy)

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98-02157
MAR 25 1998
Office of the Chief of
Naval Operations
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5. (U) References:

SAR Baseline (Development Estimate):

(U) FY 1996/1997 President's Budget
ASN, RDA Acquisition Decision Memorandum dated August 1993.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated May 9, 1997.

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. DT-IIA testing commenced with system baseline testing in November of 1995. ALFS completed DT-IIA Phase II Flight Testing in September of 1997. Preliminary data analysis indicated successful demonstration of ALFS performance requirements. Flight testing has uncovered issues regarding the reliability of Weapon Replaceable Assemblies (WRA) and compliance with system specifications. Corrective action plans have been identified to resolve reliability and performance issues during FY98 to support SH-60R FY99 DT/OT test schedule. Hughes Aircraft Company was acquired by Raytheon in January 1998.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	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	MAR 99	MAR 99	
LRIP Contract Award	NOV 98	NOV 99	JAN 00	(Ch-1)
LRIP First Delivery	JUL 00	JUL 01	JUL 01	
TECHEVAL				
Start	JAN 00	MAR 01	MAR 01	
Complete	JUN 00	MAR 02	MAR 02	
OPEVAL				
Start	SEP 00	MAR 01	MAR 01	
Complete	MAR 01	MAR 02	MAR 02	
Milestone III	OCT 01	OCT 02	OCT 02	
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	
TECHEVAL				
Start	FEB 98	MAR 01	MAR 01	
Complete	JUN 98	MAR 02	MAR 02	
OPEVAL				
Start	JUL 98	MAR 01	MAR 01	
Complete	SEP 98	MAR 02	MAR 02	
Milestone III	JAN 99	OCT 02	OCT 02	
Production Contract Award	MAR 99	JAN 03	JAN 03	

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

	Development Estimate (SAR) MAR 01	Approved Program (APB) MAR 02	Current Estimate SEP 02
Initial Operating Capability			

b. Current Change Explanations --

(U) Ch-1: As of December 1997, the program had been assessed a \$5M undistributed reduction (Congressional and Other). As a result, the Current Estimate for LRIP Contract Award has slipped two months from November 1999 to January 2000. This does not breach the May 2000 threshold. Since December 1997, an additional \$2M was reduced from the FY98 budget (inflation adjustment and additional undistributeds). Program Manager is currently assessing the impact of this additional funding loss and working to obtain funds restoral.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR) 5	Approved Program (APB) Obj/Threshold 5 / 5	Demon- strated Perf TBD	Current Estimate 5
Maximum Operating Sea State				

Mission Duration (ASW) (hrs)	5	3.3	3.3 / 2.3	TBD	2.3
Mission Duration (ASUW) (hrs)	5	3.5	3.5 / 3.0	TBD	3.0

Multi-Mode Radar
Range to Detect a
10000 Sq Meter
Target
Range to Detect a
0.5 Sq Meter
Target
Using ISAR Classify
a Surface Combatant
at a percentage
of the Target's
Maximum Detectable
Range
Electronic Support
Measures
Detectable Frequency
Bandwidth (GHz)
Ability to Detect a
Threat Emitter X
times Detection
Range of the Threat
Radar

(b)(1)

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10a. (U) 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>
Reliability and Maintainability				
MFHBCF (ASW) (hrs)	35.7	35.7 / 14.8	TBD	14.8
MFHBCF (ASUW) (hrs)	43.9	43.9 / 21.8	TBD	21.8
Acoustic System	(b)(1)			
Sonobuoys: Maximum AOU with a 75% Probability of Detection for a Nuclear Subsurface Target (sqnm)	(b)(1)			
ALFS: Maximum AOU with a 90% Probability of Detection for a Subsurface Target (sqnm)	(b)(1)			
Airborne Low Frequency Sonar				
Operating Frequency (Khz)				
Maximum System Weight				
Source Level (db)	(b)(1)			
Minimum Long Pulse Length (sec) (minimum duty cycle 6.7%)				
Reeling Machine MCBCF (cycles)	1000	1000 / 150	TBD	150
Avionics MTBMCf (hrs) (excluding cable and reeling machine)	78	78 / 53	TBD	53
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

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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 --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	508.4	814.2	834.3
Procurement	3512.1	3512.1	3515.4
Airframe/CFE	(2119.0)		(1980.3)
GFE	(435.7)		(499.7)
Nonrecurring flyaway	(150.6)		(20.5)
Total Flyaway	(2705.3)		(2500.5)
Pubs	(40.0)		(84.4)
Weapon System	(5.6)		(5.9)
Field Activities	(165.5)		(62.2)
ILS/LSA/MES	(79.2)		(60.4)
			(0.0)
Total Other Wpn Sys	(290.3)		(212.9)
Peculiar Support	(238.9)		(559.9)
Initial Spares	(277.6)		(242.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 93 Base-Year \$	4020.5	4326.3	4349.7
Escalation	1615.9	1651.7	1060.9
Development (RDT&E)	(40.3)	(76.1)	(67.4)
Procurement	(1575.6)	(1575.6)	(993.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5636.4	5978.0	5410.6

b. (U) Quantity --

Development (RDT&E)	0	4	3
Procurement	188	184	185
Total	188	188	188

Note: Excludes 2 RDT&E prototypes from the SAR Baseline and from the Current Estimate that are not considered fully configured.

(U) The total LRIP quantity of 52 (3 RDT&E, 49 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. Note: LRIP quantity changed from 53 to 52 due to the reduction of 1 RDT&E test article (from 4 to 3).

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

c. (U) Foreign Military Sales --

None.

d. (U) Nuclear Costs --

None.

12. (U) Unit Cost Summary:

	UCR Baseline (MAY 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 93 BY\$)	4326.3	4349.7	
(2) Quantity	188	188	
(3) Unit Cost	23.012	23.137	+0.54
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 93 BY\$)	3512.1	3515.4	
(2) Quantity	184	185	
(3) Unit Cost	19.087	19.002	-0.45

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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	-8.2	-424.1	-	-432.3
Quantity	+190.9	-181.4	-	+9.5
Schedule	-	-145.4	-	-145.4
Engineering	+5.0	+84.4	-	+89.4
Estimating	+83.7	+372.2	-	+455.9
Other	-	-	-	-
Support	+70.2	-50.3	-	+19.9
Subtotal	+341.6	-344.6	-	-3.0
Current Changes:				
Economic	-9.9	-131.2	-	-141.1
Quantity	-19.7	+19.1	-	-0.6
Schedule	-	-0.7	-	-0.7
Engineering	+35.0	-604.0	-	-569.0
Estimating	+6.0	+131.6	-	+137.6
Other	-	-	-	-
Support	-	+351.0	-	+351.0
Subtotal	+11.4	-234.2	-	-222.8
Total Changes	+353.0	-578.8	-	-225.8
Current Estimate	901.7	4508.9	-	5410.6

(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	+166.0	-155.3	-	+10.7
Schedule	-	-117.2	-	-117.2
Engineering	+4.5	+58.8	-	+63.3
Estimating	+74.9	+298.5	-	+373.4
Other	-	-	-	-
Support	+60.4	-46.0	-	+14.4
Subtotal	+305.8	+38.8	-	+344.6
Current Changes:				
Quantity	-16.8	+13.6	-	-3.2
Schedule	-	-0.5	-	-0.5
Engineering	+31.7	-413.3	-	-381.6
Estimating	+5.2	+110.6	-	+115.8
Other	-	-	-	-
Support	-	+254.1	-	+254.1
Subtotal	+20.1	-35.5	-	-15.4
Total Changes	+325.9	+3.3	-	+329.2
Current Estimate	834.3	3515.4	-	4349.7

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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	-10.5
Economic adjustment for negative program change. (Economic)	N/A	+0.6
Quantity variance associated with decrease of 1 test article. (Quantity)	-16.8	-19.7
Increase for Parametric Airborne Dipping Sonar. (Engineering)	+4.6	+5.0
Increase for Air Interoperability Center. (Engineering)	+4.6	+5.0
Increase for Common Cockpit. (Engineering)	+22.5	+25.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.6	+1.7
Net of Navy Working Capital Fund, Small Business Innovative Research, Undistributed Reductions, Rounding. (Estimating)	+3.6	+4.3
RDT&E Subtotal	+20.1	+11.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-205.6
Economic adjustment for negative program change. (Economic)	N/A	+74.4
Total Quantity variance associated with increase of 1 Aircraft.	+14.7	+20.6
Quantity increase of 1 Aircraft. (Quantity)	+13.6	+19.1
Allocation to Schedule variance resulting from Quantity Change. (Schedule)	-0.5	-0.7
Allocation to Engineering variance resulting from Quantity Change. (Engineering)	+0.3	+0.4
Allocation to Estimating variance resulting from Quantity Change. (Estimating)	+1.4	+1.8
Net of airframe related changes to incorporate new cabin and delete SLEP/SDLM engineering change proposal. (Engineering)	-141.7	-208.1
Net of avionics related adjustments associated with incorporation of Common Cockpit. (Engineering)	-271.9	-396.3
Revised Estimating Procedures for SEPM and revised Labor estimates (Estimating)	+109.2	+129.8
Increase due to refinement of estimates and inclusion of new dynamic component spares. (Support)	+65.8	+87.7

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

b. (U) Current Change Explanations --

(Dollars in Millions)

Refinement of estimates for all support
element categories. (Support)

Base-Year	Then-Year
+188.3	+263.3

Procurement Subtotal

-35.5	-234.2
-------	--------

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	
29.98	-3.05	+0.05	-0.78	-2.55	+3.16	--	+1.97	-1.20	28.78

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	-3.00	-0.44	-0.79	-2.81	+2.72	--	+1.63	-2.69	24.37

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	SEP 02
Total Cost	N/A	5636.4	N/A	5410.6
Total Quantity	N/A	188	N/A	188
Prog Acq Unit Cost	N/A	29.98	N/A	28.78

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

a. RDT&E --		Initial Contract Price		
(U) <u>Development (Block II):</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Martin, Owego, NY				
N00019-93-C-0196, CPFF		\$242.0	N/A	2
Award: August 23, 1993				
Definitized: December 22, 1994				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$266.5	N/A	2	\$299.0	\$307.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-16.3	\$-4.4
Cumulative Variances To Date (11/03/97)	\$-16.0	\$-4.0
Net Change	\$0.3	\$0.4

Explanation of Change:

(U) 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.

(U) Contract Comments:

Contract N00019-92-C-0001 is over 94% complete and is no longer being 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> (FY90-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-11)	<u>Total</u>
RDT&E	426.4	92.8	215.5	167.0	901.7
Procurement	-	-	-	4508.9	4508.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	426.4	92.8	215.5	4675.9	5410.6

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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				60.8	65.2
1997				50.7	55.2
1998				84.0	92.8
1999				192.0	215.5
2000				105.5	120.4
2001				27.3	31.7
2002				6.9	8.1
2003				5.6	6.8
Subtotal	3			834.3	901.7

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	3.7	234.7	308.0	358.0
2001	15	16.9	232.9	325.3	384.9
2002	19		290.5	369.7	446.0
2003	21		305.7	394.6	486.1
2004	20		248.5	336.2	423.3
2005	20		245.7	333.4	429.0
2006	20		244.6	332.6	437.3
2007	20		243.2	331.0	444.8
2008	20		242.8	330.4	453.8
2009	15		191.1	278.8	391.3
2010				87.7	125.8
2011				87.7	128.6
Subtotal	185	20.6	2479.9	3515.4	4508.9

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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	20.6	2479.9	4349.7	5410.6

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): \$ 429.8

(U) Percent Total Program Expended: 7.9%

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	N/A
Depot Maintenance	3.1	2.3
Contractor Support	N/A	N/A
Sustaining Support	1.6	0.8
Indirect Costs	0.5	0.2
Total	23.2	11.0

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DoD-2 JSF

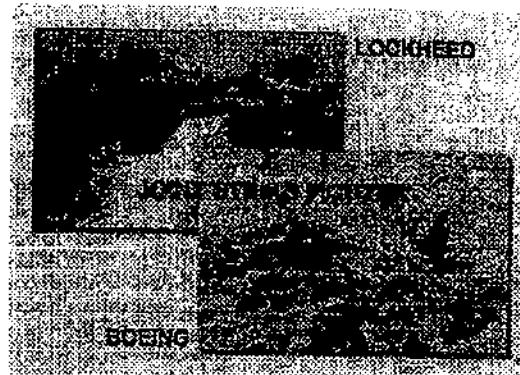
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: Joint Strike Fighter

AS OF DATE: December 31, 1997

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1. Designation and Nomenclature (Popular Name): JSF

2. DoD Component: OSD

Joint Participants:

USAF, USN, USMC, DARPA, United Kingdom, Norway, Denmark, The Netherlands, and Canada

3. Responsible Office and Telephone Number:

Joint Strike Fighter Program Office	BGen Leslie Kenne
1745 Jefferson Davis Hwy	Assigned: August 1, 1997
Suite 307	DSN 332-7638; COMM (703) 602-7638
Arlington, VA 22202-3402	kennelf@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 Navy.

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603800E
PE 0603800F
PE 0603800N
PE 0604800F
PE 0604800N

The United Kingdom, The Netherlands, Denmark, Norway, and Canada are contributing funding for current JSF development efforts under the terms of formal agreements. Foreign participation in the Engineering and

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98-00129
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98-00083

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

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 multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F. The Air Force variant will be a multi-role 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 multi-role 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 Strike Fighter Program, originally named Joint Advanced Strike Technology (JAST) Program, as an outcome of the 1993 Secretary of Defense 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. The United Kingdom became a 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.

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7. Executive Summary (Cont'd):

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. In addition to JSF development activities, requirements definition based on Cost and Operational Performance Trades (COPT) and technology maturation demonstrations continue in this phase. Both COPT and technology maturation demonstrations are essential to achieving JSF affordability goals and lowering risk prior to E&MD entry in 2001. General Electric is continuing technical efforts related to development of an alternate engine source for production.

The alternate engine program is funded through the current FYDP, which ends in FY 2003. The Navy and Air Force are committed to funding the program in the outyears as well. The Department is currently structuring its options for implementing an alternate engine program beyond FY 2003. Outyear funding for the alternate engine program will be included in the December 1998 Selected Acquisition Report.

In 1997 Denmark, Norway and the Netherlands signed agreements to join the program with a focus on requirements validation. Canada also formally joined the program, focusing on preferred weapon system concepts. The program completed key technical baseline and design reviews with Boeing, Lockheed Martin, Pratt and Whitney, and General Electric. Numerous technology maturation demonstration efforts also continued during 1997. The Services completed their second iteration of the JIRD based on the results of supporting JSF Cost and Operational Performance trades. The program is proceeding on schedule and on cost at this time. Funding stability is essential for the remainder of the program. Three technology efforts were cancelled to pay for general reductions taken across RDT&E programs. Further funding reductions are likely to result in program slip since contracts are executing, aircraft are being built, technology efforts are more than 50% complete and little reserve exists to accommodate program reductions.

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."

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 --

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Jt Init Rqmts Document (JIRD) 1 Desired Operational Characteristics				
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	2X (Ch-1) 2000# class A-G, 2X AIM-120, Design space for 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	2X 1000 # class A-G, 2X 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	2X 2000# class A-G, 2X AIM-120
Speed & Maneuverability	compa- rable to F-16 / F/A-18	Compa- / N/A 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):

	<u>Planning Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
	Yes	Yes / N/A	TBD	Yes
Integration of Offboard Sensors and Data Fusion Signature Reduction /Low Observables Logistic Footprint	Yes	Yes / N/A	TBD	Yes
	5-8 C-141B equiva- lent loads	5-8 C-141B equiva- lent loads /	TBD	no (Ch-2) more than 4 C-17 equiva- lent loads (8x C-141B)
Sortie Generation Rate - CTOL Variant	3-4/day sus- tained; 4-5/day surge	3-4/day / N/A sus- / tained; / 4-5/day / surge /	TBD	3/day sus- tained; 4/day surge
Sortie Generation Rate - CV Variant	3/day sus- tained; 4/day surge	3/day / N/A sus- / tained; / 4/day / surge /	TBD	3/day (Ch-3) sus- tained; 4/day surge
Sortie Generation Rate - STOVL Variant	4/day sus- tained; 6/day surge	4/day / N/A sus- / tained; / 6/day / surge /	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-38M(Ch-4)
Unit Flyaway Cost - STOVL Variant	\$30-35M	\$30-35M / N/A	TBD	\$30M-35M(Ch-5)

□

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

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10a. Performance Characteristics (Cont'd):

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.

b. Current Change Explanations --

□ Changes in Current Estimate based on the Services' Joint Interim Requirements Document II (September 1997):

(Ch-1) Internal Weapons Carriage (CTOL variant): changed from "2X 1000# class A-G, 2x AIM-120, Internal Gun" to "2X 2000# class A-G, 2X AIM-120, Design space for advanced internal gun"

(Ch-2) Logistic Footprint: changed from "5-8 C-141B equivalent loads" to "no more than 4 C-17 equivalent loads (8X C-141B)"

(Ch-3) Sortie Generation Rate (CTOL variant): changed from "3-4 day sustained; 4-5/day surge" to "3/day sustained; 4/day surge"

Current Estimates of flyaway cost have been changed to reflect JIRD ranges. Point estimates are premature at this time due to the continued evolution of aircraft requirements and design based on cost and operational performance trades:

(Ch-4) Unit Flyaway Cost (CV variant): changed from "\$31M" to "\$31-38M"

(Ch-5) Unit Flyaway Cost (STOVL variant): changed from "\$30M" to "\$30-35M"

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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)	19000.0	19000.0	18860.3
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 94 Base-Year \$	19000.0	19000.0	18860.3
Escalation	5800.0	5800.0	3468.7
Development (RDT&E)	(5800.0)	(5800.0)	(3468.7)
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 \$	24800.0	24800.0	22329.0
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.

12. Unit Cost Summary:

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

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	24800.0	-	-	24800.0
Previous Changes:				
Economic	-1230.4	-	-	-1230.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-403.7	-	-	-403.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1634.1	-	-	-1634.1
Current Changes:				
Economic	-745.7	-	-	-745.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-91.2	-	-	-91.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-836.9	-	-	-836.9
Total Changes	-2471.0	-	-	-2471.0
Current Estimate	22329.0	-	-	22329.0

Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	19000.0	-	-	19000.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-139.6	-	-	-139.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-139.6	-	-	-139.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.1	-	-	-0.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.1	-	-	-0.1
Total Changes	-139.7	-	-	-139.7
Current Estimate	18860.3	-	-	18860.3

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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	-829.6
Adjustment for current and prior escalation (Estimating)	0.0	+20.9
Refinement of phasing of Service funding (Estimating)	-0.1	-112.1
Economic adjustment for negative program change (Economic)	N/A	+83.9
RDT&E Subtotal	-0.1	-836.9

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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

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

a. RDT&E --			Initial Contract Price		
<u>Propulsion CDP:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Pratt and Whitney, West Palm Beach FL			\$832.0	\$	
N00019-97-C-0050, CPAF					
Award: January 23, 1997					
Definitized: January 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>	
\$	\$		\$	\$	

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

Explanation of Change:

Further contract data is not provided here due to the competitive nature of the contract. Data is available from the Program Office on request.

<u>Weapon System CDP:</u>			Initial Contract Price		
Lockheed Martin Corp., Ft. Worth TX			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-97-C-0038, CPFF			\$718.8	\$	
Award: November 16, 1996					
Definitized: November 16, 1996					

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

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

Explanation of Change:

Further contract data is not provided here due to the competitive nature of the contract. Data is available from the Program Office on request.

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15. Contract Information (Cont'd):

<u>Weapon System CDP:</u>			<u>Initial Contract Price</u>		
<u>Boeing Defense and Space, Seattle WA</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-97-C-0037, CPFF	\$661.8	\$			
Award: November 16, 1996					
Definitized: November 16, 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>	
\$	\$		\$	\$	

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

Explanation of Change:

Further contract data is not provided here due to the competitive nature of the contract. Data is available from the Program Office on request.

<u>Alternate Engine:</u>			<u>Initial Contract Price</u>		
<u>General Electric, Cincinnati, OH</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-96-C-0176, CPFF	\$96.0	\$			
Award: February 13, 1997					
Definitized: February 13, 1997					

<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>	
\$	\$		\$	\$	

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

Explanation of Change:

Further contract data is not provided here due to the competitive nature of the contract. Data is available from the Program Office on request.

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15. Contract Information (Cont'd):

<u>J/IST:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
McDonnell Douglas Corp., St. Louis MO			\$64.8	\$	
F33615-95-K-3801, CPFF					
Award: September 22, 1995					
Definitized: September 22, 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>	
\$64.8	\$		\$64.8	\$67.2	
<u>Previous Cumulative Variances</u>			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/31/97)			\$-0.4	\$-0.5	
Net Change			\$-1.0	\$0.4	
			\$-0.6	\$0.9	

Explanation of Change:

Variances are not significant. Variances and Program Manager's Estimate at Completion are expected to improve based on recent management actions.

<u>MIRFS:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Hughes Aircraft Company, Los Angeles CA			\$54.6	\$	
N00019-96-C-0074, CPFF					
Award: February 12, 1996					
Definitized: February 12, 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>	
\$54.6	\$		\$54.6	\$54.6	
<u>Previous Cumulative Variances</u>			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/26/97)			\$0.8	\$0.0	
Net Change			\$1.2	\$-0.4	
			\$0.4	\$-0.4	

Explanation of Change:

Variance is 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 (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	1052.4	982.2	964.1	19330.3	22329.0
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1052.4	982.2	964.1	19330.3	22329.0

b. Annual Summary -- JSF

Appropriation: 0400 RDT&E, Defense Agencies

<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>
1996				27.5	28.9
1997				65.8	70.3
1998				21.2	23.0
Subtotal				114.5	122.2

Appropriation: 1319 Research, Development, Test + Eval, 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				28.6	29.5
1995				95.2	98.3
1996				76.5	80.4
1997				227.8	243.3
1998				415.0	449.7
1999				421.1	463.4
2000				219.0	245.0
2001				501.4	570.5
2002				1174.7	1360.1
2003				1571.1	1854.4
2004				1545.9	1864.8
2005				1309.8	1614.7
2006				752.0	947.4
2007				409.4	527.2
2008				79.4	104.5
Subtotal				8826.9	10453.2

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Joint Strike Fighter, December 31, 1997

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

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				77.4	81.3
1997				235.6	251.6
1998				399.0	432.3
1999				414.5	456.1
2000				214.2	239.6
2001				500.7	569.8
2002				1174.8	1360.2
2003				1571.1	1854.4
2004				1545.9	1864.8
2005				1309.9	1614.8
2006				750.3	945.3
2007				410.5	528.5
2008				78.0	102.7
Subtotal				8763.0	10385.2

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				66.5	71.0
1998				71.3	77.2
1999				40.5	44.6
2000				30.1	33.7
2001				59.6	67.8
2002				141.0	163.2
2003				188.5	222.5
2004				196.1	236.5
2005				167.7	206.8
2006				103.9	130.9
2007				59.7	76.9
2008				17.7	23.3
Subtotal				1155.9	1368.4

(1) "Other RDT&E Funding" reflects current and anticipated foreign funding.

(2) Service appropriation data includes funding for the alternate engine program through FY 2003, the end of the current FYDP. USN and USAF intend to program outyear funding as well to support production availability of an

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Joint Strike Fighter, December 31, 1997

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

alternate engine source.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				114.5	122.2
Navy				8826.9	10453.2
USAF				8763.0	10385.2
Other Funding				1155.9	1368.4
Grand Total				18860.3	22329.0

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): \$ 1067.8

Percent Total Program Expended: 4.8%

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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AF-9 DMSP

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

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): DMSP Block 5D-2 Improved/5D-3/Defense Meteorological Satellite Program
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:
DMSP Office Col Norton B. James III
SMC/CI Assigned: December 4, 1995
2420 Vela Way Suite 1467-AB DSN 833-4333; COMM (310) 336-4333
El Segundo, CA 90245-4659
4. (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

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

SAF/PAS

98-0261

CONGRESSIONAL

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~~Declassify on: OADR~~

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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) AFAE Approved Acquisition Program Baseline (APB) dated February 5, 1998.

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 December 15, 1976. DMSP is a continuing program to support requirements of special strategic missions, the Joint-Service mission, and the Joint Chiefs of Staff. On December 19, 1995, 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 January 1996, Lockheed-Martin announced the calendar year 1998 plant closure at East Windsor, New Jersey. In March 1996, 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 April 1992. Spacecraft S16 delivery slipped from August 31, 1996 (contract date) to December 20, 1996 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 September 30, 1996. Current year funds have replaced cancelled funds. Spacecraft S17 and S18 were delivered in May 1997 and

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

December 1997, respectively. Settlement of the Aerojet claim which was filed with the Armed Services Board of Contract Appeals (ASBCA) was negotiated on April 25, 1997. Under terms of the \$57M settlement, this is now a firm fixed price contract. The contract is jointly funded by Air Force and Navy with FY88-91 funds. Funding of the settlement and replacement of cancelled FY88/89 Navy funds was completed in December 1997. Flight Unit 1, which experienced numerous technical and schedule setbacks due to component failures, was delivered in October 1997.

A launch call for DMSP S14, the final 5D-2 Improved satellite, was issued by the 14th Air Force in November 1996; the satellite was successfully launched on April 4, 1997.

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 January 1996. On June 1, 1996, installation of the first Joint Task Force Satellite Terminal (JTFST) at Yongsan, Korea was completed. Additional units have been delivered to Keesler AFB, Saudi Arabia and other units in Southwest Asia. Additional units have been delivered worldwide (both Air force and Army weather units). The Air Weather Service (AWS) fielding decision for STTs was made on December 18, 1996. The Space and Missile Systems Center Commander signed a Justification Review Document (JRD) for additional STT systems on December 26, 1996; six additional JTFST units were procured in May 1997. Technological Improvements were implemented to make the system smaller and lighter. A total of 40 of these "Lightweight" systems will be purchased and supplied to field units that have quick reaction mobility requirements.

On December 12, 1996, DMSP was declared unexecutable by the Air Force Acquisition Executive (AFAE) due to insufficient program funding in FY98-03; these shortfalls were substantially resolved in the FY99 budget cycle, returning the program to an executable status. Unresolved shortfalls in FY99 and continuing erosion of the budget will place executability at risk during that year.

The DMSP program has currently delivered eight of the 10 satellites. The final two satellites will be delivered in April 1998(90% delivery) and September 1998(100% delivery).

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	SEP 87	MAY 89	AUG 89
Center (FSOC) Operational			
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

(b)(1)

(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. Current Change Explanations --
(U) 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)	224.5	266.7	266.7
Procurement	491.6	616.9	642.8
Launch Vehicle	(26.0)		(7.2)
Spacecraft	(201.3)		(268.5)
Primary Sensor	(79.6)		(103.6)
Mission Sensors	(57.1)		(93.1)
Support	(48.9)		(79.7)
Total Flyaway	(412.9)		(552.1)
Ground System	(58.0)		(77.3)
Field Level Support	(19.8)		(0.0)
Total Other Wpn Sys	(77.8)		(77.3)
Peculiar Support	(0.0)		
Initial Spares	(0.9)		(13.4)
Construction (MILCON)	2.6	3.0	2.7
Acquisition O&M	0.0	0.0	0.0
Total FY 75 Base-Year \$	718.7	886.6	912.2
Escalation	1160.3	1484.2	1527.1
Development (RDT&E)	(318.1)	(392.6)	(387.3)
Procurement	(839.1)	(1088.3)	(1136.8)
Construction (MILCON)	(3.1)	(3.3)	(3.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1879.0	2370.8	2439.3
b. (U) Quantity --			
Development (RDT&E)	1	1	1
Procurement	8	9	9
Total	9	10	10

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (Feb 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 75 BY\$)	886.6	912.2	
(2) Quantity	10	10	
(3) Unit Cost	88.660	91.220	+2.89
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 75 BY\$)	616.9	642.8	
(2) Quantity	9	9	
(3) Unit Cost	68.544	71.422	+4.20

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	-34.2	-144.3	-0.2	-178.7
Quantity	-	+190.2	-	+190.2
Schedule	-	+1.9	-	+1.9
Engineering	-13.6	-70.4	-	-84.0
Estimating	+75.9	+308.2	-	+384.1
Other	-	-	-	-
Support	+37.1	+103.5	+0.2	+140.8
Subtotal	+65.2	+389.1	0.0	+454.3
Current Changes:				
Economic	-3.6	-10.1	-	-13.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+49.8	+107.6	-	+157.4
Other	-	-	-	-
Support	-	-37.7	-	-37.7
Subtotal	+46.2	+59.8	-	+106.0
Total Changes	+111.4	+448.9	0.0	+560.3
Current Estimate	654.0	1779.6	5.7	2439.3

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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	+15.2	+68.5	-	+83.7
Other	-	-	-	-
Support	+13.8	+26.1	+0.1	+40.0
Subtotal	+23.8	+131.0	+0.1	+154.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+18.4	+34.3	-	+52.7
Other	-	-	-	-
Support	-	-14.1	-	-14.1
Subtotal	+18.4	+20.2	-	+38.6
Total Changes	+42.2	+151.2	+0.1	+193.5
Current Estimate	266.7	642.8	2.7	912.2

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-3.6
Additional Funding Requirements due to the SSMIS settlement (Estimating)	+18.4	+49.8
RDT&E Subtotal	+18.4	+46.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-10.4
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Adjustment for Current and Prior inflation. (Estimating)	+0.2	+0.7
Replacement of cancelled FY89 funds on the spacecraft production contract. (Estimating)	+1.4	+4.3
Revised estimate due to the labor rate adjustment for Lockheed Martin Missiles and Space Support and Services contract (Estimating)	+0.7	+2.0
Reprogramming of FY97 funds to support the launch of S14. (Estimating)	+1.3	+4.1
Additional funding to support major outyear shortfalls (FY00 - FY05) (Estimating)	+29.2	+92.7

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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>
Revised estimate due to QDR and General reductions (Estimating)	-1.6	-5.6
Adjustment for Current and Prior inflation. (Support)	+0.2	+0.5
Refinement of the Small Tactical Terminal (STT) estimate (Support)	-7.1	-18.8
Revised estimate of initial spares (Support)	+0.4	+1.3
Transition of requirements to the National Polar-orbiting Operational Environmental Satellite System (NPOESS) (Support)	-7.6	-20.7
Additional funding requirements due to the settlement of the Aerojet claim filed with the ASBCA (Estimating)	+3.1	+9.4
Procurement Subtotal	<u>+20.2</u>	<u>+59.8</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 Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
208.78	-19.24	-1.86	+0.19	-8.40	+54.15	--	+10.31	+35.15	243.93

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	-17.16	+2.65	+0.21	-7.82	+46.20	--	+7.31	+31.39	197.73

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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	2438.7
Total Quantity	N/A	N/A	9	10
Prog Acq Unit Cost	N/A	N/A	208.78	243.87

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

a. RDT&E --

(U) SSMIS:
Aerojet Electrosystems Co, Azusa CA
F04701-89-C-0036, FFP
Award: March 17, 1989
Definitized: March 17, 1989

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$68.3	\$72.5	3

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$165.7	N/A	5	\$165.7	\$165.7

Explanation of Change:

(U) The Special Sensor Microwave Imager/Sounder (SSMIS) negotiated settlement agreement reached between the Air Force and Aerojet on April 25, 1997 closed all cost reimbursement CLINS and changed all fixed priced incentive CLINS to firm fixed price. The contract fixed price was negotiated at \$36.5M for the closed cost reimbursable CLINS and \$123.7M for the firm fixed price CLINS for a total of \$160.2M. In addition the contract price includes \$5.5M of interest on the claim paid to the contractor.

Based on the contract structure changing to firm fixed price, and the contract being 99.8% complete, this contract will no longer be reported in Section 15 of the SAR.

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

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

b. Procurement --

(U) SD-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		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$303.4	\$329.4	5

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$316.9	\$320.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-21.1	\$5.1
Cumulative Variances To Date (12/28/97)	<u>\$-21.7</u>	<u>\$-1.1</u>
Net Change	\$-0.6	\$-6.2

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 \$8.2M in award fees earned, \$1.3M in potential award fees, and \$16.9M in potential on-orbit performance incentives.

The increase in cost variance continues to be caused by problems associated with solar array fabrication, batteries, manufacturing of key subassemblies, rate increases, and a three month delay in the delivery of the final spacecraft.

The negative schedule variance is a result of continuing solar array problems and a delay in UHF transmitter fabrication, assembly, and test.

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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 (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	533.1	12.2	20.4	88.3	654.0
Procurement	1371.4	46.5	48.3	313.4	1779.6
MILCON	5.7	-	-	-	5.7
O&M	-	-	-	-	-
Total	1910.2	58.7	68.7	401.7	2439.3

b. Annual Summary -- 5D2 IMP/5D-3 SPACECRAFT

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 \$
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				18.5	47.2
1992				13.3	35.0
1993				7.3	19.6
1994				9.2	25.1
1995				10.9	29.6
1996				10.4	28.9
1997				8.0	22.6
1998				4.3	12.2
1999				7.0	20.4
2000				7.1	21.0
2001				6.3	18.9
2002				4.7	14.3
2003				3.6	11.1
2004				3.6	11.4
2005				3.6	11.6
Subtotal	1			266.7	654.0

(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)

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

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	53.2	60.0	166.4
1990	1	5.2	56.5	45.1	127.4
1991	1	5.2	67.0	57.2	167.0
1992	2	4.8	114.6	35.8	105.9
1993		3.1		10.1	30.8
1994		2.1		9.7	30.3
1995		1.8		14.8	44.6
1996		2.2		9.1	27.9
1997		2.4		10.1	31.6
1998		2.2		10.5	33.2
1999		2.1		11.2	36.1
2000		2.0		12.3	40.4
2001		2.0		18.1	60.3
2002		2.0		12.0	40.9
2003		2.1		14.3	49.6
2004		2.1		14.2	50.6
2005		2.2		14.2	51.6
Subtotal	9	68.1	484.0	552.2	1546.5

(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.

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DMSP, December 31, 1997

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 \$
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				2.8	7.7
1993				4.7	13.1
1994				3.8	10.8
1995				5.9	16.4
1996				5.5	15.7
1997				4.1	11.8
1998				4.5	13.3
1999				4.1	12.2
2000				2.2	6.8
2001				1.8	5.5
2002				1.6	5.0
2003				0.8	2.7
Subtotal				90.6	233.1

(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	68.1	484.0	912.2	2439.3

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17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	1	1
Procurement	7	7

(U) Percent Total Program Quantities Delivered: 80.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1756.5

(U) Percent Total Program Expended: 72.0%

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 estimate was done 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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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SBIRS

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): Space Based Infrared System (SBIRS) Program
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:
SMC/MT Col Daniel L. Burkett II
185 Discoverer Blvd. Assigned: July 3, 1997
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 Project
PROCUREMENT:
(U) APPN 3020 ICN MSSBIR (Air Force)
MILCON:
(U) PE 0604441F
O&M:
(U) PE 0305915F

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FOR OPEN PUBLICATION
AS AMENDED

17 MAR 12 1998

DIRECTORATE FOR FREEDOM OF INFORMATION
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DEPARTMENT OF DEFENSE

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5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Baseline (APB) dated March 19, 1998.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated March 19, 1998.

6. (U) Mission and Description:

(U) The Space Based Infrared System (SBIRS) program is intended to satisfy key requirements delineated in the SBIRS October 1, 1996 Operational Requirements Document within the available budget and schedule. SBIRS is an integrated "system of systems", consisting of multiple space and ground elements, with incremental deployment phasing, 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 Remote 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 Low Component baseline consists of TBD satellites and will be integrated with the High Component through the SBIRS MCS.

7. (U) Executive Summary:

(U) This SAR reports on SBIRS High as in previous SARs. However, certain SBIRS Low information is included in sections 7 and 9, and other related narratives and footnotes. The SBIRS Low financial, unit cost, contract, and related information will not be reported until after the SBIRS DAB review, scheduled for June 1998.

(U) SBIRS HIGH EMD CONTRACT AWARD ACTIVITIES/REVIEWS: Since SBIRS High EMD contract award, November 8, 1996, contract activities continue to progress in accordance with the Integrated Master Plan. Contractor team performance has been viewed as excellent. During this period of EMD, Lockheed Martin Missile and Space (LMMS) has successfully completed numerous design milestones on both the ground and space segments and demonstrated its commitment to Cost as an Independent Variable via numerous design initiatives to contain both contract and Life Cycle Cost. On the ground segment, those milestones included Increment 1 Final Design Review (FDR) and the Increment 2 Preliminary Design Review (PDR). For the space segment, LMMS successfully completed the Payload PDR and the High Orbit Space Vehicle (HOSV) PDR as well as PDRs or Technical Interchange Meetings (TIMs) for most space segment subsystems. This effort culminated in the SBIRS High System PDR in which LMMS successfully demonstrated system compliance with allocated requirements. The SBIRS High Program is proceeding into the detailed design phase of the program.

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

Following is a list and description of key milestones and activities during this period of the program.

- SBIRS High Ground Segment Interim Design Review (IDR) March 10-14, 1997
- SBIRS High Payload PDR August 27-29, 1997
- SBIRS High Ground Segment Increment 1 FDR September 8-12, 1997
- SBIRS High HOSV PDR October 8-10, 1997
- SBIRS High Ground Segment Increment 2 PDR November 17-20, 1997
- SBIRS High System PDR December 9-12, 1997
- Memorandum of Agreement (MOA) between SBIRS High program and Army Joint Tactical Ground Station program signed December 12, 1997

(U) SBIRS HIGH: SBIRS High EMD progress has been excellent. However, a budget shortfall has been identified in FY98 due to: 1a) a need to accelerate backbone communications one year to support Initial Operational Test and Evaluation (IOT&E) and Integrated Tactical Warning/Attack Assessment (ITW/AA) Certification, 1b) a need to accelerate some HEO Host tasks, and 2) congressionally mandated cuts. In order to drive down the FY98 shortfall, the System Program Office (SPO) is implementing program contract modifications to reduce the shortfall by \$25.5M, resulting in a four month delay to increment 2 and all five GEO satellites. These modifications also result in a three month delay in HEO sensor delivery, which still meets integration need dates for the host vehicle. The remaining shortfall will be eliminated with approval of a waiver to the Special Termination Cost Clause (\$25.9M) and Above Threshold Reprogramming (ATR) of DSP 3020 funds (\$21.6M).

(U) SBIRS LOW ISSUES: A funding shortfall in FY98 also exists for the SBIRS Low Program. The amount of the shortfall is \$20M. This shortfall will be eliminated by an ATR request.

(U) SBIRS LOW FLIGHT DEMONSTRATIONS SYSTEM (FDS). Earlier this past year, TRW submitted a not to exceed (NTE) estimate of \$136.8M to cover cost growth. Through aggressive program management, buy back of the payload pathfinder, and award fee reduction the amount was reduced to \$111.8M. The launch date has moved to December 1999. Technically, the program is back on track having completed build of the support structures for both vehicle 1 and 2 plus the Orbital Insertion System. Raytheon System, formerly Hughes, has begun integration and testing of the payload pathfinder. We continue to meet all of the technical performance measurements with good margin.

(U) SBIRS LOW ALTITUDE DEMONSTRATION SYSTEM: The program office and Boeing North American (BNA) completed an Integrated Baseline Review (IBR). BNA and Lockheed made personnel and organizational changes to improve program execution. Design reviews were completed on the payload, payload sensors, and System Integrated Design. Hardware fabrication is now under way. We continue to meet all 20 technical performance measurements. As part of the IBR, the ground demonstrations were eliminated because of cost growth in the flight system.

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

(U) SBIRS LOW PROGRAM DEFINITION (PD): The SBIRS Single Acquisition Management Plan and Test and Evaluation Master Plan are being updated. The Build 1 Request for Proposal for PD solicitation has been placed on the World Wide Web.

(U) COBRA BRASS: The Cobra Brass payload was integrated to the host vehicle and, after several launch delays, the vehicle was delivered to a successful orbit. The payload is functioning nominally.

(U) MINIATURE SENSOR TECHNOLOGY INTEGRATION (MSTI): Following a successful on-orbit mission, MSTI-3 was brought back to earth with splashdown at 1521ZULU on December 11, 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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
High Component Milestone II	OCT 96	OCT 96	OCT 96
High Component PDR (Space and Ground Increment 2)	DEC 97	DEC 97	DEC 97
High Component CDR (Space and Ground Increment 2)	SEP 99	SEP 99	APR 99 (Ch-1)
Low Component FDS CDR	DEC 96	DEC 96	DEC 96
Low Component FDS Launch	SEP 99	SEP 99	OCT 99 (Ch-2)
Low Component Dem/Val Launch	TBD	TBD	OCT 99 (Ch-3)
Ground Segment Increment 1 Certification	AUG 99	AUG 99	AUG 99
Low Component Pre-EMD Start	OCT 99	OCT 99	NOV 98 (Ch-4)

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Low Component Milestone II	DEC 00	DEC 00	DEC 00
HEO Sensor 1 Delivery	SEP 01	SEP 01	SEP 01
Ground Segment Increment 2 Certification	JAN 02	JAN 02	JAN 02
GEO Satellite 1 Launch	N/A	JUN 02	JUN 02
GEO Satellite 2 Launch	JUN 03	JUN 03	JUN 03
HEO Sensor 2 Delivery	SEP 03	SEP 03	SEP 03
SBIRS IOC	DEC 03	DEC 03	DEC 03
GEO Satellite 3 Launch	JUN 04	JUN 04	JUN 04
GEO Satellite 4 Launch	JUN 05	JUN 05	JUN 05

b. Current Change Explanations --

(U) (Ch-1) High Component CDR Current Estimate date was changed from Sep 99 to Apr 99 per current program schedule.

(Ch-2) Low Component FDS Launch Current Estimate date was changed from Sep 99 to Oct 99 due to availability of launch slot; TRW still is working to a Sep 99 launch date.

(Ch-3) Low Altitude Demonstration System Launch Current Estimate was changed from TBD to Oct 99.

(Ch-4) Low Component Pre-EMD Start Current Estimate date was changed from Oct 99 in Dec 96 SAR to Nov 98 in order to meet the program definition requirements in support of a SBIRS Low first launch date.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Coverage				
(S) North America Missile Warning	(b)(1)			

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

(b)(1)



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

(b)(1)

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

	<u>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>
(S) Technical Intell- igence	(b)(1)			
(S) Report Time North America Missile Warning (seconds)				
(S) Theater Msl Warning (seconds)				

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

	Development	Approved	Demon-	Current
	Estimate (SAR)	Program (APB)	strated	Estimate
		Obj/Threshold	Perf	
(S) Theater Msl Defense (seconds)	(b)(1)			
(S) Probability Warning				
(S) North America Missile Warning				
(S) Theater Msl Warning				
(S) Theater Msl Defense				
(S) Technical Intelligence				
(S) Data Availability				
(S) Battlespace Characterization				

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

	Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
(S) Theater Msl Defense	(b)(1)			

~~(S)~~ Technical Intell-
igence

(U) ACRONYMS:

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

CFLOS - Cloud-Free Line of Sight
 FA - Focused Area
 RV - Re-entry Vehicle
 MTR - Major Threat Region
 MRC - Major Regional Conflict
 MSLs - Missiles
 Pw - Probability of Warning

b. Current Change Explanations --

(U) (Ch-1) Program Manager's Current Estimate changed from December 31, 1996 SAR values to better describe current estimate values.

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	3016.6	3016.6	2566.6
Procurement	496.7	496.7	391.3
Flyaway	(496.7)		(391.3)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		
Construction (MILCON)	26.0	26.0	26.5
Acquisition O&M	140.2	140.2	71.2
Total FY 95 Base-Year \$	3679.5	3679.5	3055.6
Escalation	467.8	467.8	323.5
Development (RDT&E)	(369.9)	(369.9)	(245.6)
Procurement	(87.8)	(87.8)	(68.0)
Construction (MILCON)	(2.5)	(2.5)	(2.0)
Acquisition O&M	(7.6)	(7.6)	(7.9)
Total Then Year \$	4147.3	4147.3	3379.1

(U) NOTE: The APB will be updated to include SBIRS Low after the SBIRS DAB in June 1998 to reflect the current program direction.

The Current Estimate totals include Pre-EMD and EMD costs for SBIRS High through FY06. It also includes Missile Procurement funds for Geosynchronous Satellites G4 and G5.

b. (U) Quantity --

Development (RDT&E)	3	3	3
Procurement	2	2	2
Total	5	5	5

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:

	UCR Baseline (MAR 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	3679.5	3055.6	
(2) Quantity	5	5	
(3) Unit Cost	735.900	611.120	-16.96
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	496.7	391.3	
(2) Quantity	2	2	
(3) Unit Cost	248.350	195.650	-21.22

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	3386.5	584.5	28.5	147.8	4147.3
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-340.4	+32.5	-	+0.6	-307.3
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-340.4	+32.5	-	+0.6	-307.3
Current Changes:					
Economic	-60.8	-18.7	-0.5	-2.1	-82.1
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-173.1	-139.0	+0.5	-67.2	-378.8
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-233.9	-157.7	-	-69.3	-460.9
Total Changes	-574.3	-125.2	-	-68.7	-768.2
Current Estimate	2812.2	459.3	28.5	79.1	3379.1

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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	3016.6	496.7	26.0	140.2	3679.5
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-302.9	+10.7	+0.1	-15.3	-307.4
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-302.9	+10.7	+0.1	-15.3	-307.4
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-147.1	-116.1	+0.4	-53.7	-316.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-147.1	-116.1	+0.4	-53.7	-316.5
Total Changes	-450.0	-105.4	+0.5	-69.0	-623.9
Current Estimate	2566.6	391.3	26.5	71.2	3055.6

(U) Note: Changes between the December 1996 SAR Current Estimate and the current approved Acquisition Program Baseline/new SAR Development Estimate are reflected in previous changes.

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-60.8
Adjustment for Current and Prior Inflation. (Estimating)	+4.9	+5.3
Revised estimate of RDT&E costs for Geosynchronous Earth Orbit (GEO) Satellites G1-G3. (Estimating)	-124.1	-147.2
Change due to general Congressional and OSD reductions. (Estimating)	-37.9	-41.6
Increase to cover Miniature Sensor Technology Integration (MSTI) schedule delays and additional operational requirements. (Estimating)	+10.0	+10.4
RDT&E Subtotal	-147.1	-233.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-18.7

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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>
Revised estimate of procurement costs for GEO satellites G4 and G5 (Estimating)	-114.7	-137.2
Change due to general Congressional and OSD reductions. (Estimating)	-1.4	-1.8
Procurement Subtotal	-116.1	-157.7
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.5
MILCON Subtotal	+0.4	0.0
(4) <u>O&M</u>		
Revised escalation indices. (Economic)	N/A	-4.8
Economic adjustment for negative program change. (Economic)	N/A	+2.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Revised estimate of transition of SBIRS ground system from Air Force Materiel Command (AFMC) to Air Force Space Command (AFSPC). (Estimating)	-53.8	-67.3
O&M Subtotal	-53.7	-69.3

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	
829.46	-16.42	--	--	--	-137.22	--	--	-153.64	675.82

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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	
292.25	-9.35	--	--	--	-53.25	--	--	-62.60	229.65

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	4147.3	N/A	3379
Total Quantity	N/A	5	N/A	5
Prog Acq Unit Cost	N/A	829.46	N/A	675.8

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

a. RDT&E --

(U) SBIRS High EMD Mod:
Lockheed-Martin Msl Sys, Sunnyvale CA
F04701-95-C-0017, CPAF
Award: October 31, 1995
Definitized: October 31, 1995

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1666.4	N/A	5	\$1984.6	\$1984.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/97)	\$4.2	\$-4.9
Net Change	\$4.2	\$-4.9

Explanation of Change:

(U) Explanation of Change: The major contributors for the cost variance change were the favorable performance on the Pre-EMD program, spending less than planned on level of effort activities, and less costly labor rates than planned in a couple of areas. The major contributors for the schedule variance change were key staffing shortages and late hardware deliveries.

The EMD contract is a cost plus contract with no ceiling price.

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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	478.2	316.5	538.4	1479.1	2812.2
Procurement	-	-	-	459.3	459.3
MILCON	14.5	14.0	-	-	28.5
O&M	-	12.0	21.2	45.9	79.1
Total	492.7	342.5	559.6	1984.3	3379.1

(U) Note: SBIRS Low funding information is not included. A SBIRS Defense Acquisition Board (DAB) review is scheduled for June 98. The next SAR will reflect SBIRS Low funding information.

b. Annual Summary -- SBIR (High)

Appropriation: 3600 Research, Development, Test + Eval, AF

<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>
1995				114.6	116.4
1996				163.1	168.8
1997				183.5	193.0
1998				296.6	316.5
1999				496.7	538.4
2000				512.0	564.2
2001				353.3	396.0
2002				236.6	270.0
2003				123.0	143.1
2004				34.3	40.8
2005				26.5	32.2
2006				26.4	32.8
Subtotal	3			2566.6	2812.2

Appropriation: 3020 Missile Procurement, Air Force

<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>
2001				29.8	34.0
2002	1		214.2	184.4	214.4

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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		177.1	158.8	188.5
2004				9.2	11.1
2005				9.1	11.3
2006					
Subtotal	2		391.3	391.3	459.3

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				13.6	14.5
1998				12.9	14.0
Subtotal				26.5	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				11.3	12.0
1999				19.6	21.2
2000				7.5	8.3
2001				8.6	9.6
2002				7.9	9.0
2003				14.9	17.3
2004				0.4	0.5
2005				0.5	0.6
2006				0.5	0.6
Subtotal				71.2	79.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5		391.3	3055.6	3379.1

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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): \$ 486.4

(U) Percent Total Program Expended: 14.4%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
These Operations and Maintenance funds support the activation of new SBIRS High Component ground operating and training facilities at four sites worldwide. SBIRS High Component Increment 1 consolidates operations from three Defense Support Program sites into one CONUS-based site. These funds support the procurement of temporary facilities, minor construction, office equipment, furniture, travel, supplies, and communication links necessary for the activation of the SBIRS Mission Control Station, two OCONUS Remote Ground Stations, and Initial Qualification Training facility in FY99. Also supported with these funds are the repair and transportation of Government Furnished Equipment and TDY for training of the initial cadre of operators.

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	7.9	12.3
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
Total	7.9	12.3

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A-4 ATACMS-APAM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: Army TACMS/APAM

AS OF DATE: December 31, 1997

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ATACMS-APAM

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: SF&E-MSL-AB	Assigned: January 9, 1996
Redstone Arsenal, AL 35898-5650	DSN 746-1141; COMM (205) 876-1141

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

RDT&E:

- (U) PE 064324A Project D302
- (U) PE 23802A Project D2MT, D304

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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~~Classified by: Army TACMS Blki/IA SCG dtd 28 May 1997, Army TACMS-BAT PO,
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Declassify on: X3~~

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Army TACMS/APAM, December 31, 1997

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 September 18, 1997.

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; and the 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) During the preparation for MS III ASARC scheduled for March 19, 1997, the Army leadership decided to forego the formal ASARC and to remain in Low Rate Initial Production (LRIP) for a second year. This was due to concerns over the operational effectiveness and suitability as part of a system of systems raised by the Operational Test Community. These issues are being addressed through establishment of a General Officer Steering Committee to address the C4ISR and sensor-to-shooter issues. Additional live fire testing, arena tests, and modelling and simulation updates were conducted to provide supporting data to the MSIII ASARC. The Army Acquisition Executive (AAE) signed the Acquisition Decision Memorandum (ADM) on April 22, 1997, which approved a second year of LRIP for 97 missiles, award of Long Lead Time Items contract in 1QFY98, and rescheduled the MS III Decision for 2QFY98. The ADM identified specific tasks to prepare for the rescheduled MS III. This decision precluded the award of a multiyear contract for full rate production.

The contract for the Army TACMS Block IA Long Leadtime items for Full Rate Production was awarded on December 31, 1997.

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

The Army TACMS Block IA missile was approved for full release on September 12, 1997.

As a part of the extended EMD program directed in the April 22, 1997, Acquisition Decision Memorandum (ADM), additional testing was conducted to include Pyrophoric Pellet Characterization, Fuel Fire Experiments, Ammunition Stack Tests and one additional Flight Test.

The Greek Government signed Amendment #1 to FMS case GR-B-XGS for an additional 30 Army TACMS Block I export version missiles on February 26, 1998. This increase brings the total case to 71 missiles for Greece.

A Milestone III Review will be held in March 1998 for approval to enter Full-Rate Production for the Army TACMS Block IA missile.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

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Army TACMS/APAM, December 31, 1997

9. (U) Schedule:

a. Milestones --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
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			
First Full-Rate Production-II	N/A	SEP 92	SEP 92
Delivery			

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
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
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
LRIP II Contract Award	N/A	APR 97	APR 97
Production Decision	N/A	MAR 98	MAR 98
Full-Rate Production (FRP)	N/A	MAR 98	APR 98
Contract Award			
LRIP Delivery	N/A	AUG 97	JUL 97 (Ch-1)
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	MAY 98
First FRP Delivery	N/A	MAY 99	MAY 99

b. Current Change Explanations --

(U) (CH-1) LRIP Delivery date was changed from August 1997 to July 1997 to reflect the actual date of delivery.

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>
11 BLOCK I				
Range (km)	130	130 / 130	172@WSMR	165@Sea Level
Payload (kg)	454	454 / 454	567	567
Accuracy	(b)(1)			
Min range to 107km (m)				
MILS at ranges greater than 107 km				

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
M/LPA Weight (NTE kg)	(b)(1)			
Off-Axis Launch (+/- deg)	(b)(1)			
Reliability				
Launcher MTBOMF (hr)	54	54 / 54	58.8	58.8
Missile PVT/FUE	.85	.85 / .82	.935	.935
System Availability (As)	.75	.75 / .75	.75	.75
BLOCK IA				
Range (km)-Maximum	N/A	330 / 300	316@WSMR	300@Sea level
Range (km)-Minimum	N/A	50-70 / <130	93.4	70.0
Payload (kg)	N/A	158 / 158	173	173
Accuracy		(b)(1)		
Min range to 107 km but w/o GPS aiding (m)	N/A			
Mils at ranges beyond 107 km but w/o GPS aiding	N/A			
Meters w/GPS but w/o counter-measures	N/A			
Meters w/GPS but w/countermeasures	N/A			
M/LPA (NTE kg)	N/A			
Off-Axis Launch (+/- deg)	N/A			
Reliability Guided Missile and Launching Assembly: M39 (GMLA) End PPQT	N/A			

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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)	650.6	734.6	735.7
Procurement	846.4	1565.8	1501.0
Flyaway	(821.2)		(1480.1)
Other Weapon Systems	(22.9)		(11.5)
Peculiar Support	(0.0)		(5.5)
Initial Spares	(2.3)		(3.9)
Construction (MILCON)	9.6	10.0	9.9
Acquisition O&M	0.0	0.0	0.0
Total FY 91 Base-Year \$	1506.6	2310.4	2246.6
Escalation	1.6	198.4	95.4
Development (RDT&E)	(-89.3)	(-76.7)	(-78.2)
Procurement	(90.0)	(274.6)	(173.0)
Construction (MILCON)	(0.9)	(0.5)	(0.6)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1508.2	2508.8	2342.0
b. (U) Quantity --			
Development (RDT&E)	15	18	18
Procurement	1542	2447	2290
Total	1557	2465	2308

Note: Excludes 35 RDT&E 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 643 Block IA missiles.

The ATACMS/APAM ADM, March 4, 1994, approved the Block IA Low Rate Initial Production (LRIP) quantity of 100 missiles (which exceeded 10 percent). As a result of funding reductions in FY 96, the Block IA LRIP quantity was reduced to 70 missiles which was below the 10 percent. The current Block IA LRIP quantity of 167 missiles exceeds 10 percent of the total planned buy because a second LRIP buy of 97 missiles was approved in order to allow the Army time to respond to the effectiveness and reliability issues raised by the Operational Test Community during pre-ASARC reviews.

c. (U) Foreign Military Sales --
Commitments to date for Army TACMS missiles are 72 for the government of Turkey for a total of \$61.4M; 111 for the government of Korea for a total of \$94.2M; and 71 for the government of Greece for a total of \$65.2M.

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

d. (U) Nuclear Costs --
None.

12. (U) Unit Cost Summary:

	UCR Baseline (SEP 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 91 BY\$)	2310.4	2246.6	
(2) Quantity	2465	2308	
(3) Unit Cost	0.937	0.973	+3.84
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 91 BY\$)	1565.8	1501.0	
(2) Quantity	2447	2290	
(3) Unit Cost	0.640	0.655	+2.34

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	-1.3	-79.7	-0.3	-81.3
Quantity	-	+476.9	-	+476.9
Schedule	-	+52.9	-	+52.9
Engineering	+96.7	-26.9	-	+69.8
Estimating	-2.4	+394.6	+0.3	+392.5
Other	-	-	-	-
Support	-	-17.6	-	-17.6
Subtotal	+93.0	+800.2	0.0	+893.2
Current Changes:				
Economic	-0.3	-1.8	-	-2.1
Quantity	-	-86.7	-	-86.7
Schedule	-	+3.3	-	+3.3
Engineering	-	-60.5	-	-60.5
Estimating	+3.5	+83.2	-	+86.7
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	+3.2	-62.6	-	-59.4
Total Changes	+96.2	+737.6	0.0	+833.8
Current Estimate	657.5	1674.0	10.5	2342.0

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

(U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	650.6	846.4	9.6	1506.6
Previous Changes:				
Quantity	-	+364.0	-	+364.0
Schedule	-	+40.9	-	+40.9
Engineering	+83.4	-18.9	-	+64.5
Estimating	-1.3	+313.9	+0.3	+312.9
Other	-	-	-	-
Support	-	-4.2	-	-4.2
Subtotal	+82.1	+695.7	+0.3	+778.1
Current Changes:				
Quantity	-	-59.8	-	-59.8
Schedule	-	+1.7	-	+1.7
Engineering	-	-47.9	-	-47.9
Estimating	+3.0	+65.0	-	+68.0
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	+3.0	-41.1	-	-38.1
Total Changes	+85.1	+654.6	+0.3	+740.0
Current Estimate	735.7	1501.0	9.9	2246.6

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
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Reprogramming to continue Block IA Development (Estimating)	+2.7	+3.2
RDT&E Subtotal	+3.0	+3.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-13.8
Economic adjustment for negative program change. (Economic)	N/A	+12.0
Total Quantity variance associated with decrease of 157 units.	-93.0	-128.1
Quantity decrease from 2447 to 2290 units. (Quantity)	-59.8	-86.7
Allocation to Schedule variance resulting from Quantity Change. (Schedule)	+1.7	+2.3
Allocation to Engineering variance resulting from Quantity Change. (Engineering)	-47.9	-60.5
Allocation to Estimating variance resulting from Quantity Change. (Estimating)	+13.0	+16.9
Reduction in annual procurement buy profile. (Schedule)	0.0	+1.0

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Army TACMS/APAM, December 31, 1997

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. (Estimating)	+4.5	+5.2
Revised Estimate due to budget reductions and elimination of multiyear buys. (Estimating)	+47.5	+61.1
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Decrease in Other Weapon Systems cost due to quantity reduction. (Support)	-0.3	-0.3
Procurement Subtotal	-41.1	-62.6

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 Init Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.16	-0.05	-0.10	+0.03	+0.14	-1.23	--	+0.02	-1.19	0.97

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	-0.04	-0.14	+0.02	--	+0.21	--	-0.01	+0.04	1.01

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

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.55	--	--	--	--	-0.01	--	--	-0.01	0.54

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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	
0.61	-0.04	-0.02	+0.02	-0.04	+0.21	--	-0.01	+0.12	0.73

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	2342.1
Total Quantity	N/A	1050	1557	2238
Prog Acq Unit Cost	N/A	1.16	0.97	1.05

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

a. RDT&E --
(U) P3I EMD (IA) Missiles:
Vought Systems, Dallas, TX
DAAH01-94-C-0002, CRIF
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
\$53.2	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$54.1	\$54.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-3.3	\$-1.8
Cumulative Variances To Date (12/31/97)	\$-3.0	\$-1.2
Net Change	\$0.3	\$0.6

Explanation of Change:

(U) The cost and schedule variances are not significant.

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Army TACMS/APAM, December 31, 1997

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

b. Procurement --
(U) LRIP I (Block IA):
Vought Systems, Dallas, TX
DAAH01-92-C-0038, FFP
Award: June 14, 1996
Definitized: February 28, 1997

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$45.8	N/A	70

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$45.8	N/A	70

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$45.8	\$45.8

Explanation of Change:

None.

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

(U) LRIP II (Block IA):
Vought Systems, Dallas, TX
DAAH01-92-C-0038, FFP
Award: April 23, 1997
Definitized: April 23, 1997

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$62.9	N/A	97

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$62.9	N/A	97

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$62.9	\$62.9

Explanation of Change:

None.

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

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Army TACMS/APAM, December 31, 1997

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 (FY00-03)</u>	<u>Total</u>
RDT&E	657.5	-	-	-	657.5
Procurement	1282.1	94.5	90.6	206.8	1674.0
MILCON	10.5	-	-	-	10.5
O&M	-	-	-	-	-
Total	1950.1	94.5	90.6	206.8	2342.0

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				23.3	25.4
1995				32.6	36.3
1996				22.4	25.4
1997				8.0	9.2
Subtotal	18			735.7	657.5

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	67.2	72.9	72.4
1990	104	3.2	95.2	100.6	103.0
1991	373		217.9	219.0	229.7
1992	300		160.0	160.7	172.3

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Army TACMS/APAM, December 31, 1997

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

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY91 Dollars Nonrec	Flyaway FY91 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993	351		174.0	174.3	190.5
1994	255		127.5	128.3	142.8
1995	148		96.7	97.7	110.8
1996	120	4.2	99.3	105.4	120.8
1997	167		116.0	117.0	136.3
1998	100		78.4	79.8	94.5
1999	96		74.9	75.1	90.6
2000	110		77.0	77.1	94.6
2001	100		88.3	72.0	89.9
2002				11.8	15.0
2003				5.6	7.3
Subtotal	2290	7.7	1472.4	1501.0	1674.0

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	2308	7.7	1472.4	2246.6	2342.0

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	18	18
Procurement	1688	1691

(U) Percent Total Program Quantities Delivered: 74.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1760

(U) Percent Total Program Expended: 75.1%

(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.

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Army TACMS/APAM, December 31, 1997

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 (2290).

There was no antecedent system for the Army TACMS/APAM. The date of the O&S cost estimate is January 14, 1998.

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	2.1	N/A
Unit Level Consumption	1.8	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	2.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	2.0	N/A
Indirect Costs	0.4	N/A
Total	8.3	0.0

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: V-22 (OSPREY)

AS OF DATE: December 31, 1997

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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)	COL NOLAN SCHMIDT
AIR ASW ASSAULT AND SPECIAL MISSION	Assigned: June 4, 1997
47123 BUSE ROAD UNIT IPT	DSN 757-5161; COMM (301) 757-5161
PATUXENT RIVER, MD 20670-1547	SCHMIDTND.NTRPRS@NAVAIR.NAVY.MIL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603203N Project (SUNK)
PE 0603256N (Shared) Navy Proj. W1557SUNK Project 642973
PE 0604222A Project (SUNK)
PE 0604262N (Shared) Navy MLR Proj. W2088 Project H1425
PE 1110011F (Shared) Proj. 643752 (SUNK)
PE 1160404BB (Shared) Proj. 643752

PROCUREMENT:

APPN 1506 ICN 016300 (Navy)
APPN 1506 ICN 016400 (Navy)
APPN 0300 ICN 1160404BB (DCA/DNA)
APPN 3010 ICN 41318F (Air Force)

MILCON:

PE M62470

No Security Objection
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(AS AMENDED)

98-C-0136
MAR 23 1998
Office of the Chief of
Naval Operations
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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

98-C-0889

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5. References:

SAR Baseline (Development Estimate):
FY 1988/89 President's Budget.

Approved Program:

CAE Approved Acquisition Program Baseline (APB) dated November 14, 1997.

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 and USSOCOM. 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 and USSOCOM. 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:

An Acquisition Decision Memorandum (ADM) was signed on February 10, 1995 authorizing an integrated MV-22/CV-22 program with the Navy as the lead service.

First Flight and Ferry Flight to Patuxent River, MD for all four EMD aircraft completed. APBA rebaselines reflects CV-22 design review slips and MILCON cost increase. DRM convened on April 4, 1997 approved LRIP #1 and LRIP #2 AAC. DAB LRIP Approval and full funding of the LOT 1 (FY97) airframe contract. LFT&E Alternate Test Plan approved by DOT&E on March 21, 1997. Live Fire Test and Evaluation waiver from full-up testing approved. Completion of OT-IIC on May 30, 1997. OT-IIC final report signed in October 1997. Relocated government and contractor Joint Program Offices to Patuxent River, MD on 23 June 1997. CV-22 Systems PDR and Static Test Article Test to ultimate load completed. Various technical issues, including centrifugal force (CF) bearings, nose gear doors, rotor positioning unit (RPU), wing chordwise moment exceedance (CME), and fuel pump metering unit (FPMU) have been analyzed and design changes are being incorporated as required. The QDR increased the MV-22 program by 11 aircraft in the FYDP and increased to a 30 per year rate beginning in FY04. Total MV-22 aircraft buy has been reduced from 425 to 360. A Congressional approval of \$68.4M reprogramming action completed in August 1997.

Since December 31, 1997, a MV-22 MILCON Cost Breach has been identified. Approval for LRIP #2 and LRIP #3 AAC is anticipated in March 1998.

The EMD design-to-cost (DTC) commitment was \$33.4M recurring flyaway (FY94) for 523 aircraft. Since the QDR reduced our quantity and rephased our buy profile, a new DTC has not been established.

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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	Yes
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

c. Explanation of Breach:

(U) There is an APBA MILCON Cost Breach as a result of site surveys for the current MV/HV-22 basing plan and more detailed requirements definition. The APBA is currently in the process of being rebaselined.

9. Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone 0 (DEPSECDEF MEMO)	DEC 81	DEC 81	DEC 81
Milestone I (DSARG I)	DEC 82	DEC 82	DEC 82
Preliminary Design Contract Award	APR 83	APR 83	APR 83
Milestone II (DSARG 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
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

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (AFB)	Current Estimate	
	SEP 95	N/A	N/A	
USA IOC (First Operational Company Equipped)				
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	
MV-22 TECHEVAL				
Start	N/A	FEB 99	JUL 99	(Ch-1)
Complete	N/A	APR 99	SEP 99	(Ch-1)
MV-22 OPEVAL				
Start	N/A	MAY 99	OCT 99	(Ch-1)
Complete	N/A	DEC 99	MAY 00	(Ch-1)
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	
LRIP 2 First Delivery	N/A	FEB 00	APR 00	(Ch-2)
LRIP 3 Contract Award (Long Lead \$)	N/A	FEB 98	MAR 98	(Ch-3)
LRIP 3 First Delivery	N/A	NOV 00	MAR 01	(Ch-2)
LRIP 4 Contract Award (Long Lead \$)	N/A	FEB 99	MAR 99	(Ch-3)
LRIP 4 First Delivery	N/A	OCT 01	NOV 01	(Ch-2)
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	JAN 01	(Ch-2)
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	AUG 96	AUG 96	
CV-22 PDR	N/A	FEB 98	DEC 97	(Ch-4)
CV-22 CDR	N/A	DEC 98	DEC 98	
CV-22 Production Contract Award (Long lead \$)	N/A	FEB 00	FEB 00	
CV-22 Flight Test				
Start	N/A	OCT 99	OCT 99	
Complete	N/A	FEB 02	FEB 02	
CV-22 IOT&E				
Start	N/A	MAR 02	MAR 02	
Complete	N/A	SEP 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

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9a. Schedule (Cont'd):

the FSD program which was terminated in April 1989.

b. Current Change Explanations ---

(Ch-1) MV-22 TECHEVAL start and complete dates have slipped from Feb 99 and May 99 to Jul 99 and Sep 99. The OPEVAL start and complete dates have slipped from May 99 and Dec 99 to Oct 99 and May 00. This slip is a result of delays in EMD aircraft delivery and flight test.

(U) (Ch-2) LRIP 2, 3, and 4 First Deliveries have changed from Feb 00, Dec 00, and Jan 02 to Apr 00, Mar 01, and Nov 01, respectively. These changes are a result of adding 1 additional aircraft to LRIP 1 and 2 additional aircraft to LRIP 2. The addition of these aircraft resulted in an earlier MV-22 IOC from Jul 01 to Jan 01.

(U) (CH-3) LRIP 3 and 4 Contract Awards have slipped from Feb 98 and Feb 99 to Mar 98 and Mar 99. These changes are a result of administrative delays associated with internal Navy Program Review.

(U) (CH-4) CV-22 PDR completed in Dec 97 (ahead of schedule).

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>
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:	N/A	N/A / N/A	TBD	
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	N/A	
Self-Deployment (nm) (minimum distance)						
Continuous Cruise	250	N/A	/ N/A	N/A	N/A	
Speed (kts)						
Dash Speed (kts)	275	N/A	/ N/A	N/A	N/A	
Instantaneous						
G-Loading						
Plus	4.0	N/A	/ N/A	N/A	N/A	
Minus	-1.0	N/A	/ N/A	N/A	N/A	
Troop Capacity	24	N/A	/ N/A	N/A	N/A	
External Cargo (lbs)	10000	N/A	/ N/A	N/A	N/A	
MV-22						
Cruise Speed (kts)	N/A	270	/ 240	TBD	255	(Ch-1)
			/			
Mission Radius (NM)						
Land Trooplift	N/A	200X1	/ 200X1	TBD	248X1	(Ch-2)
Land External	N/A	110X1	/ 50X1	TBD	58X1	(Ch-2)
Sea Trooplift	N/A	110X2	/ 50X2	TBD	94X2	(Ch-2)
Sea External	N/A	110X1	/ 50X1	TBD	102X1	(Ch-2)
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	2414 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 (mm	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	252	(Ch-3)
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	2527 w/1	(Ch-3)
(nm)		w/0	/ 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 Compatible Operational Environment	N/A	yes / yes	TBD	yes
	N/A	100' / 300' TF/TA, / TF/TA, Day/Nigh/ Day/Nigh t, / t, VMC/IMC / VMC/IMC	TBD	300' TF/TA, Day/Nigh t, VMC/IMC
Precision Naviga- tion (diameter @ MAX Combat Radius)	N/A	Locate / Locate LZ W/IN / LZ W/IN 1 Rotor / 2X / Rotor	TBD	Locate LZ W/IN 2X Rotor
Reliability				
MTBF	N/A	>=2.0 / >=1.4	TBD	1.4
Weapon System (%)	N/A	>=84 / >=77	TBD	77

NOTE: Performance characteristics "Folded through External Cargo" with the Current Estimate as N/A were for the FSD program cancelled in 1989 and will be deleted at Milestone III.

(U) Not all of the above performance characteristics have been fully demonstrated to date.

b. Current Change Explanations --

(Ch-1) MV-22 cruise speed has been demonstrated to a higher velocity than previous estimated from 240 kts to 255 kts.

(U) (Ch-2) Changes to the MV-22 current estimate for mission radius and self-deployment are the result of increased drag estimates and inclusion of aft sponson tank for additional fuel. The changes are land trooplift from 275X1 to 248X1, land external from 50X1 to 58X1, sea trooplift from 71X2 to 94X2, sea external from 111X1 to 102X1, and self-deployment from 2565 with 1 aerial refuel to 2414 with 1 aerial refuel.

(U) (Ch-3) Changes to the CV-22 current estimate for cruise speed and self-deployment are due to revised drag estimates based on aircraft 8, adjusted for CV-22 configuration and flight test equipment.

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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	5665.9
Procurement	20493.1	21441.7	18253.3
Flyaway	(15517.1)		(14856.6)
Other Weapon Systems Cost	(3299.6)		(2361.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(1676.4)		(1035.2)
Construction (MILCON)	136.2	29.7	34.2
Acquisition O&M	0.0	0.0	0.0
Total FY 86 Base-Year \$	23073.0	27033.9	23953.4
Escalation	6589.3	25928.7	13381.0
Development (RDT&E)	(181.5)	(1388.5)	(1335.7)
Procurement	(6371.1)	(24515.2)	(12026.0)
Construction (MILCON)	(36.7)	(25.0)	(19.3)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	29662.3	52962.6	37334.4
b. Quantity --			
Development (RDT&E)	0	11	0
Procurement	913	523	458
Total	913	534	458

Note: Excludes 6 RDT&E prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

A revised APB being processed will delete the 11 development aircraft from the baseline because they are not fully configured. The MV-22 LRIP quantities are as follows: 5 (FY97), 7 (FY98), 7 (FY99), and 10 (FY00). This does not represent more than 10% of the planned program buy.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (NOV 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 86 BY\$)	27033.9	23953.4	
(2) Quantity	534	458	
(3) Unit Cost	50.625	52.300	+3.31
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 86 BY\$)	21441.7	18253.3	
(2) Quantity	523	458	
(3) Unit Cost	40.998	39.854	-2.79

13. Cost Variance Analysis:

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	-100.1	-4420.2	-9.9	-4530.2
Quantity	-77.0	+15143.2	-	+15066.2
Schedule	+28.2	-1740.3	+7.8	-1704.3
Engineering	-	-	-	-
Estimating	+4443.4	-17.5	-120.2	+4305.7
Other	-	-	-	-
Support	-	+2728.3	-	+2728.3
Subtotal	+4294.5	+11693.5	-122.3	+15865.7
Current Changes:				
Economic	-33.9	-698.8	-2.2	-734.9
Quantity	-	-3119.0	-	-3119.0
Schedule	-	-1576.9	-	-1576.9
Engineering	-	-	-	-
Estimating	+115.8	-118.7	+5.1	+2.2
Other	-	-	-	-
Support	-	-2765.0	-	-2765.0
Subtotal	+81.9	-8278.4	+2.9	-8193.6
Total Changes	+4376.4	+3415.1	-119.4	+7672.1
Current Estimate	7001.6	30279.3	53.5	37334.4

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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	2443.7	20493.1	136.2	23073.0
Previous Changes:				
Quantity	-72.9	+1076.8	-	+1003.9
Schedule	+16.9	-90.1	-	-73.2
Engineering	-	-	-	-
Estimating	+3210.8	-17.7	-107.0	+3086.1
Other	-	-	-	-
Support	-	-479.4	-	-479.4
Subtotal	+3154.8	+489.6	-107.0	+3537.4
Current Changes:				
Quantity	-	-1226.1	-	-1226.1
Schedule	-	-232.7	-	-232.7
Engineering	-	-	-	-
Estimating	+67.4	-170.7	+5.0	-98.3
Other	-	-	-	-
Support	-	-1099.9	-	-1099.9
Subtotal	+67.4	-2729.4	+5.0	-2657.0
Total Changes	+3222.2	-2239.8	-102.0	+880.4
Current Estimate	5665.9	18253.3	34.2	23953.4

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-33.9
Refinement of estimate. (USSOCOM)	+0.2	+0.3
(Estimating)		
Adjustment for Current and Prior Inflation.	+11.4	+15.8
(Navy) (Estimating)		
Increase in EMD airframe contract estimate	+55.8	+99.7
and an increase to continue Fatigue Test		
Article and Weapons Replaceable Assembly Test		
Program Sets. (Navy) (Estimating)		
RDT&E Subtotal	+67.4	+81.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-2190.1
Economic adjustment for negative program	N/A	+1491.3
change. (Economic)		
Quantity variance associated with	-1226.1	-3119.0
decrease of 65 MV-22 units from 425 to		
360. (Navy) (Quantity)		

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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>
Acceleration of MV-22 annual procurement buy profile increasing 11 aircraft in the FYDP and increasing from 24 to 30 per year rate beginning in FY04. (Navy) (Schedule)	-193.6	-1460.0
Acceleration of CV-22 annual procurement buy profile from 7 to 9 per year rate in FY03 and shortening the buy by one year from FY08 to FY07. (USSOCOM) (Schedule)	-0.3	-6.2
Acceleration of CV-22 annual procurement buy profile from 7 to 9 per year rate in FY03 and shortening the buy by one year from FY08 to FY07. (Air Force) (Schedule)	-38.8	-110.7
Adjustment for Current and Prior Inflation. (Navy) (Estimating)	+11.3	+15.8
Estimating change associated with QDR and revised cost model. (Navy) (Estimating)	-228.7	-198.9
Estimating change associated with pricing of CV-22 unique full ORD requirements. (USSOCOM) (Estimating)	+98.1	+155.8
Estimating change associated with revised cost model. (Air Force) (Estimating)	-51.4	-91.4
Adjustment for Current and Prior Inflation. (Navy) (Support)	+2.8	+3.9
Change in MV-22 Initial Spares associated with QDR. (Navy) (Support)	-976.4	-2230.4
Deletion of Peculiar Support (moved to Other Weapons Systems Cost). (Navy) (Support)	-2287.8	-4775.0
Change in Other Weapon Systems Cost associated with QDR and West Coast stand-up. (Navy) (Support)	+1956.5	+3909.3
Change in CV-22 Initial Spares estimate. (USSOCOM) (Support)	+61.2	+96.3
Deletion of Peculiar Support (moved to Other Weapon Systems Cost). (USSOCOM) (Support)	-157.4	-243.4
Change in Other Weapon Systems Cost associated with removal from parametric estimate to a bottom-up build. (USSOCOM) (Support)	+125.3	+198.5
Change in CV-22 Initial Spares estimate. (Air Force) (Support)	+120.9	+186.2
Deletion of Peculiar Support (moved to Other Weapons Systems Costs. (Air Force) (Support)	-224.6	-340.5

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

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

Change in Other Weapon Systems Cost
associated with removal from parametric
estimate to a bottom-up build. (Air Force)
(Support)

+279.6 +430.1

Procurement Subtotal

-2729.4 -8278.4

(3) MILCON

Revised escalation indices. (Economic)
Economic adjustment for negative program
change. (USSOCOM) (Economic)
Estimating change due to refinement of
estimate. (USSOCOM) (Estimating)
Estimating change resulting from site
surveys and more detailed requirements
determination. (Navy) (Estimating)

N/A -2.6

N/A +0.4

-0.2 -0.8

+5.2 +5.9

MILCON Subtotal

+5.0 +2.9

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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
32.49	-11.50	+58.36	-7.16	--	+9.41	--	-0.08	+49.03	81.52

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	
29.42	-11.18	+55.49	-7.24	--	-0.30	--	-0.08	+36.69	66.11

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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	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
FUE/IOC	DEC 91	APR 01	N/A	JAN 01
Total Cost	24467	46599.7	N/A	37334.4
Total Quantity	609	523	N/A	458
Prog Acq Unit Cost	40.18	89.1	N/A	81.52

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

a. RDT&E --

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			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$3357.9	\$0.0	4	\$3357.9	\$3487.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-50.3	\$-28.5
Cumulative Variances To Date (11/30/97)	\$-89.3	\$-37.3
Net Change	\$-39.0	\$-8.8

Explanation of Change:

Unfavorable cost variance increased due to effort expended to achieve First Flight and Ferry Flight of A/C 7-10 to Patuxent River; subcontractor cost growth; and slower start in performing flight test activities than anticipated. The Program Manager's Variance at Completion was increased from -\$60M to -\$130M.

(U) Unfavorable schedule variance increased due to late arrival of test aircraft at Patuxent River, and slower accomplishment of test activities than planned.

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15b. Contract Information (Cont'd):

b. Procurement --
FY-97 LRIP (AIRFRAME):
 Bell-Boeing, Arlington, VA
 N0001996C0054/1, CFI
 Award: June 6, 1996
 Definitized: March 14, 1997

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$419.5	\$0.0	4

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$503.6	\$0.0	5

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$503.6	\$503.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.1	\$-0.5
Cumulative Variances To Date (11/30/97)	\$5.1	\$-1.1
Net Change	\$4.0	\$-0.6

Explanation of Change:

Favorable cost variance increased due to lower rates in Overhead and G&A than projected.

(U) Unfavorable schedule variance increased due to start up difficulties experienced in 1553 data bus cable manufacturing.

(U) Target Price increased due to the addition of one aircraft.

V-22 LRIP AAC (Engine):
 Allison Engine Co., Indianapolis IN
 N00019-95-C-0209, FFP
 Award: N/A
 Definitized: N/A

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$19.5	\$0.0	10

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$	\$0.0	10

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

Explanation of Change:

This contract is a letter contract, to be definitized on a firm fixed price (FFP) basis. Contract definitization is planned for March 1998. Cost variance reporting is not required on this FFP contract.

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

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15. Contract Information (Cont'd):

FY98 LRIP (AIRFRAME):
Bell-Boeing, Arlington, VA
N0001996C0054/2, CPIF
Award: April 28, 1997
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$422.5	\$0.0	5

Current Contract Price		
Target	Ceiling	Qty
\$422.5	\$0.0	5

Estimated Price At Completion	
Contractor	Program Manager
\$422.5	\$422.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.0	\$0.1
Cumulative Variances To Date (11/30/97)	\$0.0	\$0.1
Net Change	\$0.0	\$0.0

Explanation of Change:

Contract just commenced CPR reporting, less than one percent complete. No significant cost or schedule variances. This contract is in the process of being modified to add 2 additional aircraft.

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> (FY00-18)	<u>Total</u>
RDT&E	5660.5	512.1	355.1	473.9	7001.6
Procurement	995.3	694.0	718.6	27871.4	30279.3
MILCON	4.8	-	-	48.7	53.5
O&M	-	-	-	-	-
Total	6660.6	1206.1	1073.7	28394.0	37334.4

b. Annual Summary -- V-22 OSPREY

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>
1991				6.3	7.7
1992				11.3	14.1
1993					
1994				11.3	14.7
1995					

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

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 \$
1996					
1997					
1998					
1999					
2000				6.8	9.8
2001				6.9	10.1
2002				6.6	9.9
2003				7.3	11.1
Subtotal				56.5	77.4

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
1984				88.7	85.0
1985				174.4	172.4
1986				516.4	525.1
1987				402.8	421.7
1988				375.0	405.8
1989				239.4	269.9
1990				174.0	204.2
1991				174.5	212.2
1992				606.1	758.3
1993				558.2	714.6
1994				7.0	9.1
1995				340.4	452.7
1996				530.1	717.2
1997				440.4	605.6
1998				367.1	512.1
1999				250.6	355.1
2000				129.7	186.8
2001				72.5	106.2
2002				29.9	44.5
2003				20.9	31.8
2004				20.2	31.4
2005				20.3	32.3
Subtotal				5577.3	6889.7

NOTE: FY 1983 \$'s reflect \$29.9M of Army funds (PE 0604222A).

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

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

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY86 Dollars Nonrec	Flyaway FY86 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999				2.8	4.0
2000		7.8		10.2	15.0
2001		13.6		18.7	27.9
2002		26.9	21.6	91.3	139.0
2003		25.1	28.6	90.7	141.1
2004		15.0	27.1	90.7	144.1
2005		12.9	25.8	90.6	147.1
2006		36.5	24.7	90.5	150.2
2007		14.3	11.4	35.4	60.0
Subtotal		152.1	139.2	520.9	828.4

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				34.2	47.1

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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 \$
1997	5	17.9	394.8	513.1	716.8
1998	7		438.7	489.2	694.0
1999	7	12.5	395.6	480.0	692.3
2000	10	5.0	475.3	650.7	954.6
2001	16	52.0	638.6	895.0	1336.7
2002	20	47.7	714.1	1009.6	1537.4
2003	27	23.2	875.6	1090.2	1695.2
2004	30	7.4	911.1	1179.9	1874.9
2005	30	7.1	870.7	1119.3	1817.9
2006	30	6.9	840.3	989.8	1642.8
2007	30	6.7	815.9	925.1	1569.3
2008	30	6.6	798.7	906.7	1571.8
2009	30	6.6	790.6	908.8	1610.3
2010	32	6.9	829.2	989.1	1791.1
2011	32	6.9	816.4	935.2	1730.6
2012	31	6.6	782.7	833.3	1576.1
2013	3	0.8	95.9	111.4	215.3
2014	3	0.8	95.6	143.9	284.3
2015	3	0.7	95.6	120.9	244.1
2016	6	1.4	176.2	195.3	402.9
2017	6	1.4	175.6	240.7	507.6
2018	20	4.2	529.1	547.8	1180.5
Subtotal	408	426.0	12556.3	15505.9	25925.0

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 \$
1999				15.5	22.3
2000				34.6	50.8
2001	4	5.2	176.0	265.2	396.1
2002	6	17.7	211.9	316.7	482.3
2003	9	8.6	286.6	362.5	563.6
2004	9		267.8	374.7	595.5
2005	9		255.6	360.1	584.8
2006	9		246.3	353.2	586.2
2007	4		107.3	144.0	244.3
Subtotal	50	31.5	1551.5	2226.5	3525.9

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

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				3.6	5.5
2003				6.0	9.4
Subtotal				10.3	15.9

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				0.4	0.6
2001				2.5	3.7
2002				4.4	6.7
2003				1.3	2.1
2004				3.4	5.5
2005					
2006				0.7	1.2
2007				2.7	4.6
2008				0.7	1.3
2009					
2010				2.3	4.1
2011					
2012					
2013					
2014				1.5	3.0
2015					
Subtotal				23.9	37.6

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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 \$
OSD		152.1	139.2	587.7	921.7
Navy	408	426.0	12556.3	21107.1	32852.3
USAF	50	31.5	1551.5	2258.6	3560.4
Grand Total	458	609.6	14247.0	23953.4	37334.4

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): \$ 5782.5

Percent Total Program Expended: 15.5%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

(U) The following are the Assumptions and Ground Rules:

	MV-22	HV-22	CV-22
Aircraft Service Life	10,000 hrs	10,000 hrs	10,000 hrs
Aircraft Attrition Rate	1%	1%	0.6%
Aircraft Pipeline Rate	0	10%	13%
Total Aircraft in the Inventory	360	48	50
Total Operational Aircraft	322	32	43
Aircraft per Operating Squadron	12(18squad)	16(2squad)	0
Aircraft per Operating Squadron CONUS			8(2squad)
Aircraft per Operating Squadron CONUS			6(2squad)
Aircraft per Operating Squadron OVERSEAS			5(2squad)
Aircraft per Training Squadron	35	0	5
Aircraft per Special Squadron	23	0	0
Aircraft per Reserve Squadron	12(4squad)	0	0
Flight Hours per Month	35	35	40
Flight Hours per Year	420	420	480
JP-5 Cost per Gallon	\$0.79	\$0.79	\$0.79
JP-5 Cost per Barrel	\$33.18	\$33.18	\$33.18
Consumption Rate	402 gal/hr	386 gal/hr	390 gal/hr
Lubricating Oil Cost per Gallon	\$2.19	\$2.19	\$2.19
Lube Oil Consumption Rate	0.16 gal/hr	0.16 gal/hr	0.16 gal/hr
Flyaway cost	\$38.9M (FY94\$)	\$33.5M(FY94\$)	\$47.0M(FY94\$)
Airframe Unit Weight (AUW)	29433 lbs	29433	29433
Weight Empty	33140 lbs	33601	34062
Average Operating Years	39(FY99-FY37)	51(FY12-FY62)	30(FY03-FY32)
Complexity Factor	1.5	1.3	1.8

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

The average annual operating and support cost is per aircraft.

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Thousands)

Cost Element	V-22	
Mission Pay & Allowances	908.2	N/A
Unit Level Consumption	381.8	N/A
Intermediate Maintenance	77.2	N/A
Depot Maintenance	118.1	N/A
Contractor Support	184.0	N/A
Sustaining Support	157.1	N/A
Indirect Costs	33.0	N/A
Total	1859.4	N/A

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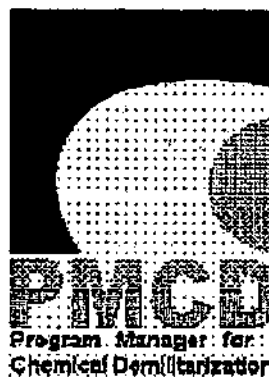
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: Chem Demil

AS OF DATE: December 31, 1997

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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 Mr. James Bacon
APG, MD 21010-5401 Assigned: July 1, 1997
 DSN 584-3447; COMM 410-671-3447
4. Program Elements/Procurement Line Items:
RDT&E:
PE 0708007D
PROCUREMENT:
APEN 0390 ICN N/A (DCA/DNA)
MILCON:
PE 0708007A
PE 0708007D
O&M:
PE 0708007D

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**DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE**

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5. References:

CSD

SAR Baseline (Development Estimate):

FY96 President's Budget dated February 6, 1995.

Approved Program / Production Estimate (PdE):

DAE Approved Acquisition Program Baseline (APB) dated March 31, 1998.

NSCMD

SAR Baseline (Development Estimate):

FY96 President's Budget dated February 6, 1995.

Approved Program / Production Estimate (PdE):

DAE Approved Acquisition Program Baseline (APB) dated March 31, 1998.

6. Mission and Description:

Chemical Demilitarization Program (CDP)

The Chemical Demilitarization (Chem Demil) Program (CDP) consists of the Chemical Stockpile Disposal Project (CSDP), the Alternative Technologies and Approaches Product (ATAP) and the Non-Stockpile Chemical Materiel Project (NSCMP). The CDP also provides funding for the Chemical Stockpile Emergency Preparedness Project (CSEPP).

Chemical Stockpile Disposal Project (CSDP)

The primary mission to be accomplished under the CSDP is the demilitarization of the United States (U.S.) unitary stockpile of lethal chemical agents and munitions stored at eight locations in the Continental U.S. (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 munitions and storage containers, followed by the incineration of each component.

Alternative Technologies and Approaches Product (ATAP)

The Product Manager for Alternative Technologies and Approaches was established during 1994 with responsibility for identifying alternative technology requirements and approaches, planning for the implementation of the requirements, and managing the activities of the various organizations involved. The Defense Acquisition Executive (DAE) authorized the Army on 17 Jan 97 to prepare an environmental impacts analysis (National Environmental Policy Act (NEPA) documentation) of the proposal to construct pilot plants to demonstrate the neutralization (hydrolysis) process for alternative technologies followed by either on-site or off-site post-treatment for nerve agent at NECD, Indiana, and for mustard agent at APG, Maryland.

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6. Mission and Description (Cont'd):

Non-Stockpile Chemical Materiel Project (NSCMP)

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. NSCMP includes recovered chemical materiel, former chemical weapons production facilities, binary chemical weapons, and miscellaneous chemical warfare materiel.

Other:

Chemical Stockpile Emergency Preparedness Project (CSEPP)

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 U.S. chemical weapons stockpile. The CSEPP provides emergency response/preparedness to the eight CONUS chemical stockpile storage locations and the communities in ten states surrounding them. Federal Emergency Management Agency (FEMA) participates in this project by providing technical emergency preparedness assistance, as well as a financial structure for transferring funds to the states and counties. The Department of the Army and FEMA concluded negotiations on a new memorandum of understanding that recognizes FEMA's autonomy to manage and direct off-post aspects of the project and retains on-post responsibility for the Army. Both parties agree to continue the collaborative approach to decision making and problem solving by supporting existing Integrated Product and Process Teams. Both parties also agree to support legislation that will give FEMA the necessary authority to take on their expanded role. The Army will continue to provide technical support and expertise to assist FEMA in implementing off-post chemical agent emergency preparedness procedures. The Secretary of the Army has directed the Army to reorganize its portion (on-post and technical support) of the project. Responsibility for the CSEPP function has been transferred from the Assistant Secretary of the Army (Research, Development and Acquisition) to the Assistant Secretary of the Army (Installations, Logistics and Environment). The Commander of the CBDCOM has programmatic authority. The PMCD will continue to coordinate and work together with FEMA and CBDCOM to ensure maximum protection to the public, the workers, and the environment during the demilitarization process.

PM for Assembled Chemical Weapon Assessment (ACWA):

Public Law 104-208 (Section 8065) required the conduct of a pilot program to identify and demonstrate not less than two alternatives to the baseline incineration process for the demilitarization of assembled chemical munitions. The Assembled Chemical Weapon Assessment (ACWA) Program was created to carry out this mission. The Undersecretary of Defense for Acquisition and Technology designated a separate program manager for this program in FY 97. While funding for the ACWA Program is included under the Chemical Agent Munitions Destruction

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6. Mission and Description (Cont'd):

Defense (CAMD,D) appropriation and because it is a separate Program Office, the ACWA portion of the CAMD,D appropriation is not reported as part of the PMCD current estimate.

7. Executive Summary:

This annual Selected Acquisition Report (SAR) is being submitted in accordance with U.S. Code, Title 10, Section 2432. The report details impacts to cost and schedule since last reported (Dec 96 SAR). This report, together with the Annual Status Report on the Disposal of Chemical Weapons and Materiel for Fiscal Year 1997, provides a complete status of the program as of the submission of the Fiscal Year 1999 President's Budget dated 2 February 1998. Where possible, significant events which have occurred since that date are included in order to provide the most current and timely information available.

The PM for Chemical Demilitarization (PMCD) submitted a revised Acquisition Program Baseline (APB) to the Army Acquisition Executive. On 27 Mar 98 the AAE signed the APB. On 31 Mar 98 the Defense Acquisition Executive signed the APB and approved devolvement of the Chemical Demilitarization Program to an ACAT IC Program.

As a result of this action, parameters in the previously approved (Mar 95) APB have been revised and rebaselined. The revisions to the CDP APB update an obsolete baseline to provide a more current and better measure of program performance, schedule and cost. Performance parameters address environmental, safety and occupational health requirements established in public law. Revised rebaselined schedule parameters place the program on an "event driven" schedule; one that links intermediate activities based on accomplishments rather than fixed calendar dates. They require the project and product managers to meet schedule parameters that they can manage and control and that are based on historical experience and lessons learned. Cost parameter changes reflect a fully funded program based on an updated life cycle cost estimate that was included in an Army Cost Position signed by the Assistant Secretary of the Army (Financial Management and Comptroller) in November 1997 and in the Fiscal Year 1999 President's Budget Submission dated 2 February 1998.

As a result of the approval of a new APB, the structure of this report has also undergone significant changes since the submission of the previous (Dec 96) SAR. The four end item structure (Chemical Stockpile Disposal Project [CSDP], Alternative Technologies and Approaches Product [ATAP], Chemical Stockpile Emergency Preparedness Project [CSEPP], and Non-Stockpile Chemical Materiel Project [NSCMP]) has been revised. The report now contains two end items which reflect two major mission areas: Chemical Stockpile Disposal (CSD) and Non-Stockpile Chemical Materiel Disposal (NSCMD). Under this revised structure, CSDP, ATAP and CSEPP funding are reported as elements of the program's chemical stockpile disposal activity, and the NSCMP is reported as the program's non-stockpile chemical materiel disposal activity.

The CDP is continuing to make progress towards the elimination of U.S. chemical weapons and materiel and to comply with Chemical Weapons Convention (CWC)

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7. Executive Summary (Cont'd):

requirements. A number of significant milestones were accomplished this past year in the nation's demilitarization effort.

All CDP funding and management will be devolved from the Office of the Secretary of Defense to the Department of the Army in accordance with the Secretary of Defense's recent Defense Reform Initiative. The process of devolvement is described in Paragraph 1.3.1.1. of Department of Defense Regulation 5000.2-R. During devolvement, the Defense Acquisition Executive will delegate Milestone Decision Authority (MDA) for the CDP to the Army Acquisition Executive (AAE). The program acquisition category (ACAT) will also be redesignated from ACAT ID (for which the MDA is the DAE) to ACAT IC (for which the MDA is the AAE).

The Army Cost Position (ACP) was approved by the Army Cost Review Board on 10 Sep 97. A follow-up meeting was held on 1 Oct 97 at which the risk-adjusted ACP was approved. The new estimate was signed by the Assistant Secretary of the Army (Financial Management and Comptroller) on 14 Nov 97. Cost Parameters based on the ACP are included in the revised rebaselined Acquisition Program Baseline presented in this report.

Program Budget Decision (PBD) 299 dated 1 Dec 97 made adjustments to the Program's cost estimate for schedule delays. PBD 604 dated 18 Dec 97 adjusted the estimate to reflect the new economic assumptions.

Chemical Stockpile Disposal Project (CSDP):

The CSDP is continuing to destroy the U.S. chemical stockpile of unitary chemical agents and munitions, while ensuring maximum protection to the communities surrounding the disposal facilities, the workers involved in the destruction effort, and the environment. As of 30 Mar 98, the prototype facility, the Johnston Atoll Chemical Agent Disposal System (JACADS), and the first-generation facility, the Tooele Chemical Agent Disposal Facility (TOCDF) have destroyed over 2,997 tons of chemical agent and over 300,093 munitions, which represent 9.5 percent (measured in tons of chemical agent) of the original national chemical stockpile.

The major accomplishments at JACADS this year were the completion of the nerve agent GB 155mm and 105mm projectile campaigns. During these campaigns, 150,138 projectiles containing over 360 tons of nerve agent GB were safely destroyed. The projectile rejects from these campaigns will be processed at a later date. JACADS began processing 8-inch GB projectiles on 2 Jan 98. As of 30 Mar 98, the 8-inch projectile campaign is complete having destroyed 13,020 projectiles. As of 30 Mar 98, JACADS has destroyed over 73.6 percent (measured in tons of chemical agent) of the chemical stockpile originally stored on Johnston Island.

Army comments on the draft JACADS RCRA permit renewal were submitted to and received by the U.S. Environmental Protection Agency (EPA) Region IX on 31 Oct 97. The EPA is in the process of addressing the public's and PMCD's comments on the draft JACADS renewal permit.

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On 27 Nov 97, an industrial accident occurred while individuals, employed by the JACADS Systems Contractor, Raytheon Engineers and Constructors, were servicing equipment during a planned maintenance operation at JACADS. The accident resulted in a fatal injury to a Systems Contractor employee. Until this incident, no employee had missed a day of work since Jun 95 as a result of an on-the-job injury or illness, representing more than 3 million hours without a lost-time injury. The facility was in an extended shutdown to prepare for the 8-inch projectile campaign at the time of the industrial accident. Neither chemical agent nor explosives were involved. The Army published the accident report on 30 Mar 98.

Agent shakedown operations continue at the TOCDF as part of preparations for full-scale disposal operations. On 22 Aug 97, TOCDF marked the completion of one year of successful operations. TOCDF completed a series of GB agent trial burns for each of the furnaces in FY 1997. The trial burn reports are under review by the State of Utah and the EPA. Once these reports are approved, chemical agent feed rates can be increased from the current 50 percent of maximum feed rate to 100 percent. Final permit approvals are expected to be received during 3Q FY 98 (Apr-Jun). The EPA is reviewing the results of the Deactivation Furnace System Trial Burn and is expected to issue the operating permit in 1998. Once the permit is received, rocket disposal will resume. No adverse impact to the operational schedule is expected due to the capability to coprocess rockets and bulk containers at TOCDF.

PMCD is implementing equipment and operating modifications to increase processing rates at TOCDF. PMCD is also working closely with the State of Utah and the EPA to expedite obtaining approval for full-rate processing. Implementation of these efforts are reflected in the schedules for FY 98 and early FY 99 and are expected to enable TOCDF to recover an FY 97 processing shortfall within that timeframe. As of 30 Mar 98, TOCDF has destroyed the GB chemical agent inside 1,858 ton containers, and 384 MC-1 bombs and 11,592 M55 rockets containing over 1,503 tons of nerve agent GB. The 5x ton containers and MC-1 bomb casings were shipped off-site for recycling.

In response to highly publicized allegations and concerns about the safety of TOCDF, the U.S. Army chartered a team to validate the safety of TOCDF operations, investigate the allegations, and verify the Systems Contractor's ability to safely operate the facility. As part of the evaluation, the team looked at operating procedures, systems, methodologies, and management philosophies. The eight-member team, which consisted of safety, engineering, environmental, legal, nuclear, and chemical weapons experts, concluded that TOCDF is being operated in a safe and environmentally sound manner. The report also stated that TOCDF has an effective safety program. The team identified management, operational procedures, and systems that were working well, as well as those needing improvement. In response to the safety evaluation, the Project Manager for Chemical Stockpile Disposal developed a detailed plan to implement the recommendations outlined in the safety evaluation team's report.

The State of Utah Citizens' Advisory Commission conducted an independent safety evaluation of TOCDF and issued their report on 25 Aug 97. The report stated

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7. Executive Summary (Cont'd):

that the operation of TOCDF is proceeding safely and is likely to continue to proceed safely. The report did include several recommendations for improvement, and the Project Manager for Chemical Stockpile Disposal is addressing those recommendations.

On 17 Nov 97, the State of Utah Department of Environmental Quality (UTDEQ) issued a Notice of Violation (NOV) and Compliance Order resulting from self-reporting by the TOCDF Site Project Manager and regulatory inspections of TOCDF from Aug 96 to Aug 97. The inspections were conducted by the Utah Division of Solid and Hazardous Waste, contractor and government personnel. All non-compliances discovered during the year were cited in the NOV issued on 17 Nov 97. All NOV line items were immediately addressed upon discovery and at no time were the violations serious enough to curtail operations of the facility. Penalties, if deemed necessary by UTDEQ, will be addressed at a later date. A response to the NOV was submitted on 18 Dec 97.

Several major events occurred this year to move the Anniston Chemical Agent Disposal Facility (ANCDF) forward toward construction, systemization, and operations. On 19 Jun 97, the Alabama Department of Environmental Management (ADEM) issued the required ANCDF environmental permits. The ANCDF Systems Contractor began construction on 20 Jun 97 after receiving a formal "notice to proceed" from the contracting officer.

The ADEM received two requests for administrative actions contesting the issuance of the ANCDF environmental permits. One request, filed by an individual, was incomplete. A motion to dismiss this request was submitted by ADEM and was granted. The second request was filed by the Legal Environmental Assistance Foundation (LEAF) and is currently being heard. Construction activities for the ANCDF are continuing during the hearing on the administrative challenge to the ANCDF environmental permits by LEAF. It is estimated that the ruling on this hearing will not be received prior to the end of 4Q FY 98 (Jul-Sep).

Significant progress was also made this year towards implementing plans for destruction of the Umatilla Chemical Depot stockpile. The Systems Contract for the Umatilla Chemical Agent Disposal Facility (UMCDF) was awarded on 10 Feb 97. The State of Oregon issued the required environmental permits for the facility on 11 Feb 97 with an effective date of 12 Feb 97. The UMCDF contracting officer issued the "notice to proceed" on 10 Jun 97. Construction of UMCDF began the same day. A Class III Permit Modification request was submitted to the State of Oregon on 31 Mar 97, to have the Systems Contractor, Raytheon Demilitarization Company (RDC), added to the Resource Conservation and Recovery Act (RCRA) permit as a co-permittee of the facility. The public comment period for this request ended in the 1Q FY 98 (Oct-Dec). Unanimous approval to add RDC as a co-permittee to the permit was received from the Oregon Environmental Quality Commission (EQC) on 9 Jan 98.

On 14 Apr 97, the Sierra Club, G.A.S.P., and the Oregon Wildlife Federation submitted a petition to reconsider and revoke, rescind, or modify the UMCDF environmental permits. At a Jun 97 meeting, the Oregon EQC unanimously voted

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7. Executive Summary (Cont'd):

to deny the petition. An appeal of the EQC's decision to deny the permit appeal was filed in State court by the same groups on 7 Aug 97. The Oregon Department of Environmental Quality is currently providing an administrative record to the State Attorney General's Office regarding issuance of the permit.

The U.S. Army made significant progress towards completing the activities necessary to begin construction of Pine Bluff Chemical Agent Disposal Facility (PBCDF) in 1997. On 25 Jul 97, the Systems Contract for PBCDF was awarded with a "limited notice to proceed" provision. However, this contract award was protested to the General Accounting Office (GAO) on 5 Aug 97. All work on the contract is suspended until such time as the protest is resolved. A report was prepared in accordance with the U.S. Army Industrial Operations Command's plan of action (Legal and Contracting offices) to address the GAO findings relative to the protest of the PBCDF Systems Contract award being upheld. The Source Selection Advisory Council was briefed in Feb 98, and announcement of the Systems Contract resolution is anticipated in the 2Q FY 98 (Jan-Mar). Construction of the facility will begin after resolution of the Systems Contract protest and the required environmental permits are received from the State of Arkansas.

The U.S. Army has completed the requirements necessary to support the issuance of the requisite PBCDF environmental permits. The amended Ecological/Health Risk Assessment Report for PBCDF and Pine Bluff Arsenal Central Incinerator Complex (PBACIC), prepared by the U.S. Army Center for Health Promotion and Preventive Medicine, was delivered to the Arkansas Department of Pollution Control & Ecology (ADPC&E) on 12 Dec 97. It addresses all regulatory comments received in Nov 97. The ADPC&E has declared the RCRA and Clean Air Act (CAA) permit applications technically complete. The ADPC&E will be preparing the draft permits with a target date to begin the public comment period by 1 Jun 98. Due to the complexity of the permit, ADPC&E has established a 75-day public comment period for the draft permit rather than the previously projected minimum 45-day period.

Public Law 104-208 (Section 8065) required the conduct of a pilot program to identify and demonstrate not less than two alternatives to the baseline incineration process for the demilitarization of assembled chemical munitions. The Assembled Chemical Weapon Assessment (ACWA) Program was created to carry out this mission. The Undersecretary of Defense for Acquisition and Technology designated a separate program manager for this program in FY 97. Public Law 104-208 (Section 8065) also suspended the obligation of funds for the construction of baseline incineration facilities at Pueblo Chemical Depot, Colorado, and Blue Grass Army Depot, Kentucky until 180 days after the Secretary of Defense submits a report to the congressional defense committees detailing the effectiveness of each alternative chemical munitions demilitarization technology identified and demonstrated under the pilot program and their ability to meet the applicable safety and environmental requirements. The PMCD placed the schedules for the Pueblo and Blue Grass Chemical Agent Disposal Facilities (PUCDF and BGCDF) on hold until that time.

The PMCD is continuing environmental permitting activities at Pueblo and Blue

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7. Executive Summary (Cont'd):

Grass. At both locations, responses to the RCRA and CAA permit applications and Notice of Deficiencies are being worked to minimize any further schedule delays should the ACWA Program determine there is no viable alternative to the baseline incineration process. PMCD is awaiting approval of the PUCDF Ecological/Health Risk Assessment Protocol which was submitted to the Colorado Department of Public Health and Environment on 22 Aug 97. PMCD continues to interface with the State of Colorado to finalize this work. PMCD efforts to comply with Commonwealth of Kentucky prerequisites to the review of chemical agent disposal facility environmental permits continue.

The CSDP developed a process in 1997 that involves the stockpile communities in evaluating proposed changes to chemical agent disposal facilities. Although the CSDP has developed and uses a safe disposal process, it may be beneficial to change aspects of the disposal facility or the disposal process to further enhance safety or efficiency. Obtaining input from the stockpile communities concerning the proposed modifications is a key component of the change management process. The CSDP proposes changes and determines their acceptability based on the impact on risk and the value of change. The public will be allowed to evaluate the proposed change based on these and other germane factors. The CSDP will take public input and include it in the final decision on the benefits of the proposed change.

Alternative Technologies and Approaches Product (ATAP):

The Product Manager (PM) for Alternative Technologies and Approaches is proceeding with implementation of pilot neutralization-based chemical demilitarization facilities at the two bulk-only agent storage locations, APG-Edgewood Area and NECD. The Aberdeen Chemical Agent Disposal Facility (ABCDF) request for proposal (RFP) was issued on 17 Nov 97. Proposals were received on 2 Mar 98. The ABCDF environmental permits are expected during 4Q FY 98 (Jul-Sep). The Newport Chemical Agent Disposal Facility (NECDF) RFP was issued on 9 Mar 98. The RCRA/CAA/Clean Water Act permit applications will be submitted during 3Q FY 98 (Apr-Jun) and approval is expected during 1Q FY 00 (Oct-Dec).

Non-Stockpile Chemical Materiel Project (NSCMP):

The NSCMP continued to support emergency chemical warfare materiel recovery and destruction operations, plan for future chemical warfare recovery efforts, and prepare documentation and plans to meet the requirements of the CWC.

The Notice of Intent (NOI) to prepare the Programmatic Environmental Impact Statement (PEIS) was released 18 Oct 96. The NSCMP PEIS Scope of Statement was approved for release by the Secretary of the Army on 3 Dec 97. Congress was notified and a notice of availability appeared in the Federal Register on 11 Dec 97.

As part of the binary munitions disposal effort, a prove-out run of the binary munitions punch and drain line at Hawthorne Army Ammunition Plant was conducted during Nov 97. The line will be used to dispose of excess binary munition

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7. Executive Summary (Cont'd):

components. These components must be destroyed by Apr 99 to achieve the CWC parity requirement. Disposal operations began 10 Nov 97.

Plans for destruction of the former chemical weapons production facilities are in preparation. Planning efforts in 1997 centered around completion of environmental documentation required before the destruction effort can begin. Disposal of empty ton containers located at APG-Edgewood Area continued throughout 1997 as did efforts to design, develop, test, and acquire deployable systems to access, identify, treat, and dispose of recovered CWM.

For NSCMP:

With the approval of the FY 99 President's Budget, a Nunn-McCurdy breach has occurred in the NSCMP. The President's Budget reflects increases to the NSCMP which have increased PAUC by \$212.4M (base year dollars) which is an increase of 21.4% when NSCMP is measured against the cost baseline in the Mar 95 APB. However, with the approval of a revised rebaselined APB on 31 Mar 98, the NSCMP is within threshold parameters.

Other Programmatic Areas:

As part of a continuing, proactive public outreach campaign, PMCD initiated plans in 1995 to open public outreach offices in the communities surrounding each of the chemical stockpile storage locations in the CONUS. In FY 1997, the PMCD opened two new outreach offices. One office opened in Oct 96 in Pueblo, CO, and another opened in Edgewood, MD in Jun 97. These offices join the five outreach offices already open in the following communities: Tooele, UT (Jun 95), Anniston, AL (Jan 96), Hermiston, OR (Mar 96), Pine Bluff, AR (Jun 96), and Richmond, KY (Oct 96).

The Program has been successful in working closely with the states, Federal regulatory agencies, and the Citizens' Advisory Commissions through a series of Environmental Forums. A successful fourth forum was held in Portland, OR, on 9 and 10 Sep 97. The discussion, issues, and contributions from attendees is extremely beneficial and continues to enhance communication. Planning has begun for Environmental Forum V, tentatively scheduled for Little Rock, AR, in 3Q FY 98 (Apr-Jun).

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8. Threshold Breaches:

CSD

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

NSCMD

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

c. Explanation of Breach:

The FY 99 President's Budget reflects increases to the NSCMP of \$212.4M (base year dollars) which increase Program Acquisition Unit Cost (PAUC) 21.4% when NSCMP is measured against the cost baseline reported in the Dec 96 SAR. The

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8c. Threshold Breaches (Cont'd):

Dec 96 SAR was based on the CDP Mar 95 APB. A revised APB was approved on 31 Mar 98. The NSCMP PAUC when measured against this new baseline reflects that the NSCMP is within threshold value in all cost parameters. The NSCMD portion of Section 12, Unit Cost Summary has been prepared with the Unit Cost Report Baseline which was included in the Dec 96 SAR in order to comply with the information requirements of 10 USC Sections 2432 and 2433.

9. Schedule:

CSD

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program/PdE</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE DISPOSAL PROJECT			
(CSDP)			
Chemical Weapons Convention			
Compliance (Entry into Force is			
04/29/97)			
1% U.S. Category 1 Chemical Weapons Destroyed	N/A	JAN 94	JAN 94 (Ch-1)
20% U.S. Category 1 Chemical Weapons Destroyed	N/A	MAY 02	MAY 02 (Ch-1)
45% U.S. Category 1 Chemical Weapons Destroyed	N/A	MAY 04	MAY 04 (Ch-1)
100% U.S. Category 1 Chemical Weapons Destroyed	N/A	MAY 07	MAY 07 (Ch-1)
CAMOS 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	SEP 00	SEP 00
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	AUG 96	AUG 96
Begin Closure	JAN 02	OCT 03	OCT 03
ANNISTON (ANCDF)			
Submit Updated RCRA/CAA Permit Applications	FEB 95	FEB 95	FEB 95
Systems Contract Award/Start Const.	AUG 95	FEB 96	FEB 96
Begin Operations	DEC 99	JAN 02	JAN 02 (Ch-2)
Begin Closure	AUG 03	NOV 05	NOV 05 (Ch-2)
UMATILLA (UMCDF)			
Submit Updated RCRA/CAA Permit Applications	MAR 95	SEP 95	SEP 95
Systems Contract Award/Start Const.	MAR 96	FEB 97	FEB 97
Begin Operations	JUL 00	FEB 02	FEB 02

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9a. Schedule (Cont'd):

CSD

	<u>Development Estimate (SAR)</u>	<u>Approved Program; PdE</u>	<u>Current Estimate</u>	
Begin Closure	SEP 03	JUN 05	JUN 05	
PINE BLUFF (PBCDF)				
Submit RCRA/CAA Permit Applications	JUN 95	JUL 95	JUN 95	
Begin Construction M+1	N/A	TBD	TBD	(Ch-1)
Begin Operations M+54	AUG 00	TBD	TBD	
Begin Closure M+94	NOV 03	TBD	TBD	
PUEBLO (PUCDF)				
Submit Updated RCRA/CAA Permit Applications	SEP 95	OCT 95	OCT 95	
Begin Construction M+1	N/A	TBD	TBD	(Ch-1)
Begin Operations M+55	AUG 01	TBD	TBD	(Ch-3)
Begin Closure M+84	AUG 03	TBD	TBD	(Ch-3)
BLUE GRASS (BGCDF)				
Submit RCRA/CAA Permit Applications	SEP 95	DEC 95	DEC 95	
Begin Construction M+1	N/A	TBD	TBD	(Ch-1)
Begin Operations M+55	MAY 02	TBD	TBD	(Ch-3)
Begin Closure M+77	MAR 04	TBD	TBD	(Ch-3)
ALTERNATIVE TECHNOLOGIES AND APPROACHES				
PRODUCT				
ABERDEEN (ABCDF)				
Milestone 0	N/A	AUG 94	AUG 94	
Milestone I/II (Pilot Scale)	N/A	DEC 96	DEC 96	
Milestone III (Operations)	N/A	MAY 04	JAN 04	(Ch-1)
NEWPORT (NECDF)				
Milestone 0	N/A	AUG 94	AUG 94	
Milestone I/II (Pilot Scale)	N/A	DEC 96	DEC 96	
Milestone III (Operations)	N/A	JAN 04	MAY 04	(Ch-1)

ACRONYMS:

CWC - Chemical Weapons Convention
 EIF - Entry Into Force
 RCRA - Resource Conservation and Recovery Act
 CAA - Clean Air Act
 CAMDS - Chemical Agent Munitions Disposal System
 JACADS - Johnston Atoll Chemical Agent Disposal System
 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

Notes:

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9a. Schedule (Cont'd):
CSD

1. Schedule parameters for the Chemical Stockpile Disposal Project (CSDP) and the Alternative Technologies and Approaches Product (ATAP) have been included under the Chemical Stockpile Disposal (CSD) end item.
2. Threshold dates will be one year where possible.
3. a. The CWC entered into force on 29 Apr 97 for the nations that ratified the CWC prior to this date. The United States Congress ratified the CWC five days earlier, on 24 Apr 97. While the start date for the CWC purposes is Apr 97, the United States has met some CWC requirements earlier than Apr 97.
- b. The CWC groups chemicals by toxicity and commercial utility by segregation into separate schedules (Annex on Chemicals, Part B, Schedule of Chemicals). Part A of the Schedules lists toxic chemicals and Part B lists Precursors. Briefly outlined, the schedules are as follows:

Schedule 1: Lists chemicals developed, produced, stockpiled, or used as weapons for which there is little or no use for purposes not prohibited by the CWC. Included in the list are:

- Toxic Chemicals

- | | |
|--------------------|----------------------|
| 1. Sarin, Soman | 5. Lewisite |
| 2. Tabun | 6. Nitrogen Mustards |
| 3. VX | 7. Saxitoxin |
| 4. Sulfur Mustards | 8. Ricin |

- Precursors

- | | |
|-------|----------------|
| 1. DF | 3. Chlorosarin |
| 2. QL | 4. Chlorosoman |

Schedule 2: Part A of Schedule 2 lists chemicals that pose a threat to the purposes of the CWC and are not produced in large quantities for purposes not prohibited by the CWC. Part B of Schedule 2 includes chemicals used as precursors to other more toxic chemicals, and those that are not produced in large quantities for purposes not prohibited by the CWC. Included in Part A (toxic chemical) is the hallucinogenic agent BZ, while Part B (precursor) includes Thiodiglycol.

Schedule 3: Lists chemicals that have been produced, stockpiled, or used as chemical weapons and may be produced in large quantities for uses not prohibited by the CWC (that is, industrial chemicals). Included in Part A of Schedule 3 (toxic chemicals) are:

- | | |
|----------------------|---------------------|
| 1. Phosgene | 3. Hydrogen Cyanide |
| 2. Cyanogen Chloride | 4. Chloropicrin |

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9a. Schedule (Cont'd):

CSD

- c. The CWC divides chemical weapons into three categories based on the schedule of chemicals described above:
 - Category 1 - Chemical weapons on the basis of Schedule 1 chemicals and their parts and components.
 - Category 2 - Chemical weapons on the basis of all other chemicals and their parts and components.
 - Category 3 - Unfilled munitions and devices, and equipment specifically designed for use directly in conjunction with employment.
4. While the majority of the Category 1 Chemical Weapons are contained in the Chemical Stockpile Disposal Project, the Non-Stockpile Chemical Materiel Project has declared Category 1 Chemical Weapons also. The United States currently has no declared Category 2 Chemical Weapons.
5. CWC objective and threshold milestone dates have been adjusted to reflect first day of the next month since EIF is 29 April 1997. This does not apply to milestones that were accomplished prior to March 1998.
6. In accordance with the CWC, disposal of at least 1 percent of the United States' Category 1 chemical weapons must be completed no later than 3 years after EIF, or April 2000. Category 1 chemical weapons include munitions and containers filled with nerve agents (GB and VX), mustard (H, HD, HT, and HN), and lewisite (L), as well as the binary chemical agent precursors DF and QL.
7. In accordance with the CWC, disposal of at least 20 percent of the United States' Category 1 chemical weapons must be completed no later than 5 years after EIF or April 2002.
8. In accordance with the CWC, disposal of at least 45 percent of the United States' Category 1 chemical weapons must be completed no later than 7 years after EIF, or April 2004.
9. UMCDF "Begin Construction" objective and threshold dates are based on a notice to proceed construction date from the State of Oregon of 10 Jun 97.
10. "M" equals the date (month) that the environmental permit applications are approved by the state. "M+" is that date plus the cumulative number of months by phase (i.e., construction, operations, closure) after issuance of the environmental permits by the state.
11. The FY97 Defense Appropriations Act, signed into law on 30 Sep

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9a. Schedule (Cont'd):

CSD

96. required that no funds for construction of a baseline facility at Pueblo Chemical Depot and Blue Grass Army Depot be obligated until 180 days after the Secretary of Defense report on the effectiveness of alternative technology for assembled munitions identified and demonstrated under a pilot program and meeting applicable safety and environmental requirements. Once this is accomplished, objective and threshold dates for these facilities will be established. "M" dates shown for PUCDF and BGCDF assume incineration based disposal process at these sites should Congress direct using incineration as the technology of choice.
12. PUCDF and BGCDF environmental permit applications were submitted based on use of incineration as the technology of choice. Selection of a different technology would require submitting new permit applications.
13. The decision as to who will operate the Alternative Technologies and Approaches Project sites after MS III is yet to be made.
14. "Closure" occurs in two phases. Phase 1 is the chemical decontamination of the facility in accordance with procedures detailed in the RCRA permit applications closure plan which is incorporated as a permit requirement. Phase 2 is facility demolition and debris removal and subsequent site restoration. The scope of Phase 2 is currently being defined.
15. As directed by the Secretary of the Army and the Director of the Federal Emergency Management Agency (FEMA), FEMA will take over full responsibility and have full authority for the off-post (civilian) portion of the Chemical Stockpile Emergency Preparedness Project (CSEPP) and the Commander of the U.S. Army Chemical Biological Defense Command (CBDCOM) will have programmatic authority. This direction resulted in the elimination of CSEPP as one of the four end items of the Chemical Demilitarization Program included in the previous (Mar 95) Acquisition Program Baseline.
- b. Current Change Explanations --
- (Ch-1) New milestones reflected in the revised Acquisition Program Baseline approved March 31, 1998..

(Ch-2) ANCDF - The current estimate for achieving the ANCDF milestone "Begin Operations" is Jan 02, a 6 month slip from the Project Manager's Previous Current Estimate of Jul 01 reported in the Dec 96 SAR. This delay is due primarily to delays in resolving discrepancies in the Ecological/Health Risk Assessment (E/HRA) and an extended public comment period as part of the environmental permitting process. This delay also resulted in a ripple effect on the subsequent milestone:

MILESTONES	FROM	TO
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9b. Schedule (Cont'd):

CSD

Begin Operations	JUL 01	JAN 02
Begin Closure	JAN 05	NOV 05

(Ch-3) PUCDF/BGCDF - The FY97 Defense Appropriations Act, signed into law on 30 Sep 96, required that no funds for construction of a baseline facility at Pueblo Chemical Depot and Blue Grass Army Depot be obligated until 180 days after the Secretary of Defense report on the effectiveness of alternative technology for assembled munitions identified and demonstrated under a pilot program and meeting applicable safety and environmental requirements. Once this is accomplished, objective and threshold dates for these facilities will be established. "M" dates shown for PUCDF and BGCDF assume incineration based disposal process at these sites should Congress direct using incineration as the technology of choice. "M" equals the date (month) that the environmental permit applications are approved by the state. "M+" is that date, plus the cumulative number of months by phase (i.e., construction, operations, closure) after issuance of the environmental permits by the state.

NSCMD

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program;PdE</u>	<u>Current Estimate</u>
NON-STOCKPILE CHEMICAL MATERIEL			
DISPOSAL PROJECT (NSCMD)			
Chemical Weapons Convention			
Compliance (Entry Into Force is 29 April 97)			
Initially Declared Category 1			
Chemical Weapons (Other than Binary)			
100% Destroyed (EIF + 10 yrs)	N/A	MAY 07	MAY 07 (Ch-1)
Initially Declared Category 3			
Chemical Weapons			
Begin Destruction (EIF + 1 yr)	N/A	MAY 98	MAY 98 (Ch-1)
100% Destroyed (EIF + 5 yrs)	N/A	MAY 02	MAY 02 (Ch-1)
Initially Declared Category 1			
Chemical Weapons (Binary)			
Excess Binary "Other" or Non-key	N/A	MAY 99	MAY 99 (Ch-1)
Chemical destroyed (EIF + 2 yrs)			
100% Destroyed (EIF + 10 yrs)	N/A	MAY 07	MAY 07 (Ch-1)
Initially Declared Schedule 1			
Production Facilities			
Begin Destruction (EIF + 1 yr)	N/A	MAY 98	MAY 98 (Ch-1)
100% Destroyed Period 3 (EIF + 10 yrs)	N/A	MAY 07	MAY 07 (Ch-1)
Initially Declared Schedule 2			
Production Facilities			
Begin Destruction (EIF + 1 yr)	N/A	MAY 98	MAY 98 (Ch-1)

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9a. Schedule (Cont'd):

NSCMD

	<u>Development Estimate (SAR)</u>	<u>Approved Program;PdE</u>	<u>Current Estimate</u>
100% Destroyed (EIF + 5 yrs)	N/A	MAY 02	MAY 02 (Ch-1)
Disposal of CWM (non CWC)	N/A	MAY 07	MAY 07 (Ch-1)
Storage, Transportation, Disposal of CWM in Support of Remediation/ Emergency Operations	N/A	MAY 07	MAY 07 (Ch-1)

1. CWC objective and threshold milestone dates have been adjusted to reflect first day of the next month since EIF is 29 April 1997.

2. While the majority of the Category 1 Chemical Weapons are contained in the Chemical Stockpile Disposal Project, the Non-Stockpile Chemical Materiel Project has declared Category 1 Chemical Weapons also. The United States currently has no declared Category 2 Chemical Weapons.

3. The date Apr 07 reflects the proposed funding cut off of the Chemical Agent and Munitions Disposal, Defense (CAMD/D) funds for purposes of the APB.

b. Current Change Explanations --

(Ch-1) New milestones reflected in the revised Acquisition Program Baseline approved March 31, 1998.

10. Performance Characteristics:

CSD

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program;PdE Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE DISPOSAL PROGRAM				
Environmental Laws & Regulations	N/A	Meets or/ Exceeds / State / State and/or / and/or Federal / Federal Rqmts / Rqmts	Meets or Exceeds TBD	Meets or (Ch-1) Exceeds State and/or Federal Rqmts (Note 1)
Safety and Occupational Laws and Regulations	N/A	Meets or/ Exceeds / State / State and/or / and/or Federal / Federal Rqmts / Rqmts	Meets or Exceeds TBD	Meets or (Ch-1) Exceeds State and/or Federal Rqmts (Note 2)

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10a. Performance Characteristics (Cont'd):

CSD

	Development Estimate (SAR)		Approved Program;PdE Obj/Threshold	Demon- strated Perf	Current Estimate	
Chemical Agent Release	N/A	0	/ 0 /	TBD	0 (Notes 3&5)	(Ch-1)
Chemical Agent Exposure	N/A	0	/ 0	TBD	0 Notes (4&5)	(Ch-1)

ACRONYMS

GB - Nerve Chemical Agent
H/HD - Mustard Blister Chemical Agent
VK - Nerve Chemical Agent

1. "Meets environmental laws and regulations" means the facility is operating in compliance with all conditions specified in environmental permits and applicable laws and regulations. The threshold is breached if violation of law or regulation warrants a stop-work order issued by the state or the Environmental Protection Agency.

2. "Meets safety and occupational health laws and regulations" means the facility is operating in compliance with the conditions specified in safety and occupational health laws and regulations. The threshold is breached if a violation warrants a stop-work order issued by the state.

3. a. Chemical Stockpile Disposal: The term "Chemical Agent Release" is defined as an event involving:

1. Confirmed agent release above the 72-hour general population time weighted average (TWA) measure at a perimeter monitoring station with the disposal facility as the identified source. The 72-hour general population TWA values are:

GB - 0.000003 mg/m3
VX - 0.000003 mg/m3
H/HD/HT - 0.0001 mg/m3

2. Confirmed point source (stack) agent release above the allowable stack concentration (ASC). The ASC value are:

GB - 0.0003 mg/m3
VX - 0.0003 mg/m3
H/HD/HT - 0.03 mg/m3

3. Clinical symptoms of agent exposure to one or more individuals.

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10a. Performance Characteristics (Cont'd):

CSD

b. Non-Stockpile Chemical Materiel Disposal: A "Chemical Release" is defined as an event involving a chemical release above the applicable federal, state, or local restriction, with the processing system (i.e., RRS, MMD, etc.) as the confirmed source of the chemical release.

4. A "Chemical Agent Exposure", as defined by DA PAM 40-173 and DA PAM 40-8, refers to an individual who exhibits clinical signs or symptoms of being exposed to chemical agent.

5. Number of events

b. Current Change Explanations --

(Ch-1) New performance characteristics reflected in the revised Acquisition Program Baseline approved March 31, 1998.

NSCMD

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program;PdE Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
NON-STOCKPILE CHEMICAL MATERIEL DISPOSAL PROJECT				
Environmental Laws & Regulations	N/A	Meets or/ Exceeds / State / State and/or / and/or Federal / Federal Rqmts / Rqmts	TBD	Meets or(Ch-1) Exceeds State and/or Federal Rqmts (Note 1)
Safety and Occupational Laws and Regulations	N/A	Meets or/ Exceeds / State / State and/or / and/or Federal / Federal Rqmts / Rqmts	TBD	Meets or(Ch-1) Exceeds State and/or Federal Rqmts (Note 2)
Chemical Agent Release	N/A	0 / 0	TBD	0 (Ch-1) (Notes 3&5)
Chemical Agent Exposure /4/5	N/A	0 / 0	TBD	0 (Ch-1) (Notes 4&5)

ACRONYMS:

GB - Nerve Chemical Agent

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

H/HD - Mustard Blister Chemical Agent
VX - Nerve Chemical Agent
RRS - Rapid Response System
MMD - Munition Management Device

1. "Meets environmental laws and regulations" means the facility is operating in compliance with all conditions specified in environmental permits and applicable laws and regulations. The threshold is breached if violation of law or regulation warrants a stop-work order issued by the state or the Environmental Protection Agency.

2. "Meets safety and occupational health laws and regulations" means the facility is operating in compliance with the conditions specified in safety and occupational health laws and regulations. The threshold is breached if a violation warrants a stop-work order issued by the state.

3. a. Chemical Stockpile Disposal: The term "Chemical Agent Release" is defined as an event involving:

1. Confirmed agent release above the 72-hour general population time weighted average (TWA) measure at a perimeter monitoring station with the disposal facility as the identified source. The 72-hour general population TWA values are:

GB - 0.000003 mg/m3
VX - 0.000003 mg/m3
H/HD/HT - 0.0001 mg/m3

2. Confirmed point source (stack) agent release above the allowable stack concentration (ASC). The ASC value are:

GB - 0.0003 mg/m3
VX - 0.0003 mg/m3
H/HD/HT - 0.03 mg/m3

3. Clinical symptoms of agent exposure to one or more individuals.

b. Non-Stockpile Chemical Materiel Disposal: A "Chemical Release" is defined as an event involving a chemical release above the applicable federal, state, or local restriction, with the processing system (i.e., RRS, MMD, etc.) as the confirmed source of the chemical release.

4. A "Chemical Agent Exposure", as defined by DA PAM 40-173 and DA PAM 40-8, refers to an individual who exhibits clinical signs or symptoms of being exposed to chemical agent.

5. Number of events

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10b. Performance Characteristics (Cont'd):

NSCMD

b. Current Change Explanations --

(Ch-1) New performance characteristics reflected in the revised Acquisition Program Baseline approved March 31, 1998.

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

CSD

a. Cost --	Development Estimate (SAR)	Approved Program; PdE	Current Estimate
Development (RDT&E)	256.0	720.0	729.9
Procurement	2434.9	2442.3	2412.9
Flyaway	(2434.9)		(2412.9)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.0)		
Initial Spares	(0.0)		
Construction (MILCON)	1240.1	1521.4	1520.4
Acquisition O&M	6451.8	7583.1	7556.9
Total FY 94 Base-Year \$	10382.8	12266.8	12220.1
Escalation	1520.2	1614.4	1612.1
Development (RDT&E)	(28.4)	(99.4)	(100.5)
Procurement	(311.2)	(174.1)	(170.5)
Construction (MILCON)	(133.5)	(144.7)	(146.3)
Acquisition O&M	(1047.1)	(1196.2)	(1194.8)
Total Then Year \$	11903.0	13881.2	13832.2

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:

The PM's current estimate does not include \$52.5M in Chemical Agent Munition Destruction, Defense (CAMD,D) RDT&E funding associated with the Assembled Chemical Weapon Assessment (ACWA) Program.

Public Law 104-208 (Section 8065) required the conduct of a pilot program to identify and demonstrate not less than two alternatives to the baseline incineration process for the demilitarization of assembled chemical munitions. The Assembled Chemical Weapon Assessment (ACWA) Program was created to carry out this mission. The Undersecretary of Defense for Acquisition and Technology designated a separate program manager for this program in FY 97. Because it is a separate Program Office, the ACWA portion of the CAMD,D appropriation is not reported as part of the PMCD current estimate.

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

CSD

Total quantity is defined as 9 (8 CONUS plants and Johnston Atoll).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

NSCMD

a. Cost --	Development Estimate (SAR)	Approved Program; PdE	Current Estimate
Development (RDT&E)	134.8	241.2	242.1
Procurement	84.1	70.2	72.1
Flyaway	(84.1)		(72.1)
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	772.8	892.9	889.9
Total FY 94 Base-Year \$	991.7	1204.3	1204.1
Escalation	215.9	224.8	226.2
Development (RDT&E)	(19.8)	(29.9)	(30.6)
Procurement	(11.1)	(12.4)	(12.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(185.0)	(182.5)	(182.9)
Total Then Year \$	1207.6	1429.1	1430.3
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	1	6	6
Total	1	6	6

The procurement quantity of six includes a non-homogeneous mix of two Rapid Response Systems (RRS) and four Munitions Management Devices (MMD) (with energetics), two original systems and two replacements. This is the number of units for the two systems to be fielded by the Non-Stockpile Chemical Materiel Project (NSCMP) as procurement items through FY 07 as defined in the Jun 97 NSCMP Implementation Plan. The Implementation Plan was based upon the inventory of munitions to be processed and their location as it was known at the time the plan was generated and the designed processing rate of each of the systems. The total quantity of items in the inventory to be processed will continue to change. Processing requirements and methodologies will be better defined as the inventory is assessed. As a result, the types of systems, the number of each type of system, and the total number of systems to be fielded may change.

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

NSCMD

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

CSD

	UCR Baseline (MAR 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	12266.8	12220.1	
(2) Quantity	9	9	
(3) Unit Cost	1362.978	1357.789	-0.38
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	2442.3	2412.9	
(2) Quantity	9	9	
(3) Unit Cost	271.367	268.100	-1.20

NSCMD

	UCR Baseline (MAR 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	991.7	1204.1	
(2) Quantity	1	1	
(3) Unit Cost	991.700	1204.100	+21.42
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	84.1	72.1	
(2) Quantity	1	1	
(3) Unit Cost	84.100	72.100	-14.27

For NSCMD, the UCR baseline reflected here is the March 1995 APB because the program has a Nunn-McCurdy unit cost breach against this baseline. In the March 1995 APB, a nominal quantity of "one" was used to represent the NSCMD. The NSCMD includes miscellaneous chemical warfare materiel, recovered chemical weapons, former production facilities, and binary chemical weapons. Procurement dollars include requirements for: Munitions Management Devices, Rapid Response System, Binary Demil Equipment, Environmental Closures, Monitoring Equipment, and Mobile Munitions Assessment System. The total procurement quantity changed to six with the revised APB dated 31 Mar 98.

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

NSCMD

	UCR Baseline (MAR 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
c. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (TY\$)	1207.6	1430.3	
(2) Unit Cost	1207.600	1430.300	+18.44
d. Avg. Proc. Unit Cost (APUC)			
(1) Cost (TY\$)	95.2	84.8	
(2) Unit Cost	95.200	84.800	-10.92
e. Changes from Previous SAR (DEC 96)	Dollars/Qty	Percent	
(1) PAUC (BY\$)	254.100	+26.75	
(2) APUC (BY\$)	-55.200	-43.36	
(3) PAUC Quantity	0	N/A	
(4) PAUC (TY\$)	298.400	+26.36	
(5) APUC (TY\$)	-64.600	-43.24	
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 --

With the approval of the FY 99 President's Budget, a Nunn-McCurdy breach occurred in the Non-Stockpile Chemical Materiel Project (NSCMP). The President's Budget reflects increases to the NSCMP of \$212.4M (base year dollars) which have increased Program Acquisition Unit Cost (PAUC) 21.4% when NSCMP is measured against the Mar 95 APB cost baseline reported in the Dec 96 SAR.

The increase is attributable to: (1) addition of risk funding due to the CAIG assessment that an additional amount will be required during execution based on past performance and the amount of uncertainty that remains in executing this effort associated with the program (Program Budget Decision 299 dated 12/01/97), (2) cost associated with realignment of schedules to meet CWC requirement and postpone non-CWC activities, and (3) technical challenges in systemization activities and extended operations schedules. However, with the approval of a revised rebaselined APB on 31 Mar 98, the NSCMP is within threshold parameters. The "Approved Program Baseline (APB)" column under the NSCMD end item in Section 11 and Sections 13 through 18 are based on the new parameters in the revised rebaselined APB. The "Approved Program Baseline (APB)" column for NSCMD in this section reflects the parameters in the previous (Mar 95) APB and are presented for historical purposes.

Unit Cost APUC Changes -- None.

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

NSCMD

h. Impact of Perf or Sched Changes --
None.

i. Program Management & Control --

The Chemical Demilitarization Program Manager is Mr. James L. Bacon. The Deputy Program Manager for Business Management is COL Edward A. Fisher. The Project Manager for Non-Stockpile Chemical Materiel is COL Edmund W. Libby.

j. Cost Control Actions --

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, as part of the WIPT process, the Project Office, the U.S. Army Cost and Economic Analysis Center (CEAC) and Office of the Secretary of Defense (OSD) Cost Analysis Improvement Group (CAIG) worked together to establish an Army Cost Position which included the NSCMP estimate and formed the basis for the cost estimates which were reviewed and approved by the Army Cost Review Board and included in the President's Budget.

k. Contract Information (In Millions of Then-Year Dollars) -- None.

l. Contracts exceeding Contract Cost Baseline Thresholds -- None.

m. General Comments -- None.

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13. Cost Variance Analysis:
CSD

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	284.4	2746.1	1373.6	7498.9	11903.0
Previous Changes:					
Economic	-3.3	-20.6	-48.2	-115.3	-187.4
Quantity	-	-	-	-	-
Schedule	-	+71.6	+21.4	+541.7	+634.7
Engineering	-	+15.8	-51.8	-23.2	-59.2
Estimating	+17.5	-43.4	+218.0	+104.9	+297.0
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+14.2	+23.4	+139.4	+508.1	+685.1
Current Changes:					
Economic	-3.3	-24.7	+10.3	-222.0	-239.7
Quantity	-	-	-	-	-
Schedule	-	+110.7	+4.7	+243.4	+358.8
Engineering	-	-296.2	+16.6	-188.9	-468.5
Estimating	+535.1	+24.1	+122.1	+912.2	+1593.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+531.8	-186.1	+153.7	+744.7	+1244.1
Total Changes	+546.0	-162.7	+293.1	+1252.8	+1929.2
Current Estimate	830.4	2583.4	1666.7	8751.7	13832.2

Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	256.0	2534.9	1240.1	6451.8	10482.8
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	+26.8	+12.2	+406.0	+445.0
Engineering	-	+12.9	-42.9	-23.5	-53.5
Estimating	+23.0	-32.3	+164.1	+53.7	+208.5
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+23.0	+7.4	+133.4	+436.2	+600.0
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	+83.6	-3.7	+176.1	+256.0
Engineering	-	-227.8	+48.4	-165.2	-344.6
Estimating	+450.9	+14.8	+102.2	+658.0	+1225.9
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+450.9	-129.4	+146.9	+668.9	+1137.3
Total Changes	+473.9	-122.0	+280.3	+1105.1	+1737.3
Current Estimate	729.9	2412.9	1520.4	7556.9	12220.1

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Chem Demil, December 31, 1997

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

CSD

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	-3.3
Adjustment for Current and Prior Inflation. (Estimating)	-0.4	-0.3
Adjustment for prior year actuals (Estimating)	-1.1	-1.3
Reprogrammed Aberdeen and Newport funds to enable demonstration of neutralization (Hydrolysis)process alternative technology (Estimating)	+453.8	+537.5
Refinement of estimate based on more mature facilities design (Estimating)	+32.0	+34.5
Addition to program to adjust for program risk (Estimating)	+14.7	+17.2
Removal of Assembled Chemical Weapon Assessment funding from estimate (Estimating)	-48.1	-52.5
RDT&E Subtotal	+450.9	+531.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-42.5
Economic adjustment for negative program change. (Economic)	N/A	+17.8
Schedule slip at Pueblo and Blue Grass reflecting delivery of Assembled Chemical Weapon Assessment report; Anniston, Umatilla and Pine Bluff due to permitting delays (Schedule)	+83.6	+110.7
Reprogrammed Aberdeen and Newport funds to enable demonstration of neutralization (Hydrolysis)process alternative technologies (Engineering)	-227.8	-296.2
Adjustment for Current and Prior Inflation. (Estimating)	-10.9	-10.0
Adjustment for prior year actuals (Estimating)	-17.7	-18.6
Addition to program to adjust for program Risk (Estimating)	+43.4	+52.7
Procurement Subtotal	-129.4	-186.1
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-15.7
Economic adjustment for negative program change. (Economic)	N/A	+26.0

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

CSD

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Schedule slip at Pueblo and Blue Grass reflecting delivery of Assembled Chemical Weapon Assessment report; Anniston, Umatilla and Pine Bluff, due to permitting delays (Schedule)	-3.7	+4.7
Reprogrammed Aberdeen and Newport funds to enable demonstration of neutralization (Hydrolysis) process alternative technology (Engineering)	+48.4	+16.6
Addition to program to adjust for program Risk (Estimating)	+48.4	+57.2
Adjustment for Current and Prior Inflation. (Estimating)	-12.4	-11.3
Adjustment for prior year actuals (Estimating)	-14.8	-14.9
Refinement of estimate based on more mature facilities design (Estimating)	+81.0	+91.1
MILCON Subtotal	+146.9	+153.7
(4) O&M		
Revised escalation indices. (Economic)	N/A	-228.6
Economic adjustment for negative program change. (Economic)	N/A	+6.6
Schedule slips at Pueblo and Blue Grass, reflecting delivery of Assembled Chemical Weapon Assessment report; Anniston, Umatilla and Pine Bluff due to permitting delays (Schedule)	+176.1	+243.4
Reprogrammed Aberdeen and Newport funds to enable demonstration of neutralization (hydrolysis) process alternative technologies (Engineering)	-165.2	-188.9
Adjustment for Current and Prior Inflation. (Estimating)	-10.8	-8.2
Adjustment for prior year actuals (Estimating)	+9.1	+10.5
Incorporation of actual consumables (i.e. DPE, chemicals, waste) experience at JACADS, Tooele and revised Depot staffing rates (Estimating)	-172.6	-196.1
Addition to program to adjust for program risk (Estimating)	+832.3	+1106.0
O&M Subtotal	+668.9	+744.7

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13. Cost Variance Analysis (Cont'd):

NSCMD

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

	RD&E	PROC	MILCON	O&M	TOTAL
Development Estimate	154.6	95.2	-	957.8	1207.6
Previous Changes:					
Economic	-2.9	-1.4	-	-17.9	-22.2
Quantity	-	-	-	-	-
Schedule	-	-1.0	-	-159.1	-160.1
Engineering	+54.5	+29.5	-	-	+84.0
Estimating	-6.5	+27.1	-	+2.0	+22.6
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+45.1	+54.2	-	-175.0	-75.7
Current Changes:					
Economic	-4.2	-2.2	-	-29.0	-35.4
Quantity	-	-	-	-	-
Schedule	+43.1	-	-	-	+43.1
Engineering	-	-	-	-	-
Estimating	+34.1	-62.4	-	+319.0	+290.7
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+73.0	-64.6	-	+290.0	+298.4
Total Changes	+118.1	-10.4	-	+115.0	+222.7
Current Estimate	272.7	84.8	-	1072.8	1430.3

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Chem Demil, December 31, 1997

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

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	-	-128.6	-129.7
Engineering	+47.8	+24.1	-	-	+71.9
Estimating	-6.0	+20.2	-	+1.9	+16.1
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+41.8	+43.2	-	-126.7	-41.7
Current Changes:					
Quantity	-	-	-	-	-
Schedule	+36.1	-	-	-	+36.1
Engineering	-	-	-	-	-
Estimating	+29.4	-55.2	-	+243.8	+218.0
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+65.5	-55.2	-	+243.8	+254.1
Total Changes	+107.3	-12.0	-	+117.1	+212.4
Current Estimate	242.1	72.1	-	889.9	1204.1

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-4.2
Realignment of schedule to meet Chemical Weapons Convention requirements, technical challenges in systemization of mobile systems and unexpected requirements for obtaining permits (Schedule)	+36.1	+43.1
Adjustment for Current and Prior Inflation. (Estimating)	+1.1	+1.2
Addition to program to adjust for program Risk (Estimating)	+28.1	+32.7
Revision of estimated program cost (Estimating)	+0.2	+0.2
RDT&E Subtotal	+65.5	+73.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.6
Economic adjustment for negative program change. (Economic)	N/A	+2.4

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

NSCMD

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Realignment of program to meet Chemical Weapons Convention requirements and postponement of non-Chemical Weapons Convention related activities. (Estimating)	-60.4	-69.8
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Adjustment for prior year actuals. (Estimating)	-7.5	-8.1
Addition to program to adjust for program Risk. (Estimating)	+12.7	+15.4
Revision of estimated program cost (Estimating)	-0.2	-0.1
Procurement Subtotal	-55.2	-64.6
(3) O&M		
Revised escalation indices. (Economic)	N/A	-29.0
Revision of program to meet Chemical Weapons Convention requirements. (Estimating)	+112.8	+157.9
Adjustment for Current and Prior Inflation. (Estimating)	+1.2	+1.3
Addition to program to adjust for program Risk (Estimating)	+130.3	+160.3
Realignment of funds within the Program. (Estimating)	-1.1	-1.2
Adjustment for prior year actuals (Estimating)	+0.6	+0.7
O&M Subtotal	+243.8	+290.0

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

CSD

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
1322.56	-47.46	-0.01	+110.39	-58.63	+210.06	--	--	+214.35	1536.91

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

CSD

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	
305.12	-5.03	-0.01	+20.26	-31.16	-2.14	--	--	-18.08	287.04

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	13832.2
Total Quantity	N/A	9	N/A	9
Prog Acq Unit Cost	N/A	1189.39	N/A	1536.91

NSCMD

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	-57.60	--	-117.00	+84.00	+313.30	--	--	+222.70	1430.30

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	-3.60	--	-1.00	+29.50	-35.30	--	--	-10.40	84.80

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

NSCMD

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	1430.3
Total Quantity	N/A	1	N/A	1
Prog Acq Unit Cost	N/A	1207.6	N/A	1430.3

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

a. Procurement --
TOCDF Sys Contractor:
 EG&G Defense Matl's, Tooele, UT
 DACA87-89-C-0076, CFAF
 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
\$920.0	N/A	1

Estimated Price At Completion	
Contractor	Program Manager
\$881.4	\$885.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-10.4	\$-1.9
Cumulative Variances To Date	\$-9.5	\$-3.6
Net Change	\$0.9	\$-1.7

Explanation of Change:

The unfavorable schedule variance reflects unanticipated interruption in processing GB-filled Ton Containers and the State of Utah limiting conditions related to environmental permits.

The target price is the current contract value through MOD P00163 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>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Bechtel National, INC, San Francisco CA					
DACA87-89-C-0007, CPFF			\$284.3	N/A	9
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>	
\$277.3	N/A	5	\$228.6	N/A	

Explanation of Change:

None.

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

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 pass through costs for fully funding CDTF, TOCDF, ANCDF, and UMCDF; and partial funding of long-lead items for the PBCDF.

<u>Equipment Installation:</u>			<u>Initial Contract Price</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</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>	
\$321.1	N/A	6	\$336.0	N/A	

Explanation of Change:

None.

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

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, UMCDF, and PBCDF.

<u>ANCDF Systems Contract:</u>			<u>Initial Contract Price</u>		
Westinghouse, Anniston, AL	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAA-09-96-C-0018, FFP/CPAF	\$575.8	N/A	1		
Award: February 29, 1996					
Definitized: February 29, 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>
\$582.6	N/A	1	\$565.8	\$584.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$0.3	\$-0.6
Net Change	\$0.3	\$-0.6

Explanation of Change:

There are no significant cost or schedule variances.

Contract Comments:

Construction started Jun 97 and is proceeding on schedule. Implementation of EVM, and development of management and systemization plans continue. An Integrated Baseline Review (IBR) is planned for Jun 98.

<u>UMCDF Systems Contract:</u>			<u>Initial Contract Price</u>		
Raytheon Demil Company, Umatilla OR	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAAA09-97-C-0025, FFP/CPAF	\$566.8	\$566.8	1		
Award: February 10, 1997					
Definitized: February 10, 1997					

<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>
\$574.2	\$574.2	1	\$576.6	\$576.6

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Chem Demil, December 31, 1997

15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$0.7	\$-4.0
Net Change	\$0.7	\$-4.0

Explanation of Change:

New contract awarded in Feb 97.

The contract contains both fixed price (Construction) and cost plus elements (Systemization). The contract is currently negotiated through FY 98 and negotiations are scheduled for the FY 99 period of performance.

EVMS reporting is required, and the System Contractor has begun to implement these requirements.

Contract Comments:

The contractor has reported a schedule variance which relates to the firm fixed price portion of the contract. It is based on approved progress payments accepted by the U.S. Army Corps of Engineers. It is used to track schedule progress and measure potential impacts on the cost plus portion of the contract. A recovery plan has been developed to bring construction back on schedule in the next 4-6 months.

b. O&M --	Initial Contract Price		
JACADS Operator & Maint.:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Eng. & Constr., Johnston Island			
DAAA09-96-C-0081, CPAF	\$9.3	\$0.0	1
Award: September 28, 1996			
Definitized: September 28, 1996			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$206.4	\$206.4	1	\$356.0	\$356.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-1.3	\$-5.2
Cumulative Variances To Date	\$2.1	\$-2.4
Net Change	\$3.4	\$2.8

Explanation of Change:

The contract is currently negotiated through FY 98 and negotiations are scheduled for FY 99 period of performance.

EVM reporting has been instituted on this contract. The IBR was completed in Oct 97, and a Pre-Validation Review was held in Jan 98.

Contract Comments:

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15. Contract Information (Cont'd):

There are no significant cost or schedule variances.

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 (FY00-10)</u>	<u>Total</u>
RDT&E	216.3	66.3	170.2	650.3	1103.1
Procurement	1375.8	72.2	140.7	1079.5	2668.2
MILCON	613.7	86.5	125.3	841.2	1666.7
O&M	2480.2	413.2	531.7	6399.4	9824.5
Total	4686.0	638.2	967.9	8970.4	15262.5

CSD

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 (FY00-10)</u>	<u>Total</u>
RDT&E	136.4	25.5	125.8	542.7	830.4
Procurement	1354.3	72.0	133.8	1023.3	2583.4
MILCON	613.7	86.5	125.3	841.2	1666.7
O&M	2389.8	363.1	448.7	5550.1	8751.7
Total	4494.2	547.1	833.6	7957.3	13832.2

NSCMD

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 (FY00-07)</u>	<u>Total</u>
RDT&E	79.9	40.8	44.4	107.6	272.7
Procurement	21.5	0.2	6.9	56.2	84.8
MILCON	-	-	-	-	-
O&M	90.4	50.1	83.0	849.3	1072.8
Total	191.8	91.1	134.3	1013.1	1430.3

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Chem Demil, December 31, 1997

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

b. Annual Summary -- CSD

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				6.0	4.9
1989				20.0	17.8
1990				8.6	7.9
1991				5.6	5.3
1992				14.2	13.9
1993				6.5	6.5
1994				24.5	25.0
1995				9.1	9.4
1996				21.1	22.2
1997				21.8	23.5
1998				22.8	25.5
1999				111.4	125.8
2000				135.9	156.2
2001				89.0	104.2
2002				121.5	145.2
2003				97.6	119.1
2004				9.8	12.2
2005				2.3	2.9
2006				2.2	2.9
Subtotal				729.9	830.4

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			117.3	117.3	96.4
1989			49.6	49.6	44.2
1990	1		78.4	78.4	72.2
1991			121.1	121.1	115.2
1992			155.2	155.2	151.8
1993			239.8	239.8	239.7
1994			45.5	45.5	46.4
1995			188.1	188.1	195.2
1996	1		216.2	216.2	227.2
1997			153.7	153.7	166.0
1998			64.5	64.5	72.0
1999			118.5	118.5	133.8
2000			308.8	308.8	355.0
2001	2		204.6	204.6	239.6
2002	1		205.1	205.1	245.1

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Chem Demil, December 31, 1997

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

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003	1		55.3	55.3	67.5
2004	3		47.5	47.5	59.3
2005			23.0	23.0	29.3
2006			10.2	10.2	13.3
2007			6.2	6.2	8.3
2008			3.2	3.2	4.4
2009			1.1	1.1	1.5
Subtotal	9		2412.9	2412.9	2583.4

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.

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				32.3	34.2
1996				12.1	13.0
1997				104.9	114.1
1998				78.3	86.5
1999				111.8	125.3
2000				212.7	242.5
2001				252.8	293.5
2002				183.1	216.8
2003				53.6	64.8
2004				19.1	23.6
Subtotal				1060.7	1214.3

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				3.4	3.0
1989				76.7	69.6
1990				6.8	6.4
1991				98.9	96.2
1992				144.6	143.8

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Chem Demil, December 31, 1997

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

Appropriation: 2050 Military Construction, Army

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				9.9	10.0
1994				119.4	123.4
Subtotal				459.7	452.4

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				118.1	97.0
1989				131.5	117.3
1990				189.2	174.2
1991				181.2	172.3
1992				211.1	206.5
1993				261.2	261.1
1994				265.0	270.0
1995				331.8	344.4
1996				310.4	326.1
1997				389.7	420.9
1998				325.3	363.1
1999				397.4	448.7
2000				454.3	522.2
2001				469.8	550.3
2002				518.9	620.0
2003				481.4	587.5
2004				663.9	828.0
2005				667.7	851.1
2006				432.3	563.1
2007				332.3	442.4
2008				180.9	246.1
2009				215.2	299.2
2010				28.3	40.2
Subtotal				7556.9	8751.7

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	9		2412.9	11760.4	13379.8
Army				459.7	452.4
Grand Total	9		2412.9	12220.1	13832.2

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

b. Annual Summary -- NSCMD

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				29.3	30.8
1997				29.7	32.1
1998				36.5	40.8
1999				39.3	44.4
2000				31.0	35.6
2001				24.2	28.3
2002				12.9	15.4
2003				9.9	12.1
2004				6.7	8.3
2005				4.2	5.4
2006				1.9	2.5
Subtotal				242.1	272.7

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
1996			10.6	10.6	11.1
1997			2.3	2.3	2.5
1998			0.2	0.2	0.2
1999			6.1	6.1	6.9
2000			6.4	6.4	7.3
2001			0.3	0.3	0.4
2002	1		18.8	18.8	22.5
2003					
2004			0.2	0.2	0.3
2005					
2006			9.6	9.6	12.5
2007			9.9	9.9	13.2
Subtotal	1		72.1	72.1	84.8

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Chem Demil, December 31, 1997

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

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				2.2	2.2
1993				6.3	6.3
1994				20.9	21.3
1995				10.9	11.3
1996				16.9	17.8
1997				29.2	31.5
1998				44.9	50.1
1999				73.5	83.0
2000				63.3	72.8
2001				79.6	93.2
2002				84.3	100.7
2003				76.0	92.8
2004				114.5	142.8
2005				108.0	137.7
2006				104.2	135.8
2007				55.2	73.5
Subtotal				889.9	1072.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1		72.1	1204.1	1430.3

17. Delivery/Expenditure Information:

CSD

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	2	2

Percent Total Program Quantities Delivered: 22.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 3044.3

Percent Total Program Expended: 22.0%

N/A

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

NSCMD

NSCMD

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): \$ 129

Percent Total Program Expended: 9.0%

N/A

18. Operating and Support Costs:

CSD

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

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

NSCMD

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-10 LHD 1

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: LHD - 1

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AS OF DATE: December 31, 1997

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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.MIL
4. (U) Program Elements/Procurement Line Items:
RDT&E:
 (U) PE 0603564N (Shared) (SUNK) Project 0408
 (U) PE 0604567N (Shared) (SUNK) Project 01803, SDB57
PROCUREMENT:
 (U) APPN 1611 ICN 3035 (Navy)

AS AMENDED
Cleared
FOR OPEN PUBLICATION
MAR 24 1998 9

No Security Objection
to Open Publication
(AS AMENDED)

MAR 24 1998

Office of the Chief of
Naval Operations
Dept. of the Navy

Derived from:
~~Declassification Instructions: OP-01, S5513.3B - 101~~
Declassify on: X3

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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 Builders Trials were conducted 17-20 February 1997, Acceptance Trials were successfully completed 30 April 1997 and the ship delivered on 23 June 1997. LHD 6 was launched on 14 March 1997 and christened 17 May 1997. The Keel Laying Ceremony for LHD 7 was held on 12 December 1997.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 was ready for operational deployment.

b. Current Change Explanations --

(U) 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
(U) Endurance at 22 knots (NM)	(b)(1)			
Armament:				
Close in Weapon System	3	3 / 3	3	3
Self Defense Missile System	2	2 / 2	2	2

b. Current Change Explanations --

(U) 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	42.3
Procurement	2891.9	6432.1	6001.1
Sailaway	(2872.5)		(5978.9)
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	6043.4
Escalation	1519.2	1943.2	1801.2
Development (RDT&E)	(3.7)	(6.0)	(5.4)
Procurement	(1515.5)	(1937.2)	(1795.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4451.0	8424.2	7844.6
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:

	UCR Baseline (FEB 94 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 82 BY\$)	6481.0	6043.4	
(2) Quantity	7	7	
(3) Unit Cost	925.857	863.343	-6.75
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 82 BY\$)	6432.1	6001.1	
(2) Quantity	7	7	
(3) Unit Cost	918.871	857.300	-6.70

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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	-1299.3	-	-1299.7
Quantity	-	+5552.1	-	+5552.1
Schedule	+4.5	-332.7	-	-328.2
Engineering	-	+14.3	-	+14.3
Estimating	+0.6	-504.1	-	-503.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.7	+3430.3	-	+3435.0
Current Changes:				
Economic	-	-44.9	-	-44.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.6	+4.1	-	+3.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.6	-40.8	-	-41.4
Total Changes	+4.1	+3389.5	-	+3393.6
Current Estimate	47.7	7796.9	-	7844.6

(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	-381.0	-	-381.5
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+2.9	+3106.7	-	+3109.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.5	+2.5	-	+2.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.5	+2.5	-	+2.0
Total Changes	+2.4	+3109.2	-	+3111.6
Current Estimate	42.3	6001.1	-	6043.4

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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>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	0.0
	Economic adjustment for negative program change. (Economic)	N/A	0.0
	Actual cost for RDT&E effort. (Estimating)	-0.5	-0.6
	RDT&E Subtotal	-0.5	-0.6
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-44.9
	Adjustment for Current and Prior Inflation. (Estimating)	+28.8	+42.2
	Actual cost on completed portion of program. (Estimating)	-5.4	-6.7
	Definitization of insurance claims for fires on LHD 5. (Estimating)	-1.2	-1.6
	Reduction to cover expiring unliquidated obligations for prior year execution. (Estimating)	-0.1	-0.2
	Revised cost estimate for GFE requirements and miscellaneous contractor support services on LHD 6 and 7. (Estimating)	-9.7	-13.9
	Increase based on revised shipbuilding estimate. (Estimating)	+5.4	+8.0
	Escalation reduction to the FY96 program. (Estimating)	-10.0	-14.9
	Revised outfitting and post delivery cost estimates for FY01 and prior. (Estimating)	-5.3	-8.8
	Procurement Subtotal	+2.5	-40.6

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	
1483.67	-192.09	-54.64	-46.89	+2.04	-71.43	--	--	-363.01	1120.66

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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	
1469.13	-192.03	-46.34	-47.53	+2.04	-71.43	--	--	-355.29	1113.84

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	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	7844.6
Total Quantity	N/A	3	N/A	7
Prog Acq Unit Cost	N/A	1483.67	N/A	1120.66

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

a. Procurement --

(U) LHD 5 CONSTRUCTION:

INGALLS SHIPBUILDING, INC, PASCAGOULA MS

NG0024-92-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
\$776.4	\$880.5	1	\$838.6	\$835.2

Previous Cumulative Variances		Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/97)		\$-3.7	\$-13.6
Net Change		\$-4.8	\$-13.1
		\$-1.1	\$0.5

Explanation of Change:

(U) Cost Variance - The majority of unfavorable variance reported by the contractor is primarily identified with support and construction labor, overhead and G&A growth offset by material related savings.

Schedule Variance - The majority of favorable variance reported by the contractor results from material recoveries offset by budget recovery for labor effort performed ahead of schedule.

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

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 \$117.5M, which would result in a net contractor profit of \$34.4M.

The Current Contract Price includes an additional \$24.3M of Firm Fixed Price Construction Contract Line Items (CLINS), while the Initial Contract Price reflects only the Construction CLIN.

The LHD 5 will not be reported in future SARs as the ship was delivered 23 June 1997 and is over 90% complete.

(U) LHD 6 CONSTRUCTION:			Initial Contract Price		
			Target	Ceiling	Qty
INGALLS SHIPBUILDING, INC, PASCAGOULA MS					
N00024-92-C-2204, FPI			\$760.9	\$779.2	1
Award: December 11, 1992					
Definitized: December 11, 1992					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$798.8	\$817.3	1	\$770.6	\$776.5	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
			\$59.3	\$-10.9	
Cumulative Variances To Date (12/31/97)			\$47.0	\$-1.4	
Net Change			\$-12.3	\$9.1	

Explanation of Change:

(U) Cost Variance: The majority of unfavorable variance reported by the Contractor is identified with construction labor, overhead, G&A and material related growth.

Schedule Variance: The majority of favorable variance reported by the Contractor is primarily identified with construction labor and material 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 \$-44.6M, which would result in a net contractor profit of \$138.1M.

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

(U) LHD 7 CONSTRUCTION: INGALLS SHIPBUILDING, INC, PASCAGOULA, MS N00024-92-C-2204, FPI Award: December 28, 1995 Definitized: December 28, 1995			Initial Contract Price	
			<u>Target</u>	<u>Ceiling</u>
		\$771.8	\$791.5	1
			Estimated Price At Completion	
			<u>Contractor</u>	<u>Program Manager</u>
			\$792.4	\$809.6
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-6.2	\$-17.8
Cumulative Variances To Date (12/31/97)			\$-10.9	\$-46.4
Net Change			\$-4.7	\$-28.6

Explanation of Change:

(U) Cost Variance: The majority of unfavorable variance reported by the contractor is primarily identified with material.

Schedule Variance: The majority of unfavorable variance reported by the contractor is identified with late receipt of material coupled with construction delays.

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 \$115.3M.

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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 (FY81-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-02)</u>	<u>Total</u>
RDT&E	47.7	-	-	-	47.7
Procurement	7707.8	14.0	40.1	35.0	7796.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	7755.5	14.0	40.1	35.0	7844.6

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				11.0	11.3
1983				17.9	19.2
1984				0.8	0.9
1985				1.8	2.1
1986				0.3	0.4
1987				0.5	0.6
1988				0.7	0.9
1989				2.8	3.7
1990				4.9	6.7
1991				0.7	1.0
Subtotal				42.3	47.7

Appropriation: 1611 Shipbuilding and Conversion, 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>
1982				41.3	45.0
1983				48.4	53.7
1984	1	150.0	1111.0	1159.2	1310.1
1985				34.0	39.2
1986	1		766.6	705.9	832.8
1987				29.8	35.9
1988	1		634.7	613.1	761.4
1989	1		607.4	584.6	748.0
1990				35.8	47.1
1991	1		918.8	882.1	1193.7

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

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 \$
1992				20.6	28.6
1993				240.5	338.2
1994	1		860.9	656.5	947.9
1995				43.8	64.2
1996	1		929.5	844.8	1255.7
1997				4.2	6.3
1998				9.1	14.0
1999				25.7	40.1
2000				7.2	11.5
2001				13.4	21.7
2002				1.1	1.8
Subtotal	7	150.0	5828.9	6001.1	7796.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	7	150.0	5828.9	6043.4	7844.6

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	5	5

(U) Percent Total Program Quantities Delivered: 71.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 6374.1

(U) Percent Total Program Expended: 81.3%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
O&S costs for LHD 1 Class ships were developed from historical (VAMOSC) data for the antecedent LHA 1 Class as well as limited data that has come from the operations of LHD 1. Greater emphasis is still being placed on LHA 1 data for two reasons: the 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

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

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 December 1997.)

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	25.4	21.8
Unit Level Consumption	6.2	5.6
Intermediate Maintenance	0.2	0.3
Depot Maintenance	16.0	16.8
Contractor Support	0.0	0.0
Sustaining Support	5.5	5.0
Indirect Costs	1.5	1.1
Total	54.8	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, 1997

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1. (U) Designation and Nomenclature (Popular Name): Advanced Threat Infrared Countermeasure/Common Missile Warning System

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:

PM ATIRCM/CMWS

Dr. Steven L. Messervy

ATTN: SFAC-AV-IR

Assigned: September 2, 1997

Redstone Arsenal, Bldg 5681

DSN 897-4498; COMM 205-313-4498

Huntsville, AL 35898-

MesservyS@PecAvn.Redstone.Army.Mil

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

RDT&E:

- (U) PE 64270A (Shared) 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)

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

~~Classified by: 155 for ATIRCM/CMWS issued 2 October 1995~~
~~Downgrade instruction~~
~~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) AAE Approved Acquisition Program Baseline (APB) dated June 12, 1997.

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) 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 Integrated Product Team (IPT) coordinated in December 1995. The Milestone II Engineering, Manufacturing and Development (EMD) contract was awarded to Sanders, a Lockheed-Martin company on September 27, 1995. The most recent contract milestone, the Critical Design Review (CDR) was completed February 1997. System integration is scheduled for June 1998.

The operational test community recommended the TEMP be revised to reflect an operational test program six months longer in order to accomplish the original planned scope of testing. Submittal of the revised TEMP is expected by the end of March 1998. Schedule extensions resulted in an APB schedule breach. A program Deviation Report (PDR) and a revised APB reflecting revised dates were submitted for approval May 1997. The revised APB was approved June 12, 1997.

As a result of Base Closure Relocation Actions (BRAC), the Joint Program

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

Office (JPO) has relocated to Huntsville, AL. Key personnel left the program and a new program manager (PM) was assigned in September 1997. Progress has been made in filling several key program office staff positions.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
DEMVAL Contract Award	SEP 91	SEP 91	SEP 91
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
First Prototype Delivery	JUL 97	JUN 98	JUN 98
Developmental Testing			
Start	MAY 98	SEP 98	SEP 98
Complete	FEB 99	JUN 99	JUN 99
Operational Testing			
Start	JAN 99	AUG 99	AUG 99
Complete	JAN 00	DEC 00	DEC 00
Milestone III	FEB 00	MAR 01	MAR 01
Production Contract Award	APR 00	MAY 01	MAY 01
First Production Delivery	APR 01	MAY 02	MAY 02

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
First Unit Equipped without Obstacle Avoidance System	NOV 01	DEC 02	DEC 02	(Ch 1)
Initial Operational Capability	(b)(1)			
Organic Support Available	FEB 05	MAR 06	MAR 06	
Depot Level Maintenance Support Established	FEB 05	MAR 06	MAR 06	

b. Current Change Explanations --

(U) Ch-1: First Unit Equip without Obstacle Avoidance System current estimate in the Dec 96 SAR was a typographical error.

Milestone:

First Unit Equip without
Obstacle Avoidance System

FROM:

Dec 03

TO:

Dec 02

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):

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

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	431.2
Procurement	2112.0	2112.0	1616.8
Recurring Flyaway	(1772.2)		(1188.3)
Nonrecurring Flyaway	(142.6)		(224.7)
Total Flyaway	(1914.8)		(1413.0)
Other Wpn System Costs	(131.0)		(137.0)
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	2048.0
Escalation	733.2	733.2	386.2
Development (RDT&E)	(43.4)	(43.4)	(14.7)
Procurement	(689.8)	(689.8)	(371.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3361.6	3361.6	2434.2
b. (U) Quantity --			
Development (RDT&E)	25	25	25
Procurement	3069	3069	2577
Total	3094	3094	2602

Note: Excludes 15 RDT&E 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

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

installed on aircraft.

There are no LRIP quantities approved for this program.

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

12. (U) Unit Cost Summary:

	UCR Baseline (Jun 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	2628.4	2048.0	
(2) Quantity	3094	2602	
(3) Unit Cost	0.850	0.787	-7.41
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	2112.0	1616.8	
(2) Quantity	3069	2577	
(3) Unit Cost	0.688	0.627	-8.87

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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	-8.7	-62.9	-	-71.6
Quantity	-	-342.3	-	-342.3
Schedule	-	+41.0	-	+41.0
Engineering	-	-	-	-
Estimating	-82.6	+21.3	-	-61.3
Other	-	-	-	-
Support	-	-63.7	-	-63.7
Subtotal	-91.3	-406.6	-	-497.9
Current Changes:				
Economic	-5.2	-65.4	-	-70.6
Quantity	-	-72.8	-	-72.8
Schedule	-	-367.8	-	-367.8
Engineering	-	-	-	-
Estimating	-17.4	-2.4	-	-19.8
Other	-	-	-	-
Support	-	+101.5	-	+101.5
Subtotal	-22.6	-406.9	-	-429.5
Total Changes	-113.9	-813.5	-	-927.4
Current Estimate	445.9	1988.3	-	2434.2

(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	-	-221.1	-	-221.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-70.9	+14.2	-	-56.7
Other	-	-	-	-
Support	-	-72.7	-	-72.7
Subtotal	-70.9	-279.6	-	-350.5
Current Changes:				
Quantity	-	-45.5	-	-45.5
Schedule	-	-245.2	-	-245.2
Engineering	-	-	-	-
Estimating	-14.3	-4.2	-	-18.5
Other	-	-	-	-
Support	-	+79.3	-	+79.3
Subtotal	-14.3	-215.6	-	-229.9
Total Changes	-85.2	-495.2	-	-580.4
Current Estimate	431.2	1616.8	-	2048.0

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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>
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-5.9
	Economic adjustment for negative program change. (Economic)	N/A	+0.7
	Adjustment for Current and Prior Inflation. (Estimating)	+0.9	+0.3
	Revised estimate to reflect reduction of Navy's CMWS development program by 30%. (Estimating)	-30.2	-34.2
	Revised estimate to reflect Army Congressional Plus Up, inclusion of Army's Operational Test funding, and increase in Air Force's development program. (Estimating)	+15.0	+16.5
	RDT&E Subtotal	-14.3	-22.6
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-68.4
	Economic adjustment for negative program change. (Economic)	N/A	+3.0
	Total Quantity variance associated with decrease of 96 units from 2673 to 2577.	-49.6	-79.3
	Quantity decrease of 96 units from 2673 to 2577. (Quantity)	-45.5	-72.8
	Allocation to Schedule variance resulting from Quantity Change. (Schedule)	0.0	-4.3
	Allocation to Estimating variance resulting from Quantity Change. (Estimating)	-4.1	-2.2
	Acceleration of annual procurement buy profile. (Schedule)	0.0	-5.7
	Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.2
	Reduction of Navy's CMWS outyear funding due to acceleration of procurement buy profile. (Schedule)	-245.2	-357.8
	Increase in program support cost based on revised production estimate. (Support)	+79.3	+101.5
	Procurement Subtotal	-215.6	-406.9

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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	
1.09	-0.05	+0.05	-0.13	--	-0.03	--	+0.01	-0.13	0.94

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	-0.05	+0.02	-0.13	--	+0.01	--	+0.01	-0.14	0.77

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	JUN 95	N/A	JUN 95
Milestone II	N/A	JUN 95	N/A	JUN 95
Milestone III	N/A	FEB 00	N/A	MAR 01
(b)(4)				
Total Cost	0	3361.6	0	2434.2
Total Quantity	0	3094	0	2602
Prog Acq Unit Cost	0	1.09	0	0.94

AS AMENDED

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			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$108.5	N/A	40	\$108.5	\$108.5

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.1	\$-0.9
Cumulative Variances To Date (12/26/97)	\$-1.3	\$-0.2
Net Change	\$1.8	\$0.7

Explanation of Change:

(U) Net change explanation:

The cost performance reflects the 8th month of performance measurement against the program re-baseline. The re-baseline was effective month end April 1997. The re-baseline was an update to the wave 2 baseline established 7/96, and was incorporated to reflect the program as proposed in the April 4, 1997 Post CDR Cost Proposal. The program was converted to event driven. The inception to date April cost and schedule were set to zero, and this report reflects measurement for eight months of performance. The specification changes proposal was negotiated December 4, 1997 for a total value of \$7,764.2K through max Award Fee. The program plan will be revised to reflect the program re-baseline which is targeted to be completed by the end of February 1998. The re-baseline will include actuals through month end December 1997. A new detailed EAC is estimated to be complete March 1998.

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> (FY00-14)	<u>Total</u>
RDT&E	195.0	69.3	82.2	99.4	445.9
Procurement	9.1	8.9	2.4	1967.9	1988.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	204.1	78.2	84.6	2067.3	2434.2

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					
1996				8.1	8.9
1997				14.7	16.4
1998				10.6	12.0
1999				11.7	13.5
2000				3.5	4.1
2001				4.4	5.2

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ATIRCM/CMWS, December 31, 1997

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 \$
2002				1.3	1.7
Subtotal	9			54.3	61.8

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				15.6	15.8
1997				20.3	20.7
1998				31.2	32.6
1999				32.0	34.0
2000				4.2	4.5
2001				1.7	1.9
Subtotal	7			147.7	150.4

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				22.2	21.4
1996				36.8	36.1
1997				34.9	34.8
1998				24.4	24.7
1999				33.8	34.7
2000				33.0	34.4
2001				19.2	20.4
2002				14.4	15.6
2003				10.5	11.6
Subtotal	9			229.2	233.7

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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		1.3		1.4	1.6
1999		1.9		2.0	2.4
2000		2.3		2.4	2.9
2001	2	0.1	4.4	4.9	5.9
2002	84	5.5	15.9	25.8	32.0
2003	111	4.8	31.3	38.5	48.7
2004	116	4.2	48.9	57.5	74.4
2005	121	6.5	25.5	34.9	46.1
2006	78	7.9	12.1	21.9	29.6
2007	48	2.9	8.5	12.9	17.8
2008	48	2.8	8.8	13.0	18.4
2009	48	2.9	8.7	12.9	18.6
2010	22	1.5	3.5	6.0	8.9
Subtotal	678	44.6	167.2	234.1	307.3

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		8.7	9.1
1998		6.9		6.9	7.3
1999					
2000	8	17.8	13.0	34.8	37.8
2001	4	1.8	19.3	24.7	27.3
2002	58	7.0	54.2	68.8	77.5
2003	58	2.9	54.1	70.3	80.8
2004	94	1.6	97.1	120.4	141.4
2005	83	0.7	99.0	113.8	136.6
2006	84	8.0	80.2	102.7	126.0
2007	84	0.2	54.3	65.0	81.5
2008	84	2.6	49.6	63.4	81.2
2009	76	2.9	49.9	62.0	81.2
2010	67	6.9	44.9	60.9	81.5
2011	65	1.7	49.4	59.6	81.5
2012	127	2.6	49.6	58.3	81.5
2013	40		22.4	23.4	33.4
2014	115		45.3	45.3	66.1
Subtotal	1047	72.3	782.3	989.0	1231.7

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ATIRCM/CMWS, December 31, 1997

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 \$
2000	38	4.9	17.2	25.4	27.1
2001	83	8.3	31.0	45.4	49.4
2002	139	15.2	41.7	65.7	72.9
2003	187	28.2	49.6	88.2	100.0
2004	175	22.9	43.5	74.9	86.8
2005	115	15.8	27.0	48.1	57.0
2006	94	7.2	22.2	33.0	40.0
2007	21	3.5	6.7	11.1	13.7
2008		1.6		1.7	2.2
2009		0.1		0.2	0.2
Subtotal	852	107.7	238.9	393.7	449.3

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	687	44.6	167.2	288.4	369.1
Army	1054	72.3	782.3	1136.7	1382.1
USAF	861	107.7	238.9	622.9	683.0
Grand Total	2602	224.6	1188.4	2048.0	2434.2

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): \$ 201.4

(U) Percent Total Program Expended: 8.3%

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. Based on a 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 Review Board,

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ATIRCM/CMWS, December 31, 1997

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

June 1995.

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

Cost Element	Avg Annual Cost Per Aircraft Composite 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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AF-8 C-130J

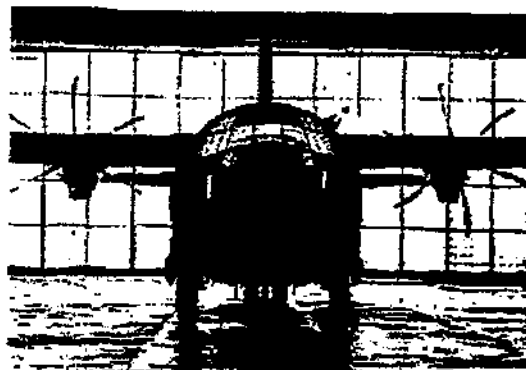
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(0&A)823)
PROGRAM: C-130J Hercules

AS OF DATE: December 31, 1997

SUBJECT	INDEX	PAGE
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1. Designation and Nomenclature (Popular Name): C-130J Hercules

2. DoD Component: USAF

3. 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:

RDTEE:

PE 0603852F

PROCUREMENT:

APPN 3010 ICM C-130J (Air Force)

CLEARED
FOR OPEN PUBLICATION

MAR 06 1998 18

5. References:

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

SAR Baseline (Production Estimate):

AFAE Approved Acquisition Program Baseline dated October 25, 1996.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated October 25, 1996.

JAF/FAS

98-028

6. Mission and Description:

CONGRESSIONAL

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 Hercules, December 31, 1997

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:

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; 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.

Through Dec 97, we have placed 28 C-130J aircraft on contract (2 H/J swap in FY94 plus 26 against the current contract). All but four of them were congressionally added.

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C-130J Hercules, December 31, 1997

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

c. Explanation of Breach:

Schedule Breach:

The C-130J contract is a commercial style contract. As such, Lockheed Martin Aeronautical Systems (LMAS), the contractor is responsible for the development of the C-130J. They have experienced development delays which have slipped the first delivery from October 1997 to October 1998---hence we have a schedule breach.

Cost Breach:

The APB developed and approved in October 1996 envisioned an Air Force buy of 11 C-130J aircraft. Congressionally added aircraft brings the total to 18, a net increase of 7 aircraft:

	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	TOTAL
APB	2	1	2	2	2	2	0	0	11
=====									
APAF (Rev)	2	0	0	1	0	0	2	2	7
Congressionally added									
WC-130J	3	4	2						9
EC-130J		1	1						2
AF FY99 PB	5	5	3	1	0	0	2	2	18

The addition of the 11 congressionally added aircraft caused the production cost breach from \$721.8M to \$1,139.7M.

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C-130J Hercules, December 31, 1997

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 98 (Ch-1)

b. Current Change Explanations --

(Ch-1) Lockheed Martin Aeronautical Systems (LMAS) has commercially developed the C-130J; they financed the development themselves. LMAS is experiencing development problems and have slipped their initial delivery from October 1997 to October 1998.

A Program Deviation Report was submitted on 2 Mar 98.

10. Performance Characteristics:

a. Performance --

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

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C-130J Hercules, December 31, 1997

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>
Cruising Speed at 100,000 lbs @25,000 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 Hercules, December 31, 1997

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	9.4
Procurement	721.8	721.8	1100.9
Airframe	(540.1)		(830.9)
OTHER COSTS	(122.2)		(164.1)
Peculiar Support	(9.4)		(13.0)
Initial Spares	(50.1)		(92.9)
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	1110.3
Escalation	109.0	109.0	88.6
Development (RDT&E)	(0.3)	(0.3)	(-0.2)
Procurement	(108.7)	(108.7)	(88.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	839.7	839.7	1198.9
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	11	11	18
Total	11	11	18

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (OCT 96 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BYS)	730.7	1110.3	
(2) Quantity	11	18	
(3) Unit Cost	66.427	61.683	-7.14
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BYS)	721.8	1100.9	
(2) Quantity	11	18	
(3) Unit Cost	65.618	61.161	-6.79

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C-130J Hercules, December 31, 1997

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	-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
Current Changes:				
Economic	-0.4	-8.0	-	-8.4
Quantity	-	+578.1	-	+578.1
Schedule	-	-31.5	-	-31.5
Engineering	+0.4	-	-	+0.4
Estimating	+0.1	-74.0	-	-73.9
Other	-	-	-	-
Support	-	+133.7	-	+133.7
Subtotal	+0.1	+598.3	-	+598.4
Total Changes	+0.0	+359.2	-	+359.2
Current Estimate	9.2	1189.7	-	1198.9

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	-	-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
Current Changes:				
Quantity	-	+522.8	-	+522.8
Schedule	-	-	-	-
Engineering	+0.4	-	-	+0.4
Estimating	+0.1	-66.8	-	-66.7
Other	-	-	-	-
Support	-	+130.8	-	+130.8
Subtotal	+0.5	+586.8	-	+587.3
Total Changes	+0.5	+379.1	-	+379.6
Current Estimate	9.4	1100.9	-	1110.3

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C-130J Hercules, December 31, 1997

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	-0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.4
Added requirement for Global Positioning System. (Engineering)	+0.4	+0.4
Undistributed program reductions. (Estimating)	-0.3	-0.3
RDT&E Subtotal	+0.5	+0.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-17.7
Economic adjustment for negative program change. (Economic)	N/A	+9.7
Quantity variance associated with increase of 11 units. (Quantity)	+522.8	+578.1
Acceleration of annual procurement buy profile. (Schedule)	0.0	-31.5
Adjustment for Current and Prior Inflation. (Estimating)	+2.8	+2.9
Refinement of program estimate based on improved contract information. (Estimating)	-69.6	-76.9
Adjustment for Current and Prior Inflation. (Support)	+0.6	+0.6
Change in Support requirements, reflected below, are a result of increased aircraft procurement: (Support)		
Change in Initial Spares (Support)	+53.2	+56.3
Change in Peculiar Support (Support)	+6.0	+6.4
Change in Other Wpn system Costs. (Support)	+71.0	+70.4
Procurement Subtotal	+586.8	+598.3

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C-130J Hercules, December 31, 1997

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	-0.47	-7.42	-10.44	+0.02	+3.09	--	+5.49	-9.73	66.61

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	-0.44	-7.11	-10.44	--	+3.09	--	+5.49	-9.41	66.09

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	1198.9
Total Quantity	N/A	N/A	11	18
Prog Acq Unit Cost	N/A	N/A	76.34	66.61

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

a. RDT&E --

Test Option:

Lockheed Martin, Marietta, GA

F33657-90-C-0071, FFP

Award: May 15, 1997

Definitized: May 15, 1997

Initial Contract Price

Target Ceiling Qty

\$0.3 N/A 0

Current Contract Price

Target Ceiling Qty
\$0.7 N/A 0

Estimated Price At Completion

Contractor Program Manager
\$0.7 \$0.7

Explanation of Change:

Funded the Global Positioning System portion of the Military Utility Test for \$4M.

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C-130J Hercules, December 31, 1997

15. Contract Information (Cont'd):

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

<u>C-130J - Production:</u>			Initial Contract Price		
Lockheed Martin, Marietta, GA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
F33657-95-C-2055, FFP	\$115.0	N/A	2		
Award: November 6, 1996					
Definitized: November 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>	
\$1273.5	N/A	26	\$1273.5	\$1273.5	

Explanation of Change:

Exercised option to procure an additional 24 C-130J aircraft.

Cost and Schedule variance reporting 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)

<u>Appropriation</u>	<u>Prior Years (FY95-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RDT&E	5.5	3.7	-	-	9.2
Procurement	543.3	240.3	125.7	280.4	1189.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	548.8	244.0	125.7	280.4	1198.9

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				5.3	5.1
1996				0.4	0.4
1997					
1998				3.7	3.7
Subtotal				9.4	9.2

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C-130J Hercules, December 31, 1997

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 \$
1996	5		212.9	230.3	239.1
1997	5		224.1	288.9	304.2
1998	3		137.9	224.8	240.3
1999	1		49.7	115.6	125.7
2000					
2001					
2002	2		102.7	119.9	137.9
2003	2		103.6	121.4	142.5
Subtotal	18		830.9	1100.9	1189.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	18		830.9	1110.3	1198.9

17. Delivery/Expenditure Information:

a. Deliveries To Date

	Plan	Actual
RD&E		
Procurement	0	0

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 285.7

Percent Total Program Expended: 23.8%

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.

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C-130J Hercules, December 31, 1997

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

- 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.

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(O&A)823)

PROGRAM: Airborne Laser

AS OF DATE: December 31, 1997

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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
3300 Target Rd Bldg 760 Assigned: December 31, 1996
Kirtland AFB DSN 246-2102; COMM 505-846-2102
Albuquerque, NM 87117-6612 booenm@plk.af.mil
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0603319F
(U) PE 0604350F

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Airborne Laser, December 31, 1997

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, 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 enemy missiles before refueling. The ABL does not replace any other defense system.

7. (U) Executive Summary:

(U) This is the second 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 needed for Program Definition and Risk Reduction (PDRR) and Engineering and Manufacturing Development (EMD), i.e. TBM lethality mechanisms; upper atmospheric turbulence conditions; high energy laser output power, chemical laser efficiencies, lightweighting; and active laser tracking of boosting TBMs.

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 may be incorporated into the EMD design.

The PDRR phase culminates with a lethality demonstration against a boosting TBM representative target in late FY02. The PDRR phase will integrate and test all key technologies, allowing the Air Force to advance to EMD in the FY03 time frame. Operational Test and Evaluation is planned during EMD.

The ABL Flight-weighted Laser Module (FLM) Critical Design Review (CDR) was completed in February. This CDR is a major event on the path to a successful,

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Airborne Laser, December 31, 1997

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

high-power FLM demonstration in April, 1998.

The ABL Program Requirements Review, held in March, covered the system-level requirements of the ABL to make certain they were well understood by the IPTs. This event marked entry into the preliminary design phase of the program.

Airborne Laser participated in Roving Sands in late April 1997. The Roving Sands exercise was the first time all Theater Missile Defense (TMD) weapons were employed as an integrated architecture, and the first time a single joint doctrine was developed and implemented for all TMD systems. The exercise provided ABL a wealth of information in the areas of Concept of Operations (CONOPS), and joint interoperability. By the end of the scenario ABL had killed 16 missiles out of 17 that it was permitted to engage. The exercise also showed force enhancement of ABL's surveillance subsystem.

The Software Integration Laboratory (SWIL) was completed in July, and is ready to support development of the initial flight software block of code. The SWIL includes two flight-like mission crew display modules. The crew display modules and Battle Management Command, Control, Communications, Computers, and Intelligence (BMC4I) DEC Alpha have successfully hosted the Boeing Open System Architecture (BOSA) operating environment, and have already been used to run an ABL Theater Missile Defense engagement scenario. The design and installation of the SWIL this early in the program should significantly reduce PDRR software development risks.

The Environmental Impact Statement (EIS) Record of Decision (ROD) was signed in September by Dr Helmut Hellwig, the Deputy Assistant Secretary (Science, Technology, and Engineering). This is the culmination of a three-year, \$1.7M effort to evaluate the potential environmental impact of the ABL PDRR program at various locations. The ROD says we can now officially and legally test at Edwards AFB, White Sands Missile Range, and Vandenberg AFB with no significant adverse environmental impacts at any site.

The mini-Flightweighted Laser Module (mini-FLM), an actual cross section of the FLM, has been successfully tested at TRW's Redondo Beach facility. The test, which began in August, has verified several FLM design points including chemical flow rates, basic hydrogen peroxide composition, and the nozzle design concept. Five tests were completed in August, and one additional test in September. These tests proved extremely valuable in identifying processes that will shorten the start-up time and reduce risk for the FLM demo in April 98.

The GAO released a report on the ABL with two recommendations: 1) The ABL needs to demonstrate a correlation between non-optical and optical turbulence data, and 2) The ABL should validate the appropriateness of the design specification for turbulence based on reliable data. The ABL SPO concurs with these two recommendations, has in fact already answered the first concern, and is well on its way to addressing the second.

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Airborne Laser, December 31, 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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
Milestone I	NOV 96	NOV 96	NOV 96
PDRR Contract Award	NOV 96	NOV 96	NOV 96
Authority To Proceed (ATP)-1	SEP 98	SEP 98	JUN 98
Authority To Proceed (ATP)-2	SEP 01	SEP 01	AUG 01
Lethal TBM Intercept Demonstration	SEP 02	SEP 02	SEP 02
Milestone II	MAR 03	MAR 03	MAR 03
Milestone III	MAR 05	MAR 05	MAR 05
IOC	SEP 06	SEP 06	SEP 06
FOC	SEP 08	SEP 08	SEP 08

(U) Authority To Proceed (ATP) decisions will be made by the AFAP with the advice of the ABL Overarching Integrated Process Team (OIPT) and the consent of the DAE. The current estimate reflects the dates for ATP-1 and ATP-2 as shown in the contractor's current Integrated Master Schedule.

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Airborne Laser, December 31, 1997

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

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

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

(b)(1)

(U) 1/ (Operational Requirements Document (ORD) Key Performance Parameter) The following conditions apply: Cloud deck: 11.75 Km; atmospheric turbulence profile: Clear 1 night.

2/ (ORD Key Performance Parameter) Probability of Kill threshold is TBD; The Acquisition Decision Memorandum (ADM) signed by USD(A&T) on November 12, 1996 directs the Air Force to provide a range of values to be used as the threshold for Probability of Kill by ATP-1, currently estimated to occur in June 1998. The following conditions apply:

- a) The weapon system has passed power-up tests and pre-flight checks
- b) Cloud-free line-of-sight to target
- c) Nominal atmospheric turbulence (approximately Clear 1 Night turbulence profile)
- d) Successful TBM detection, acquisition, and fine track prior to lasing

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Airborne Laser, December 31, 1997

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

- e) Laser ready to fire
- f) Engagement within laser weapon range
- g) Lase until kill.

3/ (ORD Key Performance Parameter) The surveillance system must provide autonomous surveillance, detection, and tracking at a range equal to the assessed range of the laser weapon.

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 --

(b)(1)

(U) The changes in the lethal range estimates are the result of refinements in the ABL performance modelling approach.

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Airborne Laser, December 31, 1997

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

	Planning <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	2210.9	2210.9	2201.6
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	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 97 Base-Year \$	2210.9	2210.9	2201.6
Escalation	288.3	288.3	210.2
Development (RDT&E)	(288.3)	(288.3)	(210.2)
Procurement	(0.0)	(N/A)	{0.0}
Construction (MILCON)	(0.0)	(N/A)	{0.0}
Acquisition O&M	<u>(0.0)</u>	<u>(0.0)</u>	<u>{0.0}</u>
Total Then Year \$	2499.2	2499.2	2411.8
b. (U) Quantity --			
Development (RDT&E)	2	2	2
Procurement	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Total	2	2	2

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

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

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Airborne Laser, December 31, 1997

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	-6.3	-	-	-6.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+31.8	-	-	+31.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+25.5	-	-	+25.5
Current Changes:				
Economic	-71.1	-	-	-71.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-41.8	-	-	-41.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-112.9	-	-	-112.9
Total Changes	-87.4	-	-	-87.4
Current Estimate	2411.8	-	-	2411.8

(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	+27.2	-	-	+27.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+27.2	-	-	+27.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-36.5	-	-	-36.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-36.5	-	-	-36.5
Total Changes	-9.3	-	-	-9.3
Current Estimate	2201.6	-	-	2201.6

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Airborne Laser, December 31, 1997

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

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-72.5
Economic adjustment for negative program change. (Economic)	N/A	+1.4
Adjustment for Current and Prior Inflation. (Estimating)	+2.2	+2.2
Revised estimate to reflect current EMD requirements (Estimating)	-25.1	-29.3
Adjustment for Adjunct Missions and Atmospheric Data Collection (Estimating)	+1.8	+1.9
Reductions to support Acquisition Stability Reserve Initiative (Estimating)	-7.7	-8.6
Refinement of In-House Estimate (Estimating)	-2.1	-2.1
Congressional and other General Reductions (Estimating)	-5.6	-5.9
RDT&E Subtotal	-36.5	-112.9

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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	2499.2	N/A	N/A	2411.8
Total Quantity	2	N/A	N/A	2
Prog Acq Unit Cost	1249.6	N/A	N/A	1205.9

(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.

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Airborne Laser, December 31, 1997

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

a. RDT&E --			Initial Contract Price		
(U) <u>ABL PDRR Contract:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Boeing Info., Space & Def, 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		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1153.6	N/A	1	\$1153.6	\$1214.5	
			<u>Cost Variance</u> <u>Schedule Variance</u>		
Previous Cumulative Variances			\$0.0 \$0.0		
Cumulative Variances To Date (11/30/97)			<u>\$-0.3</u> <u>\$-1.5</u>		
Net Change			\$-0.3 \$-1.5		

Explanation of Change:

(U) The current cost variance of \$0.3M results from earlier than planned billings for wind tunnel testing and assembly and test difficulties on the Flight-weighted Laser Module (FLM). The current contract schedule variance of \$1.5M can be attributed to staffing delays in the Beam Control area.

The Current Contract Price of \$1153.6M has been adjusted upward from the initial contract price of 1118.0M to account for two risk mitigation efforts --additional Software Lines of Code (SLOC) and Advanced Adaptive Optics (AAO).

The PM's estimate reflects the Program Office Estimate at Complete (EAC) which was approved at the time of contract award based on the evaluation of key risk areas. The Program Office EAC includes funds budgeted for risk mitigation.

(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 \$1153.6M shown as the target price, \$296.1M represents the fixed price amount for the acquisition of the commercial aircraft, \$757.5M represents the contract budget baseline, and the remaining \$100.0M makes up the award fee pool, the fixed fee portion of the PDRR EMD studies (CLIN 4), and the target option cost (CLIN 8), if exercised. There is no ceiling price for a CPAF or fixed price contract; therefore, we have annotated ceiling price N/A.

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Airborne Laser, December 31, 1997

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	99.5	151.4	292.2	1868.7	2411.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	99.5	151.4	292.2	1868.7	2411.8

b. Annual Summary -- Airborne Laser

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 \$
1994		1.9		1.9	1.8
1995		21.8		21.8	21.3
1996		20.5		20.5	20.4
1997		55.4		55.4	56.0
1998		147.7		147.7	151.4
1999		280.7		280.7	292.2
2000		297.0		297.0	314.2
2001		140.1		140.1	150.7
2002		160.6		160.6	175.9
2003		354.0		354.0	395.4
2004		368.9		368.9	420.9
2005		353.0		353.0	411.6
Subtotal	2	2201.6		2201.6	2411.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2	2201.6		2201.6	2411.8

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Airborne Laser, December 31, 1997

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): \$ 119.2

(U) Percent Total Program Expended: 4.9%

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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AF-5 B-1 CMUP - DSUP

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: B-1B CMUP-DSUP

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): B-1 Conventional Mission Upgrade Program - Defensive System Upgrade Program (CMUP-DSUP)
2. (U) DoD Component: USAF
3. (U) Responsible Office and Telephone Number:
ASC/YD B-1B System Program Office Col Ben F. McCarter
Building 556 Assigned: June 1, 1997
2690 Loop Road West DSN 986-9187; COMM (937) 656-9187
WPAFB, OH 45433-7148 ben.mccarter@b1b.wpafb.af.mil
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0604226F
PROCUREMENT:
(U) APPN 3010 ICN 0101126F (Air Force)

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B-1B CMUP-DSUP, December 31, 1997

5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE approved Acquisition Program Baseline (APB) dated April 14, 1997.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated April 14, 1997.

6. (U) Mission and Description:

(U) The existing ALQ-161 defensive system, designed and optimized for the strategic nuclear mission (i.e., low altitude penetration against specific air defense threats) has limited effectiveness in the B-1B's new conventional mission. DSUP will remove most of the ALQ-161 system and replace it with an AN/ALR-56M radar warning receiver and the Radio Frequency Countermeasures (RFCM) portion of the Navy's Integrated Defense Electronic Counter Measures (IDECM) program, which includes a techniques generator and a fiber optic towed decoy (FOTD). A new low band on-board jammer will be installed to provide the requisite threat coverage. These new systems will significantly improve situational awareness and the survivability of the B-1B in the medium and high altitude regimes where most conventional missions will be conducted. These enhancements are required to maximize the effectiveness of the new weapons capability provided under CMUP. Additionally, these modifications will reduce annual O&S costs approximately \$50M per year.

7. (U) Executive Summary:

(U) In the Jan 92 publication of The Bomber Roadmap, the Secretary of the Air Force designated the B-1B as the backbone of the bomber force. In the Aug 92 Mission Need Statement and the Apr 93 Operational Requirements Document, HQ ACC specified the need for an improved conventional mission capability on the B-1B as well as computer and defensive system improvements. Conventional capability was to be accomplished in phases. First, area munitions (Conventional Bomb Units (CBUs)), second, guided munitions (Joint Direct Attack Munition (JDAM)) and Wind Corrected Munitions Dispenser (WCMD)), and third, standoff munitions (Joint Standoff Weapon (JSOW) and Joint Air-to-Surface Standoff Missile (JASSM)). Due to funding constraints and lack of an affordable solution, the computer and defensive system upgrades were delayed. This resulted in a block upgrade approach outlined as follows: The Conventional Mission Upgrade (CMUP)-JDAM (integrates a MIL-STD 1760 interface, Global Positioning System, communications upgrades and the JDAM precision missile); CMUP-Computer (upgrades the on-board computers); and the CMUP-Defensive System Upgrade (improves the electronic countermeasures suite).

The DSUP program implemented 21 acquisition streamlining initiatives as well as Cost as an Independent Variable (CAIV) efforts, resulting in a program cost avoidance of approximately \$264M in the development phase of the program. Examples of these were a revised architecture implemented as a result of a CAIV study (open systems design using non-developmental items/government furnished

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B-1B CMUP-DSUP, December 31, 1997

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

equipment), a pre-EMD underrun and a decision to integrate testing with the Computer Upgrade portion of the CMUP program. CAIV continues to be a key part of the decision process in the acquisition phase of the B-1 upgrade program.

The DSUP EMD contract was awarded to Boeing North American Aircraft on Jun 20, 97. The program completed several In Process Reviews (IPRs) for both the hardware and software designs. System level Preliminary Design Review (PDR) was completed in Jan 98. The program is on track for a Jul 98 Configuration Design Review (CDR).

FY98 funding shortfalls in the O&M were worked throughout this reporting period. The Computer Upgrade is the baseline for the DSUP design. In Jan 98, HQ ACC/DR/LG provided the required \$23M of 3400 funds to keep the Computer Upgrade program on schedule. This eliminated the threat of a slip in the Computer Upgrade which would have directly impacted the DSUP schedule. Due to the dependency of integrated development and sustainment software activities in the B-1 block upgrade process, any slips in the Computer Upgrade program will directly impact the DSUP, Wind Corrected Munitions Dispenser (WCMD) integration, Joint Standoff Weapon (JSOW) integration, and Joint Air-to-Surface Standoff Missile JASSM) integration programs. Additionally, the late delivery of software to the JDAM/GPS upgrade program is impacting DT&E schedules. The JDAM/GPS team is continuing to examine a variety of options that will allow flight test to complete on its planned date of Jun 19, 98. Any significant slips in completion of flight test could impact the Computer Upgrade and DSUP schedules for DT&E.

In Dec 97, the Navy identified a \$35.8M overrun on the IDECM EMD contract. Major cost drivers are material and labor. The IDECM PEO commissioned an Independent Review Team (IRT) to examine the causes of the overrun and the impacts to schedule. Major slips in delivery of IDECM GFE could have a significant impact on the DSUP schedule. The DSUP team will assess impacts after the IRT reports its findings in late Feb 98.

Milestone III Acquisition Decision Memorandum for the Towed Decoy was signed on Feb 5, 98. Contract award is set for May 98.

Program Budget Decision (PBD) 604 funding cuts will delay DSUP Required Assets Available (RAA) one month and defer delivery of five kits from FY02/03 to FY07.

The loss of an aircraft this reporting period will result in a quantity change from 95 to 94 aircraft. These changes are reflected in the current estimate portions of the SAR.

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B-1B CMUP-DSUP, December 31, 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
-- OEM	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	APR 97	APR 97	APR 97	
Development Contract Award	JUN 97	JUN 97	JUN 97	
Critical Design Review Complete	JUL 98	JUL 98	JUL 98	
Developmental Flight Test				
Start	MAR 00	MAR 00	APR 00	(Ch-1)
Complete	APR 01	APR 01	MAY 01	(Ch-1)
IOT&E				
Start	JUN 01	JUN 01	JUL 01	(Ch-1)
Complete	DEC 01	DEC 01	JAN 02	(Ch-1)
Required Assets Available	FEB 02	FEB 02	MAR 02	(Ch-1)
MILESTONE III	MAR 02	MAR 02	APR 02	(Ch-1)
Full Rate Production Contract Award	APR 02	APR 02	APR 02	

(U) Milestone II occurred with the issuance of an Acquisition Decision Memorandum (ADM) to the Air Force Acquisition Executive on Apr 11, 97.

Full Rate Production Contract Award is defined as the production contract award for upgrade modification kits.

Required Assets Available is defined as the date assets consisting of 3 modified aircraft, associated O-level support equipment, O-level spares, verified O-level maintenance and flight manuals and source data to support

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B-1B CMUP-DSUP, December 31, 1997

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

training is available (does not include training system devices).

b. Current Change Explanations --

(U) (Ch-1) All schedule delays are due to the impact of budget funding cuts (PBD 604):

Developmental Flight Test Start changed from Mar 00 to Apr 00.

Developmental Flight Test Complete changed from Apr 01 to May 01.

IOT&E Start changed from Jun 01 to Jul 01.

IOT&E Complete changed from Feb 02 to Mar 02.

Required Assets Available date changed from Feb 02 to Mar 02.

Full Rate Production Contract Award date changed from Mar 02 to Apr 02.

10. (U) Performance Characteristics:

a. Performance --

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

(b)(1)

(U) (U) The specified values for the threshold and objectives are for system maturity. System maturity for the DSUP occurs after accumulation of 16,520 flight hours.

b. 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)	303.0	303.0	291.5
Procurement	291.4	291.4	310.6
Recurring Flyaway	(262.8)		(279.9)
Nonrecurring Flyaway	(0.7)		(0.6)
Total Flyaway	(263.5)		(280.5)
Total Other Wpn Sys			(0.0)
Peculiar Support	(6.3)		(5.9)
Initial Spares	(21.6)		(24.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	594.4	594.4	602.1
Escalation	105.9	105.9	88.7
Development (RDT&E)	(30.0)	(30.0)	(20.8)
Procurement	(75.9)	(75.9)	(67.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	700.3	700.3	690.8

(U) (U) RDT&E dollars do not include funds for Trainers, Air Force Mission Support Systems (AFMSS), AFOTEC, Group B (Techniques Generators and Fiber Optic Towed Decoy (FOTD) subsystem) and decoys. Trainers and AFMSS are separately managed ACAT III programs. Group B funds provided by Electronic Warfare Program element. AFOTEC costs funded under AFOTEC PE. Procurement costs do not include Fiber Optic Towed Decoy subsystem and decoys. Funding is provided by Electronic Warfare PE.

b. (U) Quantity --

Development (RDT&E)	N/A	N/A	0
Procurement	95	95	94
Total	95	95	94

(U) Current Estimate reflects loss of one aircraft this reporting period.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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B-1B CMUP-DSUP, December 31, 1997

12. (U) Unit Cost Summary:

	UCR Baseline (Apr 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BYS)	594.4	602.1	
(2) Quantity	95	94	
(3) Unit Cost	6.257	6.405	+2.37
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BYS)	291.4	310.6	
(2) Quantity	95	94	
(3) Unit Cost	3.067	3.304	+7.73

13. (U) Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Development Estimate	333.0	367.3	-	700.3
Previous Changes:				
Economic	-1.5	+2.3	-	+0.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.5	-2.2	-	-0.7
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	-	0.0	-	0.0
Current Changes:				
Economic	-5.8	-16.1	-	-21.9
Quantity	-	-1.9	-	-1.9
Schedule	-	+0.9	-	+0.9
Engineering	-	-	-	-
Estimating	-14.9	+26.1	-	+11.2
Other	-	-	-	-
Support	-	+2.2	-	+2.2
Subtotal	-20.7	+11.2	-	-9.5
Total Changes	-20.7	+11.2	-	-9.5
Current Estimate	312.3	378.5	-	690.8

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	303.0	291.4	-	594.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.8	-1.7	-	+0.1
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	+1.8	-1.8	-	0.0
Current Changes:				
Quantity	-	-1.5	-	-1.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-13.3	+20.2	-	+6.9
Other	-	-	-	-
Support	-	+2.3	-	+2.3
Subtotal	-13.3	+21.0	-	+7.7
Total Changes	-11.5	+19.2	-	+7.7
Current Estimate	291.5	310.6	-	602.1

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-6.2
Economic adjustment for negative program change. (Economic)	N/A	+0.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.8	+0.8
Revised estimate to account for non-pay purchase inflation (PBD 604) and acquisition stability reserve reductions (Estimating)	-3.0	-3.3
Revised program estimate to account for actual contract value and phasing (Estimating)	-11.1	-12.4
RDT&E Subtotal	-13.3	-20.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-16.3
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Quantity variance associated with decrease of 1 units. (Quantity)	-1.5	-1.9

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R-1B CMUP-DSUP, December 31, 1997

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. (Schedule)	0.0	+0.9
Revised estimate and buy profile to account for non-pay purchase inflation and revised inflation assumptions (Estimating)	+20.2	+26.1
Revised estimate of Initial Spares (Support)	+2.7	+2.9
Revised estimate in Peculiar Support (Support)	-0.4	-0.7
 Procurement Subtotal	 +21.0	 +11.2

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	
7.37	-0.22	+0.06	+0.01	--	+0.11	--	+0.02	-0.02	7.35

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	
3.87	-0.15	+0.03	+0.01	--	+0.25	--	+0.02	+0.16	4.03

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	APR 97	N/A	APR 97
Milestone III	N/A	MAR 02	N/A	APR 02
FUE/IOC	N/A	FEB 02	N/A	MAR 02
Total Cost	N/A	700.3	N/A	690.8
Total Quantity	N/A	95	N/A	94
Prog Acq Unit Cost	N/A	7.37	N/A	7.35

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

a. RDT&E --			Initial Contract Price		
(U) <u>B-1B DSUP:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Boeing North American, Seal Beach CA	\$216.5	N/A	0		
F33657-97-C-0002, CPAP					
Award: June 20, 1997					
Definitized: June 20, 1997					

Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$216.5	N/A	0	\$216.5	\$216.5	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/28/97)	\$0.4	\$-0.2
Net Change	\$0.4	\$-0.2

Explanation of Change:

(U) Net changes are not significant in relation to current contract target price.

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> (FY97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-09)	<u>Total</u>
RDT&E	23.5	55.4	73.9	159.5	312.3
Procurement	-	-	-	378.5	378.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	23.5	55.4	73.9	538.0	690.8

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

b. Annual Summary -- B-1B CMUP-DSUP

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 \$
1997				22.8	23.5
1998				53.0	55.4
1999				69.5	73.9
2000				74.0	79.9
2001				55.1	60.5
2002				17.1	19.1
Subtotal				291.5	312.3

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 \$
2001	3	0.2	1.5	1.8	2.0
2002	12	0.4	31.0	31.7	36.4
2003	17		45.1	50.3	59.0
2004	18		51.8	58.3	69.9
2005	19		55.9	64.4	79.0
2006	18		53.0	62.0	77.8
2007	7		29.4	29.4	37.7
2008			9.1	9.2	12.0
2009			3.5	3.5	4.7
Subtotal	94	0.6	279.9	310.6	378.5

(U) (U) FY08 and FY09 procurement funds are for installation of kits procured in FY06 and FY07.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	94	0.6	279.9	602.1	690.8

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17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDTE&E	0	0
Procurement	94	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 25.3

(U) Percent Total Program Expended: 3.7%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

This estimate was prepared by the B-1B Program Office as part of the updated Service Cost Position, dated 20 Dec 96, for the approved Acquisition Program Baseline.

The B-1B CMUP - Defensive System 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 a 33 manpower reduction for the Defensive System Upgrade. The Operation and Support has a phase in of FY04-FY09 and steady state FY10-FY26. A 1.48 utilization factor (Equipment Operation Hours per Flying Hour) was used for 95 aircraft at 508/Flying Hour/Aircraft/Year.

Changes with the Defensive System Upgrade include replacing 118 ALQ-161 boxes with 35 ALR-56M and IDECM boxes; a 4000 pound B-1B aircraft weight reduction; elimination of over 41,000 Technical Order pages; and in Support Equipment, the elimination of one Test Station Type, 31 Line Replaceable Unit Test Program Sets and 66 Shop Replaceable Unit Test Program Sets. It is estimated the Defensive System Upgrade will significantly reduce the B-1B Operating and Support costs.

The antecedent system is the B-1B ALQ-161 Defensive System.

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

Cost Element	B-1B CMUP-DSUP 95 B-1B Aircraft	Antecedent B-1B ALQ-161 Avg Annual Cost
Mission Pay & Allowances	36.2	58.8
Unit Level Consumption	42.0	1279.7
Intermediate Maintenance	0.0	N/A
Depot Maintenance	0.0	N/A
Contractor Support	0.0	N/A

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

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

Cost Element	B-1B CMUP-DSUP 95 B-1B Aircraft	Antecedent B-1B ALQ-161 Avg Annual Cost
Sustaining Support	109.9	546.8
Indirect Costs	3.0	3.9
	N/A	N/A
Total	191.1	1889.2

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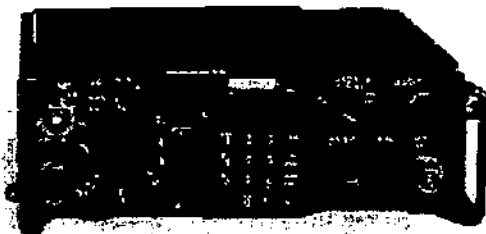
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SELECTED ACQUISITION REPORT (RCS: DD-A&T (Q&A) 823)
PROGRAM: SINGARS

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1. Designation and Nomenclature (Popular Name): Single Channel Ground and Airborne Radio System (SINGARS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Project Manager, Tactical Radio Communication Systems	Mr. John C. Ferrapato
ATTN: SFAE-C35-TRC	Assigned: November 24, 1997
Fort Monmouth, NJ 07703-5505	DSN 987-3063; COMM (908) 427-3063
	perrapat@doim6.monmouth.army.mil

4. Program Elements/Procurement Line Items:

RDTE:

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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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 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 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. The SINGGARS ground radio production hardware was type ~~classified~~ standard at ASARC III in Sep 83 and has been in production since Dec 83. The airborne version of the radio commenced production in May 85 with the acquisition objective being completed in FY97.

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7. Executive Summary (Cont'd):

Dual-sourced production of the ground version of the SINGGARS radio commenced in FY88 as directed by Secretary of Defense Decision Memorandum (SDDM) to independently select and manage a second source which would be a form, fit, and function equivalent to the ITT A/CD Integrated COMSEC (ICOM) SINGGARS at the Line Replaceable Unit (LRU) level. 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.

The FY97 head-to-head competition between ITT and GD resulted in the down selection to a single source with ITT being the winner and was awarded a new production contract to continue through completion of the program. Cost as an Independent Variable (CAIV) initiatives were implemented as part of the source selection process. An alternate configuration, known as the Advanced System Improved (ASIP) SINGGARS Ground radio was awarded. The ASIP radio provides all of the System Improved (SIP) functionality plus an enhanced synchronization capability in a package that is one-half the size and weight of the current SIP Receiver/Transmitter. Evolutionary enhancements of the SINGGARS ASIP radio and Internet Controller, to provide Go-to-War capabilities for the Tactical Internet, are envisioned to continue over the next several years, if funded.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 0 (ROC Approval)	DEC 74	N/A	DEC 74
ASARC I	OCT 75	N/A	OCT 75
Milestone I (DSARC I)	FEB 76	N/A	FEB 76
Award AD Contracts	APR 78	N/A	APR 78
Milestone IIIA	SEP 83	SEP 83	SEP 83
Complete DT/OT -- I/II	DEC 83	N/A	DEC 83
Complete Limited DT/OT	DEC 82	N/A	DEC 82
Complete Maturity DT/OT	DEC 83	N/A	DEC 83
Initial Ground (ITT) Production	DEC 83	DEC 83	DEC 83
Contract Award			
Initial Airborne Production Contract	N/A	MAY 85	MAY 85
Award			
JRMB - Level Program Review	N/A	DEC 86	DEC 86
Ground (ITT) FAT			
Complete	JUN 85	JAN 88	JAN 88
Ground (ITT) Production Delivery Begins	AUG 85	JAN 88	JAN 88
Airborne Option 1 Award	N/A	APR 88	APR 88
Ground (ITT) Option 1 Delivery Begins	N/A	MAY 88	MAY 88
Initial Ground (GD) Award	N/A	JUL 88	JUL 88
Airborne FAT			
Complete	N/A	SEP 88	SEP 88
Airborne Production Delivery Begins	N/A	NOV 88	NOV 88
ICOM EUT&E	N/A	NOV 88	NOV 88
Milestone IIIB -- ITT Full Rate	N/A	MAR 89	MAR 89
Production (Non-ICOM)			
Airborne Option 2 Award	N/A	APR 89	APR 89
Ground (ITT) Option 3 Award	N/A	JUN 89	JUN 89
Ground (ITT) Option 2 Delivery Begins	N/A	JUN 89	JUN 89
Airborne Option 1 Delivery Begins	N/A	AUG 89	AUG 89
Airborne Option 2 Delivery Begins	N/A	APR 90	APR 90
ICOM IOT&E (ITT)	N/A	JUN 90	JUN 90
Ground (ITT) Option 3 Delivery Begins	N/A	JUL 90	JUL 90
Milestone IIIB -- ITT Full Rate (ICOM)	N/A	DEC 90	DEC 90
and GD Low Rate Option 1			
Ground (ITT) Option 4 Award	N/A	DEC 90	DEC 90
IOC (1st Div Equipped)	OCT 87	DEC 90	DEC 90
Airborne Option 3 Award	N/A	DEC 90	JAN 91
Ground (GD) Option 1 Award	N/A	DEC 90	MAR 91
Ground (GD) FAT			
Complete	N/A	DEC 91	JUN 92
Airborne Option 3 Delivery Begins	N/A	JAN 92	JAN 92
Ground (ITT) Option 4 Delivery Begins	N/A	JAN 92	JAN 92
Ground (GD) Production Delivery Begins	N/A	FEB 92	JUL 92
Ground (GD) Option 2 Award	N/A	JUN 92	NOV 92
Ground (GD) Option 1 Delivery Begins	N/A	DEC 92	DEC 92
ICOM FOT&E (GD)	N/A	FEB 93	FEB 93
ITT Sole-Source (Basic) Award	N/A	MAR 92	MAR 92
ITT Sole-Source (Basic) Delivery Begins	N/A	JUN 93	JUN 93
Second Source (GD) Full Rate Production	N/A	JUN 93	AUG 93
Program Review			

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9a. Schedule (Cont'd):

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
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
(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)				

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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>
Ground				
Non-ICOM (less ECCM, DRA)	N/A	1250 / 1250	7588	1250
ICOM	N/A	1250 / 1250	8382	1250
Airborne	750	750 / 750	7345	750
ECCM (Hrs)	3500	N/A / N/A	8382	3500
Mean Time To Repair (MTTR) (Min)				
Organizational Level	15	15 / 15	2.9	15
Direct Support (DS)				
Non-ICOM	N/A	60 / 60	52.2	45/60
ICOM	N/A	45 / 45	16	45
General Support (GS) (Hrs)	2	N/A / N/A	1.78	2

PERFORMANCE CHARACTERISTICS AS DISPLAYED ARE SUBJECT TO THE FOLLOWING CONDITIONS:

- 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 SINCGARS reliability requirement as approved in 1974 has no MTBF requirement or DCP threshold. This means that only radio hardware failures are counted, but under field test rather than in a lab. Demonstrated performance results are expressed on a point estimate basis on the AN/VRC-90 or 1477A airborne R/T system basis.
- Direct support Mean Time to Repair (MTTR) is not a cumulative requirement and does not include Organizational Level MTTR.

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10b. Performance Characteristics (Cont'd):

b. Current Change Explanations --
None.

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

a. Cost --	Production Estimate (SAR)	Approved Program (AFB)	Current Estimate
Development (RDT&E)	154.4	220.2	209.1
Procurement	4013.3	3089.8	2630.6
Major System Equipment	(3151.8)		(2340.9)
Ancillary Equipment	(431.8)		(123.0)
Total Flyaway	(3583.6)		(2463.9)
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	2839.7
Escalation	1444.0	1312.6	966.1
Development (RDT&E)	(-19.0)	(4.5)	(2.6)
Procurement	(1463.0)	(1308.1)	(963.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5611.7	4622.6	3805.8
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	292853	246845	264505
Total	292853	246845	264505

Note: Excludes 123 RDT&E 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	10.3M
Kuwait (AF)	KU-B-UGO	61	1.0M

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

Hellenic Republic	GR-B-JAX	131	1.6M
Bahrain	BA-B-JBO	6	.1M
Taiwan MADSAvenger	N/A	126	5.9M
SHAPE Tech Ctr	A2-B-USB	3	.03M

* Estimated cost includes Total Package Fielding services/supplies..

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (AUG 93 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 84 BY\$)	3310.0	2839.7	
(2) Quantity	246845	264505	
(3) Unit Cost	0.013	0.011	-15.38
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 84 BY\$)	3089.8	2630.6	
(2) Quantity	246845	264505	
(3) Unit Cost	0.013	0.010	-23.08

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	135.4	5476.3	-	5611.7
Previous Changes:				
Economic	+0.6	-48.8	-	-48.2
Quantity	+11.6	-913.3	-	-901.7
Schedule	+2.2	+760.3	-	+762.5
Engineering	+46.4	-	-	+46.4
Estimating	+15.7	-1331.2	-	-1315.5
Other	-	-	-	-
Support	-	-324.1	-	-324.1
Subtotal	+76.5	-1857.1	-	-1780.6
Current Changes:				
Economic	-0.1	-15.5	-	-15.6
Quantity	-	+82.5	-	+82.5
Schedule	-	+9.8	-	+9.8
Engineering	-	+47.1	-	+47.1
Estimating	-0.1	-149.0	-	-149.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.2	-25.1	-	-25.3
Total Changes	+76.3	-1882.2	-	-1805.9
Current Estimate	211.7	3594.1	-	3805.8

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	-423.7	-	-414.0
Schedule	-	+49.1	-	+49.1
Engineering	+35.0	-	-	+35.0
Estimating	+10.1	-739.7	-	-729.6
Other	-	-	-	-
Support	-	-263.0	-	-263.0
Subtotal	+54.8	-1377.3	-	-1322.5
Current Changes:				
Quantity	-	+54.8	-	+54.8
Schedule	-	+0.9	-	+0.9
Engineering	-	+30.8	-	+30.8
Estimating	-0.1	-91.9	-	-92.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.1	-5.4	-	-5.5
Total Changes	+54.7	-1382.7	-	-1328.0
Current Estimate	209.1	2630.6	-	2839.7

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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
Adjustment to actual program costs. (Estimating)	-0.1	-0.1
RDT&E Subtotal	-0.1	-0.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-17.2
Economic adjustment for negative program change. (Economic)	N/A	+1.7
Adjustment for Current and Prior Inflation. (Estimating)	+10.1	+14.9
Total variance associated with increase of 5,609 units.	+42.3	+64.2
Increase to Army requirement of 5501 units, from 209,991 to 215,492. (Quantity)	+53.8	+81.0
Increase to Marine Corps requirement of 106 units, from, 31,207 to 31,313. (Quantity)	+1.0	+1.5
Increase to Navy requirement of 2 units, from 3,422 to 3,424. (Quantity)	0.0	0.0
Allocation to Schedule variance resulting from Quantity Change. (Schedule)	+0.9	+10.0
Allocation to Estimating variance resulting from Quantity Change. (Estimating)	-13.4	-28.3
Revised annual procurement buy profile. (Schedule)	0.0	-0.2
Revised estimate due to Advanced System Improved (ASIP) enhancements and upgrades (Engineering)	+7.1	+10.8
Revised estimate due to enhancements and upgrades to Internet Controller (INC) microprocessor (Engineering)	+16.7	+25.6
Revised estimate due to software enhancement to FBCB2 IOT&E (Engineering)	+7.0	+10.7
Revised estimate due to GRM-122 upgrade to ASIP radio. (Estimating)	+0.1	+0.2
Revised unit cost based on contract award. (Estimating)	-92.7	-141.9
Adjustment to FY98 program for Frequency Hopping Multiplexer (Estimating)	+4.0	+6.1
Procurement Subtotal	-5.4	-25.1

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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	
0.02	--	--	--	--	-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

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	SEP 83	SEP 83
FUE/IOC	N/A	N/A	OCT 87	DEC 90
Total Cost	N/A	N/A	5611.7	3805.8
Total Quantity	N/A	N/A	292853	264505
Prog Acq Unit Cost	N/A	N/A	0.02	0.01

Additional Milestone III information:

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 --

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15a. Contract Information (Cont'd):

<u>SINGGARS Ground PY6:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
GENERAL DYNAMICS, Tallahassee, FL	\$128.5	N/A	15219	
DAAB07-95-C-C502, FPAF				
Award: March 30, 1995				
Definitized: March 30, 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>
\$137.4	N/A	15219	\$137.4	\$141.2

Explanation of Change:

The target price increase of \$4.0M from the Dec 1996 SAR is due to the incorporation of modifications for procurement of vehicular amplifier adapter guide rail kits and award of earned reliability award fees. The contractor's EAC does not include reliability award fee yet to be earned.

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

<u>SINGGARS Ground PY 9:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
ITT CORPORATION, Fort Wayne, IN	\$145.8	N/A	18601	
DAAB07-95-C-C503, FPAF				
Award: March 30, 1995				
Definitized: March 30, 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>
\$167.1	N/A	18601	\$167.1	\$167.1

Explanation of Change:

The target price increase of \$6.9M from the Dec 1996 SAR is due to award of earned Reliability Award fees.

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

<u>SINGGARS Ground FY10:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
ITT CORPORATION, Fort Wayne, IN	\$153.8	N/A	16501	
DAAB07-96-C-C501, FPAF				
Award: April 19, 1996				
Definitized: April 19, 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>
\$161.4	N/A	16501	\$161.4	\$169.6

Explanation of Change:

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15. Contract Information (Cont'd):

The target price increase of \$.9M from the Dec 1996 SAR is due to procurement of additional cables and incorporation of an ECP to add a reprogrammable feature to the SIP ECCM Modules. The contractor's EAC does not include reliability award fee yet to be earned.

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

<u>SINGARS Ground FY7:</u>		<u>Initial Contract Price</u>	
<u>GENERAL DYNAMICS, Tallahassee, FL</u>		<u>Target</u>	<u>Ceiling</u>
DAAB07-96-C-C502, FPAF		\$107.0	N/A
Award: April 19, 1996			Qty
Definitized: April 19, 1996			11001

<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>
\$107.7	N/A	11001	\$107.7	\$113.1

Explanation of Change:

The target price increase of \$0.3M from the Dec 1996 SAR is due to the incorporation of modification to procure additional spares. The contractor's EAC does not include reliability award fee yet to be earned.

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

<u>SINGARS Ground FY11:</u>		<u>Initial Contract Price</u>	
<u>ITT Corporation, Fort Wayne, IN</u>		<u>Target</u>	<u>Ceiling</u>
DAAB07-97-C-C600, FFP		\$190.0	N/A
Award: April 25, 1997			Qty
Definitized: August 13, 1997			35000

<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>
\$191.1	N/A	35000	\$191.1	\$191.1

Explanation of Change:

The target price increase of \$1.1M since the initial award is due to the procurement of additional spares.

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

Contract Comments:

This is the first time this contract appears in the SAR.

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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 (FY76-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00)</u>	<u>Total</u>
RD&E	211.7	-	-	-	211.7
Procurement	3278.2	287.8	14.6	13.5	3594.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3489.9	287.8	14.6	13.5	3805.8

b. Annual Summary -- SINGARS

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY84 Dollars Nonrec</u>	<u>Flyaway FY84 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1976				0.7	0.4
1977				0.3	0.2
1978				3.2	2.0
1979				9.2	6.2
1980				16.6	12.4
1981				24.4	20.0
1982				27.3	24.4
1983				13.9	13.2
1984				12.0	11.8
1985				10.1	10.3
1986				9.9	10.4
1987				11.1	12.0
1988				13.2	14.8
1989				14.2	16.5
1990				7.6	9.2
1991				10.2	12.8
1992				2.1	2.7
1993				1.3	1.7
1994				5.3	7.2
1995				3.9	5.4
1996				3.0	4.2
1997				5.0	7.2
1998				4.6	6.7
Subtotal				209.1	211.7

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

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		3.0	2.9	4.2
1997				0.1	0.2
Subtotal	11977		86.0	86.0	119.5

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		37.7	37.7	52.5
1994	4539		32.6	32.6	46.1
1995	7100		36.4	36.4	52.6
1996	3606		30.3	30.3	44.3
1997	4218		20.9	20.9	31.1
Subtotal	31313		218.1	218.1	306.4

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	128		0.7	0.7	1.1
1998	198		0.7	0.7	1.1

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

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY84 Dollars Nonrec	Flyaway FY84 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Subtotal	3424		25.5	25.5	35.2

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.

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	148.8	207.4
1994	24219	0.1	229.8	243.3	344.1
1995	23850	0.1	223.5	239.9	346.6
1996	23797	0.1	221.1	244.0	356.4
1997	31302	0.1	177.6	210.5	312.6
1998	32847	0.1	186.4	190.3	286.7
1999				9.6	14.6
2000				8.7	13.5
Subtotal	215492	20.9	2084.3	2269.3	3094.3

1998 program includes \$6.0M for the Frequency Hopping Multiplexer (FHMUX).

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SINGGARS, December 31, 1997

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

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	1.9
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	215642	25.2	2094.9	2495.9	3325.0
OSD	11977		86.0	86.0	119.8
Navy	34737		243.6	243.6	341.6
USAF	2149		14.2	14.2	19.7
Grand Total	264505	25.2	2438.7	2839.7	3805.8

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	180347	180380

Percent Total Program Quantities Delivered: 68.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2968

Percent Total Program Expended: 78.0%

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

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

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.

Total Operation and Sustainment cost for the life cycle of the program is \$2977.1M in Base Year FY84 Dollars, \$5714.5M in Then Year Dollars.

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

N-18 STD MSL 2

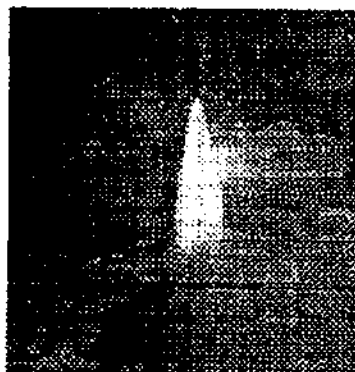
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: STANDARD MISSILE-2

AS OF DATE: December 31, 1997

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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 CAPT M. G. MATHIS
THEATER AIR DEFENSE Assigned: June 26, 1997
2521 JEFFERSON DAVIS HIGHWAY DSN 332-0662; COMM (703) 602-0662
ARLINGTON,, VA 22242-5170
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 IIIE 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:

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 ER was deployed on all TERRIER Guided Missile Cruisers and Destroyers prior to their decommissioning. The SM-2 Block II MR is deployed on AEGIS CG-47/51 Cruisers and AEGIS DDG-51 Destroyers.

The STANDARD Missile-2 Block III, IIIA and IIIB provide improved low altitude and guidance performance over SM-2 Block II. The SM-2 Block III incorporates (b)(1)

(b)(1)

SM-2 Block IIIA is essentially a Block II Missile with a (b)(1) coupled with a (b)(1) to provide improved lethality throughout the envelope. A moving target indicator (MTI) is also incorporated in the fuze design to permit engagement of (b)(1) cruise missiles. The SM-2 Block IIIB Missile Homing Improvement Program (MHIP) encompasses improvements to the Block IIIA for continued evolution in SM guidance capability with incorporation of a dual mode Infrared/RF guidance system.

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6. ~~(S)~~ Mission and Description (Cont'd):

These versions of STANDARD Missile will be employed on ships capable of firing SM-2 Block III. The SM-2 Block III missile achieved IOC in August, 1990. The SM-2 Block IIIA Missile achieved IOC in January, 1994. The SM-2 Block IIIB Missile achieved IOC in October 1997.

~~(S)~~ STANDARD Missile-2 Block IV will provide dramatic increases in performance for AEGIS/VLS ships. Block IV incorporates a new separable booster with thrust vector control, a new guidance section, all digital autopilot, and the ordnance section and dual thrust rocket motor of Block IIIA. The Block IV missile will be capable of supporting the entire SPY 18/D envelope and will have improved capability at very high altitudes and at large crossranges. Block IV will also retain the low altitude performance of Block III/IIIA. SM-2 Block IV will be introduced into the fleet ~~(b)(1)~~ After five years of production it is anticipated that the Block IV will evolve into the Block IVA variant in FY 00.

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 a 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. SM-2 Block IIIB IOC was achieved on October 21, 1997. 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. On December 17, 1997 Raytheon completed its merger with Hughes to create Raytheon Systems Company (RSC).

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	Yes
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

The SM-2 BLK IV total procurement cost breach results from the addition of one year of SM-2 BLK IV LRIP production as approved in ASN (RD&A) Memo dtd 17 Oct 97. A Baseline Change Request and Program Deviation Report are in process.

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
Lot 3 ALP	APR 86	APR 86	APR 86
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

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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
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 III E (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
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
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
Milestone IIIA	SEP 91	N/A	OCT 95
LRIP Program Decision	N/A	OCT 95	OCT 95 (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
Operational Test	(b)(1)		
IOC			(Ch-2)
Milestone IIIB			
Milestone III (Full Rate Production)			

b. Current Change Explanations --

(Ch-1) This change corrects a clerical error in the current estimate of the Dec 96 SAR.

(Ch-2) Actual IOC achieved 21 Oct 97.

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9a. ~~(S)~~ Schedule (Cont'd):
SM-2 BLK IV

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Milestone II	AUG 86	AUG 86	AUG 86	
FSED Contract	JUL 87	JUL 87	JUL 87	
Preliminary Design Review	DEC 88	DEC 88	DEC 88	
Critical Design Review	JUL 89	AUG 89	AUG 89	
Development Test	NOV 90	MAY 94	JUL 94	
Milestone IIIA (NPDM) Pilot Production	DEC 90	N/A	N/A	
Operational Test	SEP 91	JUL 94	OCT 94	
Milestone IIIB (Full Production)	DEC 91	N/A	N/A	
LRIP Program Decision	N/A	JAN 95	MAY 95	
(S) First Production Delivery	(b)(1)			(Ch-1)
(S) Milestone III (Full Rate Production)				
(S) IOC				(Ch-2)

b. Current Change Explanations --

~~(S)~~ (Ch-1) - First Production Delivery has changed from (b)(1) due to MK72 Booster Hardware Requalification issues.

~~(S)~~ (Ch-2) - The IOC has changed from (b)(1) due to delays in First Production Delivery (see Ch-1 above).

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

SM-2 BLK I\II\III\A\B

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
BLOCK II MR	(b)(1)			
Max Range (nm)				
Min Range (nm)				
Max Alt (k ft)				
Miss Distance (ft)				
Prob of Successful Engagement (%)				
Flight Reliability				
Launch Reliability				
BLOCK II ER				
Max Range (nm)				
Min Range (nm)				
Max Alt (k ft)				
Miss Distance (ft)				
Prob of Successful Engagement (%)				
Flight Reliability				
Launch Reliability				

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

SM-2 BLK I\II\III\A\B

	<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>
BLOCK III	(b)(1)			
Intercept Altitude (ft)				
Prob of Air Target Kill (%)				
Technical Reliability				
Flight Reliability				
Launch Availability (8 mon storage)				
Compatability				
BLOCK IIIA				
Intercept Altitude (ft)				
Warhead Fragment Velocity (ft per sec)				
Directional Warhead Aim Accuracy (deg)				
Prob of Air Target Kill (%)				
Technical Reliability				
Flight Reliability				
Launch Availability (8 mon storage)				
Compatability				
BLOCK IIIB				
Unintegrated IR Seeker Sensitivity (pw/cm ²)				
Integrated IR Seeker Sensitivity (pw/cm ²)				
Pointing Accuracy (deg)				
Track Rate (deg per sec)				
Prob of Air Target Kill (%)				

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

SM-2 BLK I\II\III\A\B

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Technical	(b)(1)			
Reliability				
Flight Reliability				
Launch Availability				
(8 mon storage)				
Compatibility				

b. Current Change Explanations -- None

SM-2 BLK IV

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Intercept Altitude (K ft)	(b)(1)			
Probability of Air Target Kill (%)				
Technical Reliability				
Flight Reliability				
Launch Availability				
(8 month storage)				
(Objective not tested until FOT&E)				
Compatibility				

b. Current Change Explanations -- None

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

SM-2 BLK I\II\III\A\B

a. (U) Cost --	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Development (RDT&E)	648.4	770.6	781.0
Procurement	5923.2	6432.1	6403.6
AUR Hardware	(4510.5)		(4459.1)
Other Flyaway	(500.0)		(954.0)
Total Flyaway	(5010.5)		(5413.1)
Non-recurring Support	(388.9)		(480.2)
Fleet Support	(330.9)		(352.6)
Total Other Wpn Sys	(719.8)		(832.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(192.9)		(157.7)
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	7218.8
Escalation	1481.2	1536.0	1406.1
Development (RDT&E)	(53.2)	(86.6)	(80.1)
Procurement	(1428.0)	(1440.6)	(1317.4)
Construction (MILCON)	(0.0)	(8.8)	(8.6)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	8052.8	8772.7	8624.9
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 IIIs 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, Canada ordered 12 SM-2 Block IIIA missiles and Japan ordered 26 SM-2 Block III missiles. In FY98 Canada has ordered 10 SM-2 Block IIIA and we expect Japan to order 5 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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	283.9	319.8	320.0
Procurement	1914.6	314.8	342.9
AUR Hardware	(1551.7)		(222.5)
Other Flyaway	(207.0)		(64.0)
Total Flyaway	(1758.7)		(286.5)
Fleet Support	(60.1)		(19.0)
Non-recurring Support	(66.8)		(27.3)
Total Other Wpn Sys	(126.9)		(47.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(29.0)		(9.3)
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	662.9
Escalation	815.9	230.1	238.1
Development (RDT&E)	(56.2)	(72.1)	(71.9)
Procurement	(759.7)	(158.0)	(166.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3014.4	864.7	901.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	3000	160	184
Total	3000	160	184

(U) Note: At the LRIP Program Decision (4 May 95), a quantity of 106 was approved with a provision for additional quantities should the program not transition to the SM-2 Block IVA as planned. ASN (RD&A) Memo dtd 17 Oct 97 authorizes procurement of additional SM-2 BLK IV LRIP Missiles to a maximum quantity of 180.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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STANDARD MISSILE-2, December 31, 1997

12. (U) Unit Cost Summary:

SM-2 BLK I\II\III\A\B

	UCR Baseline (OCT 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 84 BY\$)	7236.7	7218.8	
(2) Quantity	11504	11505	
(3) Unit Cost	0.629	0.627	-0.32
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 84 BY\$)	6432.1	6403.6	
(2) Quantity	11504	11505	
(3) Unit Cost	0.559	0.557	-0.36

SM-2 BLK IV

	UCR Baseline (MAY 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 84 BY\$)	634.6	662.9	
(2) Quantity	160	184	
(3) Unit Cost	3.966	3.603	-9.15
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 84 BY\$)	314.8	342.9	
(2) Quantity	160	184	
(3) Unit Cost	1.968	1.864	-5.28

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STANDARD MISSILE-2, December 31, 1997

13. (U) Cost Variance Analysis:

SM-2 BLK I\II\III\A\B

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

	RDTE	PROC	MILCON	TOTAL
Production Estimate	701.6	7351.2	-	8052.8
Previous Changes:				
Economic	-32.5	-816.2	+1.6	-847.1
Quantity	-	+271.6	-	+271.6
Schedule	-	+581.3	-	+581.3
Engineering	+5.1	+202.1	-	+207.2
Estimating	+188.3	+32.9	+41.2	+262.4
Other	-	-	-	-
Support	-	-40.9	-	-40.9
Subtotal	+160.9	+230.8	+42.8	+434.5
Current Changes:				
Economic	-0.9	-59.8	-	-60.7
Quantity	-	-	-	-
Schedule	-	-9.3	-	-9.3
Engineering	-	-	-	-
Estimating	-0.5	+176.4	-	+175.9
Other	-	-	-	-
Support	-	+31.7	-	+31.7
Subtotal	-1.4	+139.0	-	+137.6
Total Changes	+159.5	+369.8	+42.8	+572.1
Current Estimate	861.1	7721.0	42.8	8624.9

(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	-	+116.1	-	+116.1
Engineering	+16.1	+161.7	-	+177.8
Estimating	+116.8	-263.0	+34.2	-112.0
Other	-	-	-	-
Support	-	+53.2	-	+53.2
Subtotal	+132.9	+357.6	+34.2	+524.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-7.4	-	-7.4
Engineering	-	-	-	-
Estimating	-0.3	+105.6	-	+105.3
Other	-	-	-	-
Support	-	+24.6	-	+24.6
Subtotal	-0.3	+122.8	-	+122.5
Total Changes	+132.6	+480.4	+34.2	+647.2
Current Estimate	781.0	6403.6	34.2	7218.8

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STANDARD MISSILE-2, December 31, 1997

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>
(1) <u>RDT&E</u>		
Revised Escalation Indices. (Economic)	N/A	-0.9
Decrease due to commercial purchases inflation adjustment. (Estimating)	-0.1	-0.2
Decrease due to Navy Development Program rebalancing. (Estimating)	-0.3	-0.5
Adjustment for current and prior year inflation. (Estimating)	+0.1	+0.2
RDT&E Subtotal	-0.3	-1.4
(2) <u>Procurement</u>		
Revised Escalation Indices. (Economic)	N/A	-59.8
Decrease due to revised FY04-09 Procurement Profile. (Schedule)	-7.4	-9.3
Increase due to hardware unit price adjustments to reflect recent procurement experience, parts obsolescence, fuze transition. (Estimating)	+126.6	+208.2
Decrease based on initial estimate of Raytheon/Hughes merger efficiencies. (Estimating)	-19.4	-30.4
Decrease due to commercial purchases inflation adjustment. (Estimating)	-14.8	-23.6
Increase due to Navy Procurement Program rebalancing. (Estimating)	+11.0	+18.6
Adjustment for current and prior year inflation. (Estimating)	+2.4	+3.6
Correction to align Flyaway and Support. (AR) (Estimating)	-0.2	N/A
Adjustment for current and prior year inflation. (Support)	+0.6	+0.9
Increase due to additional support/initial spares requirements. (Support)	+23.8	+30.8
Correction to align Flyaway and Support. (AR) (Support)	+0.2	N/A
Procurement Subtotal	+122.8	+139.0

AR = Acquisition Reform related changes.

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STANDARD MISSILE-2, December 31, 1997

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	-3.8	-	-2.7
Quantity	-	-3044.8	-	-3044.8
Schedule	-	+992.7	-	+992.7
Engineering	-	+123.0	-	+123.0
Estimating	+50.7	-172.7	-	-122.0
Other	-	-	-	-
Support	-	-152.7	-	-152.7
Subtotal	+51.8	-2258.3	-	-2206.5
Current Changes:				
Economic	-	-4.8	-	-4.8
Quantity	-	+81.7	-	+81.7
Schedule	-	-5.9	-	-5.9
Engineering	-	-	-	-
Estimating	-	+12.8	-	+12.8
Other	-	-	-	-
Support	-	+9.3	-	+9.3
Subtotal	-	+93.1	-	+93.1
Total Changes	+51.8	-2165.2	-	-2113.4
Current Estimate	391.9	509.1	-	901.0

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STANDARD MISSILE-2, December 31, 1997

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	-	-1749.7	-	-1749.7
Schedule	-	+226.0	-	+226.0
Engineering	+41.2	-	-	+41.2
Estimating	-5.1	-5.7	-	-10.8
Other	-	-	-	-
Support	-	-106.1	-	-106.1
Subtotal	+36.1	-1635.5	-	-1599.4
Current Changes:				
Quantity	-	+53.3	-	+53.3
Schedule	-	-2.3	-	-2.3
Engineering	-	-	-	-
Estimating	-	+6.2	-	+6.2
Other	-	-	-	-
Support	-	+6.6	-	+6.6
Subtotal	-	+63.8	-	+63.8
Total Changes	+36.1	-1571.7	-	-1535.6
Current Estimate	320.0	342.9	-	662.9

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised Escalation Indices. (Economic)	N/A	-4.8
Increase due to additional total program quantity of 31 BLK IV missiles. (Quantity)	+53.3	+81.7
Decrease due to revised FY97/98 Procurement Schedule. (Schedule)	-2.3	-5.9
Increase due to hardware unit price adjustments based on recent procurement experience. (Estimating)	+9.5	+17.7
Decrease due to Navy Procurement Program rebalancing. (Estimating)	-4.6	-6.8
Decrease due to commercial purchases inflation adjustment. (Estimating)	-1.4	-2.1
Adjustment for current and prior year inflation. (Estimating)	+2.7	+4.0
Increase due to additional support/initial spares requirements related to additional 31 BLK IV Missiles. (Support)	+6.0	+8.5

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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>
Adjustment for current and prior year inflation. (Support)	+0.6	+0.8
Procurement Subtotal	+63.8	+93.1

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	-0.08	-0.03	+0.05	+0.02	+0.04	--	--	--	0.75

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	-0.08	-0.02	+0.05	+0.02	+0.02	--	--	-0.01	0.67

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	N/A	JUN 85	JUN 85
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	N/A	SEP 90	SEP 90
Total Cost	N/A	N/A	8052	8624.9
Total Quantity	N/A	N/A	10778	11505
Prog Acq Unit Cost	N/A	N/A	0.75	0.75

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

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	-0.04	-0.72	+5.36	+0.67	-0.59	--	-0.78	+3.90	4.90

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	
0.89	-0.05	-2.45	+5.36	+0.67	-0.87	--	-0.78	+1.88	2.77

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	N/A
FUE/IOC	N/A	N/A	N/A	JUN 98
Total Cost	N/A	3014.4	N/A	901
Total Quantity	N/A	3000	N/A	184
Prog Acq Unit Cost	N/A	1	N/A	4.9

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: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$43.2	N/A	101

Current Contract Price		
Target	Ceiling	Qty
\$29.8	\$29.8	101

Estimated Price At Completion	
Contractor	Program Manager
\$29.8	\$29.8

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15a. (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 Target Price (\$29.8M) was changed from that reported in the previous SAR report (\$43.2M) in order to correctly reflect the contract dollars associated solely with the procurement of USN All Up Round (AUR) assets. This change ensures consistency between the Target Price and Large Active Contract data. The total negotiated cost of this contract is \$43.2M which includes \$29.8M for quantity 101 USN AUR's and \$13.4M for Qty 44 FMS AUR's.

As of Jan 98 deliveries under this contract are over 90% complete. This is the final report for this contract.

(U) Contract Comments:

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

The FY94 SM-2 AUR Production Contract, N00024-94-C-5320, is greater than 90% complete and not reported in the SAR.

(U) SM-2 IIIA FY95 AUR PROD:
SMCo, McLean, VA
N00024-96-C-5304, FFP/PI
Award: November 14, 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>
\$52.5	\$52.5	160

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$52.5	\$52.5

	<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 Target Price (\$52.5M) was changed from that reported in the previous SAR report (\$84.5M) in order to correctly reflect the contract dollars associated solely with the procurement of USN All Up Round (AUR) assets. This change ensures consistency between the Target Price and Large Active Contract data. The total negotiated cost of this contract is \$84.5M which includes \$52.5M for quantity 160 USN AUR's and \$32M for Qty 104 FMS AUR's.

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

(U) SM-2 BLK IV FY95-96 LRIP:
Standard Missile Company, McLean VA
N00024-96-C-5337, CPAF/FPIF
Award: March 3, 1996
Definitized: April 11, 1997

Initial Contract Price		
Target	Ceiling	Qty
\$126.7	N/A	45

Current Contract Price		
Target	Ceiling	Qty
\$214.7	N/A	97

Estimated Price At Completion	
Contractor	Program Manager
\$117.1	\$122.8

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

Cost Variance	Schedule Variance
\$0.2	\$-1.2
\$-6.0	\$-4.3
\$-6.2	\$-3.1

Explanation of Change:

(U) Total quantity includes FY95/96/97 procurements.

Change in variance is due to issues surrounding the requalification of a subcontractor associated with the MK72 Booster.

(U) SM2 BLK IIIB AUR:
Standard Missile Company, McLean VA
N00024-97-C-5353, FPIF
Award: April 4, 1997
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$85.9	N/A	80

Current Contract Price		
Target	Ceiling	Qty
\$58.0	\$58.0	80

Estimated Price At Completion	
Contractor	Program Manager
\$58.0	\$58.0

Previous Cumulative Variances
Cumulative Variances To Date
Net Change

Cost Variance	Schedule Variance
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

(U) This is the first time this contract is reported in the SAR.

The total negotiated cost of this contract is \$85.9M which includes \$58.0M for quantity 80 USN AUR's, \$20.5M for quantity 42 FMS AUR's, and \$7.4M for quantity 32 Retrofit kits.

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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 (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	1236.6	0.5	1.3	14.6	1253.0
Procurement	6591.3	177.6	222.7	1238.5	8230.1
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7870.7	178.1	224.0	1253.1	9525.9

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	844.7	0.5	1.3	14.6	861.1
Procurement	6268.9	98.8	114.8	1238.5	7721.0
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7156.4	99.3	116.1	1253.1	8624.9

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	322.4	78.8	107.9	-	509.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	714.3	78.8	107.9	-	901.0

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STANDARD MISSILE-2, December 31, 1997

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				14.3	20.6
1997				6.3	9.2
1998				0.3	0.5
1999				0.9	1.3
2000				0.8	1.3
2001				0.8	1.2
2002				0.9	1.4
2003				0.9	1.4
2004				0.9	1.5
2005				0.9	1.5
2006				0.9	1.5
2007				0.9	1.6
2008				0.9	1.6
2009				0.9	1.6
Subtotal				781.0	861.1

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					
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

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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 \$
1981	345		156.2	198.2	174.3
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		162.7	180.3	250.1
1994	202		124.9	157.3	222.7
1995	160		92.1	113.7	163.6
1996					
1997	80		53.9	69.3	102.8
1998	72		55.4	65.5	98.8
1999	75		56.4	74.9	114.8
2000	85		54.7	79.7	124.3
2001	87		47.3	61.3	97.3
2002	83		52.8	63.7	103.0
2003	108		62.0	72.9	120.5
2004	152		68.4	74.1	125.2
2005	152		68.1	73.9	127.5
2006	152		67.9	73.6	129.9
2007	152		69.3	75.1	135.3
2008	152		69.2	75.0	138.2
2009	150		67.3	72.9	137.3
Subtotal	11505		5413.1	6403.6	7721.0

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		5413.1	7218.8	8624.9

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	1.9	49.8	53.6	77.1
1996	22	15.0	64.6	91.1	133.2
1997	47	3.8	66.5	75.5	112.1
1998	42	2.3	46.4	52.3	78.8
1999	45	4.2	59.2	70.4	107.9
Subtotal	184	27.3	286.5	342.9	509.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	184	27.3	286.5	662.9	901.0

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STANDARD MISSILE-2, December 31, 1997

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	9986	9962

(U) Percent Total Program Quantities Delivered: 86.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 6874.5

(U) Percent Total Program Expended: 79.7%

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): \$ 585

(U) Percent Total Program Expended: 64.9%

18. (U) Operating and Support Costs:

SM-2 BLK I\II\III\A\B

a. ~~(S)~~ 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.

~~(S)~~ Computation is based on an inventory objective of (b)(1) SM-2 BLK I/II/III/A/B missiles at the end of the FY 2003 funded delivery period. Operations & support cost estimate as of Feb 1998.*

NOTE: Other (2.5) = Other Direct Support (2.3) = Disposal (@ 24 years)

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

SM-2 BLK I/II/III/A/B

b. ~~(S)~~ Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	SM-2 BLK I/II/III Avg Annual Cost Per (b)(4)	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	(b)(4)	(b)(4)

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.

~~(S)~~ Computation is based on an inventory objective of (b)(1) SM-2 BLK IV missiles at the end of the FY 2003 funded delivery period. Operations and support cost estimate as of Feb 1998.*

Note: Other (.03) = Other direct support; Other (.02) = Disposal (@ 24 years)

b. ~~(S)~~ Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	SM-2 Block IV Avg Annual Cost Per (b)(4)	Avg Annual Cost Per N/A
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	(b)(4)	(b)(4)
Intermediate Maintenance	(b)(4)	(b)(4)
Depot Maintenance	(b)(4)	(b)(4)
Contractor Support	(b)(4)	(b)(4)
Sustaining Support	(b)(4)	(b)(4)
Indirect Costs	(b)(4)	(b)(4)
Overhaul/Rework	0.2	N/A

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STANDARD MISSILE-2, December 31, 1997

18b. (U) Operating and Support Costs (Cont'd):
SM-2 BLK IV

b. ~~(U)~~ Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	SM-2 Block IV		Avg Annual Cost Per	
	Avg Annual Cost Per		N/A	
Other	(b)(1)		(b)(1)	
Other				
Total				

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DoD-1 GBS

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

AS OF DATE: December 31, 1997

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1. Designation and Nomenclature (Popular Name): Global Broadcast Service

2. DoD Component: OSD

Joint Participants:
Army, Air Force, Navy

3. Responsible Office and Telephone Number:

GBS Joint Program Office	CAPT Joseph Delpino, USN
Skyline 5/Room 9095	Assigned: October 1, 1996
5111 Leesburg Pike	DSN 761-0205; COMM 703-681-0205
Falls Church, VA 22041-3205	delpinlj@ncr.disa.mil
	santerra@ncr.disa.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 063854F (Shared) Project 2679
PE 0603854F (Shared) Project 2679

PROCUREMENT:

APPN 1810 ICN 33109N (Navy) (Shared)
APPN 2035 ICN BC4120 (Army)

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DEPARTMENT OF DEFENSE

SAF/PAS

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98-C-0707

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5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated November 14, 1997.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated November 14, 1997.

6. Mission and Description:

GBS will augment other communications systems and provide a continuous high-speed, one-way information flow to deployed, mobile or garrisoned forces. GBS will support routine operations, training and military exercises, special activities, crisis, situational awareness, weapons targeting, reconnaissance, and the transition to and conduct of opposed operations short of nuclear war. Access will be near worldwide (65 degrees north latitude to 65 degrees south latitude), with constellation orbit positions selected to minimize requirements for overseas fixed broadcast injection sites.

The Joint Program Office (JPO) will procure, via a single contract, development of the transmit and receive suites, development of the transportable injection points, and performance of end-to-end system integration. The Navy has procured the space segment Ultra-High Frequency(UHF) Follow-On (UFO) satellite tertiary payloads, and will acquire the Navy-unique shipboard receive terminals (SRTs) which will be integrated with shipboard receive broadcast managers to form shipboard receive suites.

The GBS is a worldwide, high-throughput broadcast (one way) information transmission system that extends the Defense Information Infrastructure(DII). It is intended to consistently provide the warfighter with information that allows action inside the decision cycle-time of the adversaries. The full Joint Operational Requirements Document (Joint ORD) threshold performance requirements will be met with the fielding of the ground capabilities in support of UFO 10.

7. Executive Summary:

This is the initial SAR submission for the GBS SAR.

A March 27, 1996 Under Secretary of Defense Acquisition & Technology (USD(A&T)) Acquisition Decision Memorandum (ADM) designated GBS as an ACAT ID Joint Program with the United States Air Force (USAF) as executive agent to manage the joint service GBS program.

An evolutionary acquisition strategy will be employed; it will allow the incorporation of incremental enhancements from the commercial marketplace resulting from the maturing requirements embodied in the GBS Joint ORD.

GBS received ACAT ID Milestone II approval on November 14, 1997 as a result of a successful DAB Readiness Meeting on November 12, 1997. As a result of the Independent Cost Estimate (ICE) completed in preparation for the Milestone

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7. Executive Summary (Cont'd):

decision an Above Threshold Reprogramming Action (ATR) will be submitted to Congress in February 1998. The system development and integration contract was awarded on November 17, 1997 to Hughes Information Technology Systems (now Raytheon Systems Company), Reston, VA as a result of a competitive source selection. The development is currently on track to field interim ground capability to support the use of the UFO-8 payload which will be available for use in June 1998 subject to ATR approval in March 1998.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 II (DAE)	DEC 97	DEC 97	NOV 97
System Available for Operational Use	JUN 99	JUN 99	JUN 99
Initial Operational Capability (IOC)	DEC 99	DEC 99	DEC 99
Milestone III	DEC 99	DEC 99	DEC 99

b. Current Change Explanations --

None. This is the initial GBS SAR.

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10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
System Coverage	65 deg South to 65 deg North	65 deg / 65 deg South to/ South to 65 deg / 65 deg North / North	TBD	65 deg South to 65 deg North
Spot Beams	Two 500nm steer- able, one 2000 nm steer- able	Two / Two 500nm / 500nm steer- / steer- able, / able, one / One 2000 nm / 2000 nm steer- / steer- able / able	TBD	Two 500nm steer- able, One 2000 nm steer- able
Simultaneous Uplinks	One PIP and up to 3 TIPS simultan eously	One PIP / One PIP and up / and one to 3 / TIP TIPS / simultan/ eously /	TBD	One PIP and one TIP
Security	Pass unclass- ified to TS/SCI traffic	Pass / Pass unclass-/ unclass- ified to/ ified to TS/SCI / TS/SCI traffic / traffic	TBD	Pass unclass- ified to TS/SCI traffic
Receive Frequency Band	20.2-21. 2 GHz UFO GBS	20.2-21./ 20.2-21. 2 GHz / 2 GHz UFO GBS, / UFO GBS one or / more / commer- / cial / satell- / ite / frequen- / cy bands/	TBD	20.2-21. 2 GHz UFO GBS
Support operations with multiple satellite beams and terminal types (i.e., Receive Variable Data Rates)	2000nm: add SSRT and ART 500nm: Add ART	2000nm: / 2000nm: add SSRT/ FGRT, and ART / TGRT 500nm: / and Add ART / SRT / 500nm: / FGRT, / TGRT, / SRT and / SSRT	TBD	2000nm: FGRT, TGRT and SRT 500nm: FGRT, TGRT, SRT and SSRT
Pointing of Steerable Spot Beam Antenna	Frequent	Frequent/ Frequent	TBD	Frequent

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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>
Steerable Antenna	SBM	SBM / SBM	TBD	SBM
Tasking	Primary means	Primary / Primary Means / Means		Primary Means

ACRONYMS:

ART -Airborne Receive Suite Terminal
FGRT -Fixed Ground Receive Suite Terminal
GBS -Global Broadcast Service
PIP -Primary Injection Point
SBM -Satellite Broadcast Manager
SRT -Shipboard Receive Suite Terminal
SSRT -Sub-surface(submarine) Receive Suite Terminal
TGRT -Transportable Ground Receive Suite Terminal
TIP -Theater Injection Point
UFO -UHF Follow-on Satellite

b. Current Change Explanations --
None. This is the initial GBS SAR.

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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)	397.5	397.5	375.9
Procurement	53.9	53.9	25.7
Flyaway	(48.5)		(24.1)
Other Wpn System Costs	(4.3)		(0.5)
Peculiar Support	(0.0)		
Initial Spares	(1.1)		(1.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 97 Base-Year \$	451.4	451.4	401.6
Escalation	45.7	45.7	30.1
Development (RDT&E)	(41.7)	(41.7)	(29.0)
Procurement	(4.0)	(4.0)	(1.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	497.1	497.1	431.7
b. Quantity --			
Development (RDT&E)	221	221	221
Procurement	125	125	123
Total	346	346	344

For the current estimate, the Development Quantity includes 218 Fixed and Transportable Ground Receive Suites, and 3 Primary Injection Points; the Procurement Quantity includes 122 Fixed and Transportable Ground Receive Suites and Shipboard Receive Suites, and 1 Theater Injection Point.

NOTE: A Low Rate Initial Production (LRIP) quantity of up to 500 receive suites and 140 shipboard antennas was approved at MSII by the DAE. The LRIP quantity exceeds 10% of the total program quantities to provide production representative articles for operational test and evaluation. This quantity will also permit an orderly increase in the fielding (production) rate sufficient to lead to a full-rate fielding (production) of the receive suite hardware.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (Nov 97 APBI)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 97 BY\$)	451.4	401.6	
(2) Quantity	346	344	
(3) Unit Cost	1.305	1.167	-10.57
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 97 BY\$)	53.9	25.7	
(2) Quantity	125	123	
(3) Unit Cost	0.431	0.209	-51.51

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	439.2	57.9	-	497.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-13.8	-0.6	-	-14.4
Quantity	-2.7	-	-	-2.7
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-17.8	-28.9	-	-46.7
Other	-	-	-	-
Support	-	-1.6	-	-1.6
Subtotal	-34.3	-31.1	-	-65.4
Total Changes	-34.3	-31.1	-	-65.4
Current Estimate	404.9	26.8	-	431.7

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

Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	397.5	53.9	-	451.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-2.6	-	-	-2.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-19.0	-26.6	-	-45.6
Other	-	-	-	-
Support	-	-1.6	-	-1.6
Subtotal	-21.6	-28.2	-	-49.8
Total Changes	-21.6	-28.2	-	-49.8
Current Estimate	375.9	25.7	-	401.6

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-13.8
Adjustment for Current and Prior Inflation. (Estimating)	+1.9	+1.9
Quantity decrease of two units. (Quantity)	-2.6	-2.7
Increase in unit cost due to reduced quantity. (Estimating)	+2.6	+2.7
Requirement for connectivity was deleted and is now funded elsewhere by the Air Force, Army and Navy. (Estimating)	-16.8	-17.3
Budget reduction in FY98. (Estimating)	-6.7	-5.1
RDT&E Subtotal	-21.6	-34.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-1.6
Economic adjustment for negative program change. (Economic)	N/A	+1.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.8	+0.8
Deletion of Navy requirement for antenna and installation costs. (Estimating)	-31.0	-33.6

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Revised estimate for security engineering. (Estimating)	+3.6	+3.9
Adjustment for Current and Prior Inflation. (Support.)	+0.2	+0.2
Revised estimate for data. (Support)	-1.8	-1.8
Procurement Subtotal	-28.2	-31.1

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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.44	-0.04	-0.01	--	--	-0.14	--	--	-0.19	1.25

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	
0.46	--	--	--	--	-0.23	--	-0.01	-0.24	0.22

c. Schedule, Cost, and Quantity History

Item/Event	SAR Planning Estimate(PE)	SAR Development Estimate(DE)	SAR Production Estimate(PdE)	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	DEC 97	N/A	NOV 97
Milestone III	N/A	DEC 99	N/A	DEC 99
FUE/IOC	N/A	DEC 99	N/A	DEC 99
Total Cost	N/A	497.1	N/A	431.7
Total Quantity	N/A	346	N/A	344
Prog Acq Unit Cost	N/A	1.44	N/A	1.25

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

a. RDT&E --

Terminals:

Raytheon Systems, Reston, VA
F04701-97-C-0044, CPAF
Award: November 17, 1997
Definitized: November 17, 1997

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$84.8	N/A	344

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$84.8	N/A	344	\$84.8	\$84.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	N/A	N/A

Explanation of Change:

None. This is the initial GBS SAR. Cost and schedule variance reporting will be reflected in subsequent SARs.

Contract Comments:

This contract will be funded with both RDT&E and Procurement funds by the Air Force, Army and Navy.

The Procurement quantity is 123 and the R&D quantity is 221.

An Integrated Baseline Review (IBR) began on Feb 18, 1998 and is ongoing.

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> (FY96-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-13)	<u>Total</u>
RDT&E	47.1	54.1	70.2	233.5	404.9
Procurement	2.8	13.2	10.8	-	26.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	49.9	67.3	81.0	233.5	431.7

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GBS, December 31, 1997

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

b. Annual Summary -- Global Broadcast Service

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY Dollars Nonrec	Flyaway FY Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996				14.1	14.0
1997				32.8	33.1
1998				52.9	54.1
1999				67.6	70.2
2000				46.7	49.3
2001				36.9	39.6
2002				26.6	29.1
2003				19.9	22.2
2004				28.6	32.6
2005				13.4	15.6
2006				12.8	15.2
2007				7.1	8.6
2008				7.1	8.8
2009				2.0	2.5
2010				2.0	2.6
2011				1.8	2.4
2012				1.8	2.5
2013				1.8	2.5
Subtotal	221			375.9	404.9

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY Dollars Nonrec	Flyaway FY Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997	12		2.7	2.7	2.8
1998	42		3.3	3.3	3.4
1999	36		4.5	4.6	4.9
Subtotal	90		10.5	10.6	11.1

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY Dollars Nonrec	Flyaway FY Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998	1	2.2	6.4	9.5	9.8
1999	32		5.0	5.6	5.9
Subtotal	33	2.2	11.4	15.1	15.7

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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	221			375.9	404.9
Navy	90		10.5	10.6	11.1
Army	33	2.2	11.4	15.1	15.7
Grand Total	344	2.2	21.9	401.6	431.7

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): \$ 30.5

Percent Total Program Expended: 7.1%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --
There is no antecedent system.

Operations and support costs include all costs of operating, maintaining and supporting the GBS assets. Costs also include the costs for contractor support for sustaining engineering, logistics support and the operations personnel at each of the Primary Injection Sites.

The O&S cost estimate was approved on November 14, 1997.

b. Costs -- (FY 1997 Constant (Base-Year) Dollars in Thousands)

Cost Element	GBS	N/A
Mission Pay & Allowances	6.5	N/A
Unit Level Consumption	41.1	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	N/A	N/A
Contractor Support	201.7	N/A
Sustaining Support	140.8	N/A
Indirect Costs	1.2	N/A
	N/A	N/A
Total	391.3	N/A

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5. References:

SAR Baseline (Planning Estimate):

DAE Approved Acquisition Program Baseline (APB) dated March 17, 1997. The NPOESS Executive Committee Acquisition Decision Memorandum (ADM), dated March 17, 1997, served as the approval.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated March 17, 1997.

6. Mission and Description:

The NPOESS Program is required to provide, for a period of at least 10 years, a remote sensing capability to acquire, receive at ground terminals, and disseminate to processing centers, global and regional environmental imagery and specialized meteorological, climatic, terrestrial, oceanographic, solar-geophysical and other data supporting DOC/NOAA mission requirements, and DoD peacetime and wartime missions.

7. Executive Summary:

The National Polar-orbiting Operational Environmental Satellite System (NPOESS) Executive Committee (EXCOM) signed the NPOESS Milestone I Acquisition Decision Memorandum (ADM) on March 17, 1997. On May 14, 1997, the EXCOM approved the NPOESS Memorandum of Agreement (MOA) Funding Profile Update and directed the updated profile to be used as the baseline for planning, programming, and budgeting for future NPOESS budgets. This profile supported the Milestone I program and reflected an equal-by-year funding for the Department of Commerce (DOC) and the Department of Defense (DoD).

The Sensor Payload and Algorithm Development Effort Source Selection was completed on 30 July 1997 with the awarding of six competitive contracts for five critical instruments. The contracts were awarded as follows:

An approximately \$32 million contract to Hughes Space and Communications Company, Los Angeles California. This action provides for the development and design of the Conical Microwave Imager/Sounder sensor that will collect microwave radiometry and soundings.

An approximately \$35 million contract to Ball Aerospace and Technologies Corporation, Aerospace Systems Division Boulder, Colorado. This action provides for development and design of the Ozone Mapping and Profiler Suite and the Conical Microwave Imager/Sounder sensors.

An approximately \$5 million contract to Orbital Sciences Corporation, Sensor Systems Division, Pomona, California. This action provides for development and design of the Ozone Mapping and Profiler Suite sensors.

An approximately \$37 million contract to Hughes Aircraft Company (now Raytheon), Santa Barbara, California. This action provides for the development

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NPOESS, December 31, 1997

7. Executive Summary (Cont'd):

and design of the Cross Track Infrared Sounder and Visible/Infrared Imager Radiometer Suite sensors. Hughes will perform this effort in Goleta, California.

An approximately \$36 million contract to ITT Aerospace/Communications Division, Fort Wayne, Indiana. This action provides for the development and design of the Cross Track Infrared Sounder and Visible/Infrared Imager Radiometer Suite sensors.

An approximately \$4 million contract to Saab Ericsson of Sweden for a Global Positioning System Occultation Sensor that will measure the refraction of radiowave signals from the GPS and Russia's Global Navigation Satellite System to characterize the ionosphere.

In September 1997, the DOC and DoD provided their FY99 budget requests to OMB at a lower level of funding than required for the EXCOM approved Milestone I program. Also, in September 1997, in the DoD appropriations conference, Congress reduced the FY98 amounts by \$17.5 million from \$51.5 million to \$34 million. In October 1997, the DOC appropriations conference reduced the NPOESS submit by an equal amount. The combination of the two marks reduced the total FY98 NPOESS budget by \$35 million.

As a result of the actions above, the Integrated Program Office (IPO) developed a revised program which was approved by the EXCOM in November 1997. This revised program delays the system development, selected sensor developments, and delivery of the first satellite by six months from January 2007 to July 2007. Consequently, the first satellite will be delivered approximately three months after the required need date to back up DMSP-20. The revised program also restructured the DMSP and POES modifications and made adjustments to the Leveraged Payloads, Command, Control, and Communications, and other segments to fit within the new budget profile. In January 1998, this revised program was reduced for lower inflation rates by both the DoD and DOC.

As part of a National Performance Review (NPR) recommendation, NPOESS was expected to save the U.S. Government up to an estimated \$300 million in FY94-FY99 with additional savings after FY99. As a result of the program restructure, the NPOESS IPO currently estimates the FY94-FY99 savings to be over \$650 million.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	MAR 97	MAR 97	MAR 97
Payload Contract Awards	JUL 97	JUL 97	JUL 97
Pre-Total System Performance Responsibility (pre-TSPR) Contract Award	MAY 99	MAY 99	SEP 99 (Ch-1)
Milestone II	SEP 00	SEP 00	MAR 01 (Ch-1)
Total System Responsibility (TSPR) Contract Award	OCT 00	OCT 00	MAR 01 (Ch-1)
Initial Operational Capability (IOC)	DEC 10	DEC 10	DEC 10
Milestone III	DEC 11	DEC 11	DEC 11

Schedule Milestone Footnotes

IOC is met when the IOC criteria are satisfied per paragraph 8.1 of the IORD-1, dated Mar 28, 1996.

b. Current Change Explanations --

(Ch-1) Schedule changes associated with the EXCOM approved November 1997 revised program.

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10. Performance Characteristics:

a. Performance --

Key EDR Parameters	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate (1)
Atmospheric Verti- cal Moisture Profile				
Measurement Accuracy (Clear: Surface - 600mb)	+/- 10%	+/- 10% / +/- 20%	N/A	+/- 20%
Measurement Accuracy (Cloudy: Surface - 600mb)	+/- 10%	+/- 10% / +/- 20%	N/A	+/- 20%
Atmospheric Verti- cal Temperature Profile				
Measurement Accuracy (Clear: Surface - 300mb)	+/- 0.5K	+/- 0.5K / +/- 1.6K / per 1 km / layer	N/A	+/- 1.0K per 1 km layer
Measurement Accuracy (Cloudy: Surface 700mb)	+/- 0.5K	+/- 0.5K / +/- 2.5K / per 1 km / layer	N/A	+/- 2.5K per 1 km layer
Imagery				
Horizontal Resolution				
Global at Nadir	.65 km	.65 km / 1.0 km	N/A	1.0 km (2)
Regional at Nadir	0.1 km	0.1 km / 0.4 km	N/A	0.4 km (3)
Refresh Visible and IR bands				
Average Revisit Time	1 hour	1 hour / 4 hours / or less	N/A	4 hours or less (4)
Maximum Revisit Time	1 hour	1 hour / 6 hours / or less	N/A	6 hours or less
Sea Surface Temperature				
Horizontal Resolution				
Regional at Nadir	0.25 km	0.25 km / 1.0 km	N/A	1.0 km (3)
Measurement Accuracy	+/- 0.1°C	+/- / +/- 0.1°C / 0.5°C	N/A	+/- 0.5 °C

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10a. Performance Characteristics (Cont'd):

	Planning <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Sea Surface Winds (Speed)	greater of ± 1 m/s or $\pm 10\%$	greater / greater of ± 1 / of ± 2 m/s or / m/s or $\pm 10\%$ / $\pm 20\%$	N/A	greater of ± 2 m/s or $\pm 20\%$
Soil Moisture (Surface) Sensing Depth	Surface to -80cm	Surface / Surface to -80cm/ (skin / layer: / -0.1cm)	N/A	Surface (skin layer: -0.1cm) (1)
Key System Parameters Data Access	Select. denial of all U.S. data (ARGOS and SARSAT ex- cepted)	Select. / Select. denial / denial of all / of all U.S. / U.S. data / data (ARGOS / (ARGOS and / and SARSAT / SARSAT ex- / ex- cepted) / cepted)	N/A	Select. denial of all U.S. data (ARGOS and SARSAT ex- cepted)

Performance Characteristics Footnotes:

1. Ref: NPOESS IORD dated March 28, 1996.
2. Low resolution mode for real time transmission plus a full orbit of stored data.
3. High resolution mode for real time transmission plus 1/2 orbit of selected stored data.
4. At least 75% of revisit time will be 4 hours or less.

Acronyms:

C - Celsius
EDR - Environmental Data Record
K - Kelvin
km - kilometer
m/s - meters per second
mb - millibars

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10b. 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)	4314.2	4314.2	4176.8
Procurement	0.0	N/A	
Flyaway	(0.0)		(0.0)
			(0.0)
Total Sailaway	(0.0)		(0.0)
New Cost	(0.0)		(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 96 Base-Year \$	4314.2	4314.2	4176.8
Escalation	1014.8	1014.8	805.9
Development (RDT&E)	(1014.8)	(1014.8)	(805.9)
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 \$	5329.0	5329.0	4982.7

Cost and Quantity Footnotes:

The Planning Estimate (PE) and APB amounts reflect the total estimated program, excluding Operating and Support, presented at Milestone 1 of which DoD and DOC are providing equal funding. The PE and APB include the costs of all NPOESS satellites and ground activities; NPOESS launch vehicles; Government Program Office support; satellite and ground modifications for 1 POES and 3 DMSP; payload sets for 2 METOP satellites; and installation of dual capable antennas at Fairbanks, Alaska. The funding summary reflects the total program funding profile, excluding Operations and Support, required for the EXCOM approved November 1997 revised program. Total funding consists of equal shares by the DoD and DOC.

b. Quantity --

Development (RDT&E)	5	5	5
Procurement	0	N/A	0
Total	5	5	5

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	5329.0	-	-	5329.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+4.8	-	-	+4.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.8	-	-	+4.8
Current Changes:				
Economic	-185.9	-	-	-185.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-69.2	-	-	-69.2
Estimating	-96.0	-	-	-96.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-351.1	-	-	-351.1
Total Changes	-346.3	-	-	-346.3
Current Estimate	4982.7	-	-	4982.7

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

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

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	4314.2	-	-	4314.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+5.3	-	-	+5.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+5.3	-	-	+5.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-58.2	-	-	-58.2
Estimating	-84.5	-	-	-84.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-142.7	-	-	-142.7
Total Changes	-137.4	-	-	-137.4
Current Estimate	4176.8	-	-	4176.8

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RD&E</u>		
Revised escalation indices: (Economic)	N/A	-190.0
Economic adjustment for negative program change. (Economic)	N/A	+4.1
Revisions to DMSP and POES modifications (Engineering)	-58.2	-69.2
Adjustment for Current and Prior Inflation. (Estimating)	+2.2	+2.3
Adjustments for contractor proposals and estimates (Estimating)	-86.7	-98.3
RD&E Subtotal	-142.7	-351.1

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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 97	N/A	N/A	MAR 97
Milestone II	SEP 00	N/A	N/A	MAR 01
Milestone III	DEC 11	N/A	N/A	DEC 11
FUE/IOC	DEC 10	N/A	N/A	DEC 10
Total Cost	5329	N/A	N/A	4982.7
Total Quantity	5	N/A	N/A	5
Prog Acq Unit Cost	1065.8	N/A	N/A	996.54

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

Section 15 is not applicable. Currently, no NPOESS contracts exceed the \$40M contract reporting threshold.

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 (FY00-18)</u>	<u>Total</u>
RDT&E	111.0	68.0	129.4	4674.3	4982.7
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	111.0	68.0	129.4	4674.3	4982.7

Program Funding Summary Footnotes:

The funding summary reflects the total program funding profile, excluding Operating and Support, required for the EXCOM approved November 1997 revised program. FY95-97 are Appropriated amounts. Total funding consists of equal shares by the DoD and DOC.

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

b. Annual Summary -- Weather Satellite System

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 \$
1995				23.7	23.6
1996				29.0	29.4
1997				56.3	58.0
1998				65.0	68.0
1999				121.7	129.4
2000				176.7	190.8
2001				240.3	264.1
2002				383.7	429.0
2003				448.7	511.5
2004				559.2	651.5
2005				483.3	575.6
2006				359.6	437.6
2007				396.7	493.5
2008				179.1	227.6
2009				161.7	210.0
2010				218.6	290.3
2011				58.9	79.9
2012				39.4	54.6
2013				37.7	53.4
2014				51.6	74.8
2015				26.3	38.9
2016				36.4	55.1
2017				15.4	23.8
2018				7.8	12.3
Subtotal	5			4176.8	4982.7

Note: Indices are from OSD, dated January 1998.

The funding summary reflects the total program funding profile, excluding Operating and Support, required for the EXCOM approved November 1997 revised program. FY95-97 are Appropriated amounts. Total funding consists of equal shares by the DoD and DOC.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5			4176.8	4982.7

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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): \$ 39.3

Percent Total Program Expended: 0.8%

The amount reflects Air Force expenditures only as of January 24, 1998.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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N-20. T45TS

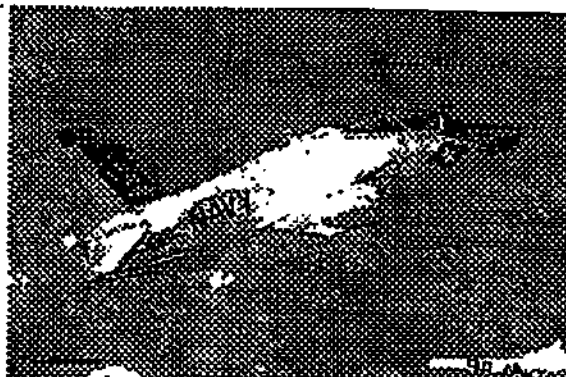
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: T45TS

AS OF DATE: December 31, 1997

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1. Designation and Nomenclature (Popular Name): T45TS - Naval Undergraduate Jet Flight Training System (GOSHAWK)
2. DoD Component: Navy
3. Responsible Office and Telephone Number:
PEOASWASM (FMA-273) CAPT T. L. HEELY
PATUXENT RIVER, MD 20670-1547 Assigned: February 28, 1997
DSN 757-5203; COMM 301-757-5203
HEELYTL.NTRPRS@NAVAIR.NAVY.MIL
4. Program Elements/Procurement Line Items:
RDT&E:
PE 0603208N Project H1142
PROCUREMENT:
APPN 1506 ICN 0015/0016 (Navy)
MILCON:
PE PROJ 236

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MAR 24 1998 11

DIRECTORATE FOR FREEDOM OF INFORMATION
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98-02133
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Naval Operations
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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:

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 (of two type/model/series: the T-45A, equipped with an analog cockpit; and T-45C, equipped with the "Cockpit-21" digital cockpit and avionics suite); 17 simulators; academic material, training aids, & equipment; a computer based Training Integration System (TIS) at both NAS Kingsville and NAS Meridian 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 both NAS Kingsville and NAS Meridian. NAS Kingsville continues to produce winged Naval Aviators; NAS Meridian will begin training students in the T-45C in June 1998.

7. Executive Summary:

Development of the T45TS was initiated in 1975 when the Navy perceived that both the T-2B/C and TA-4J aircraft should be replaced during the mid 1980's because of age and attrition. After extensive program strategy reviews the program was approved by SECNAV after a DNSARC on August 31, 1984. The subsequent DSARC review resulted in DOD approval on September 24, 1984.

The FY95 and FY96 aircraft deliveries remained behind schedule throughout calendar year 1997. The delays were attributed to: (1) the 99-day strike of the International Association of Machinists & Aerospace Workers (IAMAW) during the summer of 1996; (2) Boeing's own admission of production line quality and workmanship issues; and (3) the Boeing acquisition of McDonnell Douglas. In September 1997, the PM, in order to best address the impact and upheaval of the Boeing acquisition and strike/quality concerns, directed the contractor to develop and present a realistic, revised production and delivery schedule. On October 22, 1997, FMA-273 met with Boeing and accepted, via a contract

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7. Executive Summary (Cont'd):

modification, a revised aircraft delivery schedule (for both FY95 and FY96 deliveries) that met the PM's requirement to keep the necessary emphasis on Cockpit-21/NAS Meridian stand-up and simultaneously allow for realistic schedule recovery. Boeing's revised schedule will recover the FY 96 contract with the June 1998 aircraft deliveries and commits the contractor to deliver 16 aircraft during FY 98. The delays, however, did not affect the scheduled delivery of the first Cockpit-21 aircraft, the start of OT-IIIB or the stand up of NAS Meridian as the first T-45C operating site. A chronological summary of significant accomplishments and developments follows:

A withhold in the amount of \$2.16M dollars was released to Boeing on January 9, 1997 signifying the close out of the F405 engine durability issue. Redesign of engine hardware to correct durability problems resulted in ECPs that were submitted May 23, 1997, with hardware delivery commencing in August 1997.

June 10, 1997, the T45TS program reached a significant aircraft structural milestone when the full-scale fatigue test successfully completed "two equivalent lifetimes" testing. This milestone will allow for a quantitative and qualitative assessment of the aircraft service life to the fleet; and more importantly, allow for the necessary program plans and analysis to extend the airframe structural and service life if needed.

The Test and Evaluation Master Plan (TEMP) for the Cockpit-21 digital cockpit was approved June 20, 1997, thus clearing the last hurdle for OT-IIIB phase, scheduled to begin testing in February 1998.

June 26, 1997, the Navy exercised the FY98 option of the engine contract for Rolls Royce Military Aircraft Engines Limited to produce 13 engines (12 production and one spare).

The Navy awarded Boeing the T45TS FY97 Integrated Logistics Support contract on August 14, 1997, as part of the total contractor logistics support concept for the T45TS program.

Both the Congressional Authorizers and Appropriators increased the total procurement for FY98 to 15 aircraft on September 23, 1997, three more than requested in the President's Budget. An additional net of \$45.4M was appropriated by the CAC and authorized by the CASC for the additional three aircraft.

Additionally on September 23, 1997, a multiyear procurement (MYP) for the T-45 airframe was submitted to OSD. In November, OSD adjusted the MYP to reflect advance procurement for Economic Order Quantities (EOQ) and adjusted quantities to 15, 15, 15, 15, and 4 aircraft for FY99-03. Total acquisition savings to be reflected in the President's Budget submission from FY98 to "To Complete" is \$383.4M. Of that, \$198.1 M reflects airframe escalation, cost avoidance, and \$47.4M for airframe MYP savings.

The Navy awarded Boeing the T45TS FY98 production Advanced Acquisition Contract on September 30, 1997. Initial funding included \$23M in termination liability.

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7. Executive Summary (Cont'd):

The contract was initially priced for 15 T45 aircraft, with an option to increase the quantity by six. It was subsequently executed for 15 aircraft.

The first T-45C aircraft (T-45C BUNO 165080) was accepted by the US Navy and delivered to NAWC-AD Patuxent River MD, November 7, 1997, to begin DT-IIIB for the Cockpit-21 avionics upgrade. Upon completion of DT-IIIB, the aircraft will be delivered to NAS Meridian in February 1998 to support the OT phase of testing and be used as a fleet asset to begin training Student Naval Aviators in June 1998.

PMA-273 modified both the FY95 and FY96 production delivery contracts on November 14, 1997, based on a realistic contractor self assessment regarding production capability and resolution of quality and workmanship issues.

The Chief of Naval Operations presided over the T-45C Cockpit-21 Introduction Ceremony December 15, 1997, signifying the start-up of T45TS operations at NAS Meridian, Mississippi.

(U) As of Dec 1997, the Training Command had flown over 143,468 T-45A flight hours and there were a total of 194 students in training (FY97).

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 --

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Program Initiated	JUL 75	JUL 75	JUL 75
Requirements Validation Study	MAR 78	MAR 78	MAR 78
MENS Approved	JUN 79	JUN 79	JUN 79
RFQ For Concept Definition	DEC 79	DEC 79	DEC 79
Project Charter Approved	AUG 80	AUG 80	AUG 80
ASE Studies Completed	MAR 81	MAR 81	MAR 81
Sustain Engr Contract Award	NOV 81	NOV 81	NOV 81
DEM/VAL Contract Award (Pre FSED)	SEP 82	SEP 82	SEP 82
Program Redirect (All Carrier Qual)	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

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>
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

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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>
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
Visual System Luminance (ft-l)	2.0	2.0 / 1.5	2.16	2.16
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

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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>
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 (MFBF)	3.2	3.2 / 2.0	3.2	3.2
Direct Maintenance Man Hours/Flight Hour (DMMH/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	1054.6
Procurement	4595.2	4832.2	4565.7
Airframe/CFE	(2738.5)		(2841.5)
Engines	(184.3)		(213.5)
GFE	(137.8)		(114.0)
Change Allowance/ECO	(62.6)		(18.6)
Nonrecurring flyaway	(198.6)		(187.9)
Total Flyaway	(3321.8)		(3375.5)
Training Equipment	(337.1)		(226.0)
Other	(651.3)		(689.3)
Total Other Wpn Sys	(988.4)		(915.3)
Peculiar Support	(0.0)		
Initial Spares	(285.0)		(274.9)
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	5654.2
Escalation	71.4	30.8	-105.2
Development (RDT&E)	(-167.1)	(-186.8)	(-174.7)
Procurement	(241.4)	(220.5)	(72.3)
Construction (MILCON)	(-2.9)	(-2.9)	(-2.8)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	5599.5	5983.0	5549.0
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, 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:

	UCR Baseline (Feb 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	5952.2	5654.2	
(2) Quantity	189	189	
(3) Unit Cost	31.493	29.916	-5.01
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	4632.2	4565.7	
(2) Quantity	187	187	
(3) Unit Cost	25.841	24.416	-5.51

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	-118.8	+0.1	-113.2
Quantity	-	+276.6	-	+276.6
Schedule	-	-4.9	-	-4.9
Engineering	-19.6	+34.9	-	+15.3
Estimating	+162.5	+41.8	-0.1	+204.2
Other	-	-	-	-
Support	-	-13.5	-	-13.5
Subtotal	+148.4	+216.1	+0.0	+364.5
Current Changes:				
Economic	-	+28.4	-	+28.4
Quantity	-	-	-	-
Schedule	-	-169.7	-	-169.7
Engineering	-	-	-	-
Estimating	-0.3	-193.1	-	-193.4
Other	-	-	-	-
Support	-	-80.3	-	-80.3
Subtotal	-0.3	-414.7	-	-415.0
Total Changes	+148.1	-198.6	+0.0	-50.5
Current Estimate	879.9	4638.0	31.1	5549.0

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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	-	+216.1	-	+216.1
Schedule	-	-4.9	-	-4.9
Engineering	-20.3	+38.0	-	+17.7
Estimating	+176.3	+22.4	-0.1	+198.6
Other	-	-	-	-
Support	-	-34.6	-	-34.6
Subtotal	+156.0	+237.0	-0.1	+392.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-85.2	-	-85.2
Engineering	-	-	-	-
Estimating	-0.3	-132.7	-	-133.0
Other	-	-	-	-
Support	-	-48.6	-	-48.6
Subtotal	-0.3	-266.5	-	-266.8
Total Changes	+155.7	-29.5	-0.1	+126.1
Current Estimate	1054.6	4565.7	33.9	5654.2

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	0.0
Refinement of estimate to reflect actual costs. (Estimating)	-0.3	-0.3
RDT&E Subtotal	-0.3	-0.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-69.8
Economic adjustment for negative program change. (Economic)	N/A	+98.2
Adjustment for Current and Prior Inflation. (Estimating)	+8.3	+8.9
Acceleration of buy quantities from FY04 through FY07 to Fiscal years FY98 through FY03. (Schedule)	-85.2	-169.7
Refinement of Program estimate to account for Multi-Year Procurements. (FY98-FY03) (AR) (Estimating)	-41.8	-56.0
Reduction of Estimate for Airframe and Engine Contracts Savings. (Estimating)	-48.4	-70.7
Delete requirements for shutdown costs in FY06 and FY07. (Estimating)	-35.7	-54.3

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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>
Refinement of estimates for Sustaining Eng & ECO requirements Estimate. (Estimating)	-15.1	-21.0
Adjustment for Current and Prior Inflation. (Support)	+3.0	+3.0
Refinement of estimate for Initial Spares associated with schedule acceleration. (Support)	-5.2	-9.4
Change in Training Equipment requirements based on accelerated production. (Support)	-33.9	-45.4
Change in Other Weapon System requirements based on accelerated production. (Support)	-12.5	-28.5
Procurement Subtotal	-266.5	-414.7

AR = Acquisition Reform related changes.

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 Init 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

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	-0.45	-0.73	-0.92	+0.08	+0.06	--	-0.50	-2.46	29.36

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Init 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

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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	
27.80	-0.48	-0.47	-0.93	+0.19	-0.81	--	-0.50	-3.00	24.80

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	5549
Total Quantity	304	N/A	176	189
Prog Acq Unit Cost	17.97	N/A	31.82	29.36

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

a. Procurement --

T-45A GFE ENGINES: ROLLS ROYCE, plc, Bristol, England	Initial Contract Price		
	Target	Ceiling	Qty
N00019-93-C-0100, FFP Award: November 30, 1993 Definitized: March 23, 1995	\$2.7	\$0.0	12
	Current Contract Price		Qty
	Target	Ceiling	
	\$86.7	N/A	48
	Estimated Price At Completion		Program Manager
	Contractor		
	\$216.0		\$216.0

Explanation of Change:

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):

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

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.

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>
\$215.8	N/A	12	\$215.8	\$215.8

Explanation of Change:

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.

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

Contract Comments:

(U)The Initial Target Price reflects the Termination Liability funding (initially) awarded on the Advanced Acquisition contract prior to definitization.

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15. Contract Information (Cont'd):

T45TS FY96 PRODUCTION:			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
MCDONNELL DOUGLAS CORP, ST. LOUIS, MO	\$15.0	N/A	12	
N00019-95-C-0164, FFP				
Award: September 30, 1995				
Definitized: May 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>
\$257.3	N/A	12	\$257.3	\$257.3

Explanation of Change:

The Current Target Price reflects the May 96 contract definitization price modified to include Cockpit 21 ECP. Additional funding awarded procures T45TS simulator systems and support items, support equipment, logistics support items, and non recurring costs.

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

Contract Comments:

(U)The Initial Target Price reflects the Termination Liability funding (initially) awarded on the Advanced Aquisition contract prior to definitization.

T45TS FY97 PROD:			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
MCDONNELL DOUGLAS, ST. LOUIS, MO	\$16.0	N/A	12	
N00019-96-C-0029, FFP				
Award: September 30, 1996				
Definitized: March 25, 1997				

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$207.7	N/A	12	\$207.7	\$207.7

Explanation of Change:

The Current Target Price reflects the Mar 97 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.

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15. Contract Information (Cont'd):

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

T45TS FY98 PROD:	Initial Contract Price		
McDonnell Douglas, ST. LOUIS, MO	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-97-C-0059, FFP	\$23.2	N/A	15
Award: September 15, 1997			
Definitized: December 10, 1997			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$216.0	N/A	15	\$216.0	\$216.0

Explanation of Change:

The Current Target Price reflects the Dec 97 contract definitization price modified to include Cockpit 21. Additional funding awarded procures T45TS simulators systems and support items, support equipment, logistics support items, and non recurring costs.

Cost and Schedule variance reporting 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)

<u>Appropriation</u>	<u>Prior Years (FY80-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RD&E	879.9	-	-	-	879.9
Procurement	2986.6	297.8	363.9	989.7	4638.0
MILCON	31.1	-	-	-	31.1
O&M	-	-	-	-	-
Total	3897.6	297.8	363.9	989.7	5549.0

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

b. Annual Summary -- T45TS

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 \$
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			0.1	0.1	0.1
Subtotal	2		1054.6	1054.6	879.9

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1987				78.8	65.1
1988	12	55.9	274.4	481.3	414.9
1989	24	9.1	428.9	418.6	375.3
1990		15.4		137.1	127.2
1991		39.9		159.5	152.2
1992	12	25.9	222.7	367.3	358.3
1993	12	8.3	225.1	281.6	279.9
1994	12	8.2	247.4	316.0	320.1
1995	12	5.2	218.7	256.4	264.2
1996	12	2.2	205.0	305.0	319.8
1997	12	2.8	204.0	290.8	309.6
1998	15	4.9	233.8	275.4	297.8
1999	15	2.5	219.2	331.1	363.9
2000	15	2.6	218.4	313.6	350.7
2001	15	2.6	216.3	237.4	270.3
2002	15	2.4	209.7	226.4	262.8

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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 \$
2003	4		64.0	89.4	105.9
Subtotal	187	187.9	3187.6	4565.7	4638.0

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	187.9	4242.2	5654.2	5549.0

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	2	2
Procurement	85	83

Percent Total Program Quantities Delivered: 45.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 3733

Percent Total Program Expended: 67.3%

T-45A deliveries accepted through the "As Of" date of Dec 97 are through A085 with the exception of A082 and A083.

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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 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.

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

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per T-45/YEAR	Avg Annual Cost Per Steady State
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, 1997

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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
1616 Anderson Road
McLean, VA 22102-1616

COL Lawrence G Arrol
Assigned: May 14, 1996
DSN 235-8110; COMM (703)-275-8110
larrol@asaspmo.belvoir.army.mil

4. Program Elements/Procurement Line Items:

RDTE:

PE 64321A Project D2FT, DB19

PROCUREMENT:

APPN 2035 ICN BS9704 (Army)

APPN 2035 ICN K28801 (Army)

5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated December 1991.

Approved Program:

SAE Approved Acquisition Program Baseline (APB) dated April 21, 1997.

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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 conflicts, 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 I has been fielded to the entire active force and the (15) enhanced National Guard Brigades.

Block II is made up of objective hardware modules using ATCCS Common Hardware/Software (CHS) components. ASAS Block II hardware procurement will begin in FY99 and full fielding to the Army's force structure will begin in FY00. ASAS Block III is a software development effort which will bring ASAS to its full objective capabilities. It will operate on the same hardware architecture as the Block II ASAS. 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.

7. Executive Summary:

The All Source Analysis System (ASAS) underwent significant programmatic change during 1997. On 24 Feb 97, the Army Acquisition Executive (AAE) approved a revised Army Cost Position (ACP). On 14 Mar 97, a revised Test and Evaluation Master Plan (TEMP) was approved. On 21 Apr 97, the AAE approved a revised Acquisition Program Baseline (APB). In addition, Operational Requirements Document (ORD) Change 3 was approved on 17 Mar 97, establishing the requirement to provide ASAS to Special Operations Forces.

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7. Executive Summary (Cont'd):

Common Operating Environment (COE) segmentation of the ASAS Remote Workstation (RWS) baseline proceeds extremely well. ASAS issues and exceptions to Level 5 and Level 6 compliance have been worked directly with Defense Information Infrastructure (DII) COE Chief Engineer. Because of their proactive approach to segmentation, the DII COE Chief Engineer personally invited the ASAS Team to participate in working group meetings at the DII level. The RWS baseline is now 100% segmented, ahead of schedule.

The ASAS Remote Workstation (RWS) software continues to be tailored to meet functional requirements of Force XXI initiatives. Software deliveries continue to be timely and to successfully meet interoperability requirements with other BFA systems supporting the First Digitized Division (FDD). Block II has been replanned to incorporate Army Digitization.

The current foundation development baseline, Remote Workstation (RWS), has demonstrated success at a number of exercises. While these do not constitute test events, they continue to be utilized as excellent opportunities to gather data and collect user feedback on newly developed enhancements.

The ASAS Remote Workstation Version 3 (RWS V3) was the primary intelligence processing workstation at the recent Division Advanced Warfighting Experiment (DAWE). Soldiers used over 50 RWS V3 workstations at several division and corps tactical operations centers. In 10,000 hours of operations, the ASAS RWS V3 was available more than 99% of the time and only two problem reports were filed by the users during the entire exercise. Moreover, even under a heavy message load from simulation drivers that often accelerated their output to synchronize the scenario, the RWS V3 continued to parse all messages while other users utilized various situation, target, database and map operations. As an illustration of its reliability and its warfighting functionality, the ASAS RWS V3 at Division responded to the commander's targeting guidance and identified and nominated over 1500 targets to the Division Fire Support Element. This number represents only a small number of the total entities processed by the ASAS RWS V3 during the exercise.

The ASAS continues to successfully provide 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.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
Joint Oversight Group (ASARC Authority Approves Block II)	NOV 87	NOV 87	NOV 87
DAB Program Review	AUG 93	AUG 93	AUG 93
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	JUN 00	SEP 00 (Ch-1)
Block III EMD Contract Award	JUN 99	MAR 00	SEP 00 (Ch-1)
Block III FOT&E	OCT 02	APR 03	APR 03 (Ch-1)
Block III Milestone III	JUL 03	NOV 03	NOV 03 (Ch-1)
Block II Milestone III/	N/A	FEB 00	MAR 00 (Ch-1)
Block III Milestone II			

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Op Eval, Del 2 (RWS)	N/A	MAR 98	AUG 98 (Ch-1)
Op Eval, Del 3 (ACE)	N/A	DEC 98	MAY 99 (Ch-1)
Op Eval, Del 4 (Advanced Capability)	N/A	SEP 99	OCT 99 (Ch-1)

b. Current Change Explanations --

(Ch-1) The following milestone CEs have changed due to the new APB approved April 21, 1997:

IOC changed from TBD to Sep 00
 Block II EMD Contact Award changed from TBD to Sep 00
 Block III FOT&E changed from TBD to Apr 03
 Block III Milestone III changed from TBD to Nov 03
 Block II Milestone III/Block III Milestone II changed from TBD to Mar 00
 Op Eval, Del 2 (RWS) changed from TBD to Aug 98
 Op Eval, Del 3 (ACE) changed from TBD to May 99
 Op Eval, Del 4 (Advanced Capability) changed from TBD to Oct 99

Note: Milestones with N/A's in CE were to have been removed from APB approved April 21, 1997. This will be done through an administrative change after the SAR cycle.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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/ combined I/O msgs/ I/O msgs w/ peak / w/ peak => 4,350/ => 2,100 per hour/ per hour in 24 / in 24 hours at/ hours at Division/ Division	TBD	Process 29,000 combined I/O msgs w/peak => 4,350 per hour in 24 hours at Division
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

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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>
Intelligence Development	All Source correlated database auto-IPB product, receive, manipulate, display, & store secondary/UAV imagery.	All Source / Source correlated / database auto-IPB / product, / receive, / manipulate, / display, / & store / secondary/UAV / imagery.	TBD	All Source correlated database auto-IPB product, receive, manipulate, display, & store secondary/UAV imagery
Target Development	Auto generation of target nomination msg w/in 30 seconds of receipt of info meeting preset criteria in 90% of all cases.	Auto / Generation of target / nomination msg w/in 30 / seconds of receipt of info / meeting analyst preset / criteria in 90% / of all cases.	TBD	Auto generation of target nomination msg w/in 30 seconds of receipt of info meeting preset criteria in 90% of all cases.
Collection Management	Integration of DoD Std Collection Mgt Systems.	Integration of / DoD Std / Collection Mgt / Systems.	TBD	Integration of DoD Std Collection Mgt Systems.
Interoperability with ATCCS (SCI/Collateral)	Auto Sanitize	Auto / Sanitize / Manual Sanitize	TBD	Auto-Sanitize
Interoperability with DIA MIIDS/IDB	Auto Data Base Exchange	Auto / Bulk Load / Updates Exchange/	TBD	Auto Database Exchange

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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>
Direct transmission/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
DIA Accreditation for Operation	Multi-Level Security Process	Multi-Level 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.	=> 1,365 I/O msgs combined/ during peak hour.	=>2,828 I/O msgs combined during peak hour

ACRONYMS:

USMTF - US Message Text Format
TSE - Tactical Operations Center Support Element
TCAE - Technical Control and Analysis Element
FSIC - Forward Sensor Interface and Control
ENSIT - Enemy Situation
CCS - Communications Control Set
G2-TOC - Assistant Chief of Staff, Intelligence (General Staff)
Tactical Operations Center
EAC - Echelons Above Corps

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)	259.3	247.5	273.7
Procurement	279.8	460.4	502.6
TOTAL FLYAWAY	(256.3)		(480.6)
Other Wpn Sys Costs			(0.0)
Peculiar Support	(0.5)		(0.5)
Initial Spares	(23.0)		(21.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 86 Base-Year \$	539.1	707.9	776.3
Escalation	270.7	453.9	431.0
Development (RDT&E)	(108.2)	(98.6)	(106.4)
Procurement	(162.5)	(355.3)	(324.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	809.8	1161.8	1207.3
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:

	UCR Baseline (APR 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 86 BY\$)	707.9	776.3	
(2) Quantity	28	28	
(3) Unit Cost	25.282	27.725	+9.66
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 86 BY\$)	460.4	502.6	
(2) Quantity	28	28	
(3) Unit Cost	16.443	17.950	+9.16

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	-15.0	-27.4	-	-42.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+3.0	-	-	+3.0
Estimating	+14.1	+89.0	-	+103.1
Other	-	-	-	-
Support	-	-0.6	-	-0.6
Subtotal	+2.1	+61.0	-	+63.1
Current Changes:				
Economic	-4.9	-18.6	-	-23.5
Quantity	-	-	-	-
Schedule	-	+4.2	-	+4.2
Engineering	-	-	-	-
Estimating	+15.4	+340.4	-	+355.8
Other	-	-	-	-
Support	-	-2.1	-	-2.1
Subtotal	+10.5	+323.9	-	+334.4
Total Changes	+12.6	+384.9	-	+397.5
Current Estimate	380.1	827.2	-	1207.3

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

Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	259.3	279.8	-	539.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+2.2	-	-	+2.2
Estimating	+2.2	+38.1	-	+40.3
Other	-	-	-	-
Support	-	+0.4	-	+0.4
Subtotal	+4.4	+38.5	-	+42.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+3.2	-	+3.2
Engineering	-	-	-	-
Estimating	+10.0	+180.0	-	+190.0
Other	-	-	-	-
Support	-	-1.9	-	-1.9
Subtotal	+10.0	+181.3	-	+191.3
Total Changes	+14.4	+219.8	-	+234.2
Current Estimate	273.7	499.6	-	773.3

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-4.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+1.0
Revised estimate for deferred Block II functionality. (Estimating)	+6.6	+9.8
Revised estimate for advanced technology insertion (Estimating)	+2.3	+3.2
Revised Program Office Estimate (Estimating)	+0.4	+1.4
RD&E Subtotal	+10.0	+10.5
(2) <u>Procurement</u>		
Correction to Dec 96 Final SAR outyear estimates to delete unrelated funding. (Estimating)	-29.4	-46.9
Revised escalation indices. (Economic)	N/A	-18.6
Revised annual procurement buy profile. (Schedule)	+3.2	+4.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Reduced Initial Spares requirement due to revised equipment needs (Support)	-1.9	-2.1

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Refined estimate to procure Remote Work Stations for Brigade and Battalion (Estimating)	+22.1	+36.0
Funding increase for purchase of additional workstations (Estimating)	+11.6	+16.5
Equipment Rebuys not previously included in SAR (formerly OMA funded). (Estimating)	+175.5	+334.6
Procurement Subtotal	+181.3	+323.9

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 Init Est	Changes								PAUC Dev Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
--	--	--	--	--	--	--	--	--	--

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	-2.35	--	+0.15	+0.11	+16.39	--	-0.10	+14.20	43.12

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Dev Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
--	--	--	--	--	--	--	--	--	--

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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	
15.80	-1.64	-0.01	+0.15	--	+15.34	--	-0.10	+13.74	29.54

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 93	N/A	OCT 93
Milestone III	N/A	JUL 03	N/A	NOV 03
FUE/IOC	N/A	DEC 99	N/A	SEP 00
Total Cost	0	809.8	0	1207.3
Total Quantity	0	28	0	28
Prog Acq Unit Cost	0	28.92	0	43.12

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.

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

a. RDT&E --

ASAS Block II:
Martin Marietta Astro, Littleton CO
DAAB07-94-C-A515, CPAF
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

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.7	\$0.6
Cumulative Variances To Date (12/31/97)	\$0.0	\$-1.5
Net Change	\$-0.7	\$-2.1

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)

<u>Appropriation</u>	<u>Prior Years</u> (FY91-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-17)	<u>Total</u>
RDT&E	202.2	26.1	25.4	126.4	380.1
Procurement	32.4	22.8	24.1	747.9	827.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	234.6	48.9	49.5	874.3	1207.3

b. Annual Summary -- Block II/III

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>
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	49.9
1997				27.2	37.9
1998				18.7	26.1
1999				17.9	25.4
2000				18.3	26.4
2001				25.8	37.9
2002				21.5	32.2
2003				9.8	14.8
2004				3.2	5.0
2005				2.5	4.0
2006				1.8	3.0
2007				1.2	2.0
2008				0.6	1.0

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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 \$
Subtotal				273.7	380.1

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995			2.8	3.3	4.9
1996			5.9	9.8	13.5
1997			8.7	10.3	14.4
1998			16.1	16.1	22.8
1999			16.8	16.8	24.1
2000	7		41.7	42.9	62.7
2001	7		42.8	46.3	68.9
2002	5		32.8	38.1	57.7
2003	5		41.0	46.6	72.1
2004	4		41.3	48.5	76.7
2005			27.5	28.1	45.4
2006			16.2	12.1	20.0
2007			7.9	5.9	10.0
2008			3.1	2.3	4.0
2009			2.1	1.6	2.8
2010			22.3	22.3	40.1
2011			28.4	28.4	52.3
2012			48.1	48.1	90.6
2013			30.1	30.1	58.0
2014			10.9	10.9	21.0
2015			11.1	11.1	21.3
2016			11.4	11.4	21.9
2017			11.6	11.6	22.4
Subtotal	28		480.6	502.6	827.2

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 Block III 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		480.6	776.3	1207.3

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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: 19.8%

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	0.0
O&S Consumables	0.0	0.0

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ASAS, December 31, 1997

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	0.0
Sustaining Investment	0.2	0.0
Other Direct Costs	0.2	0.0
Personnel	1.7	0.0
Indirect Costs	N/A	N/A
Indirect Costs	N/A	N/A
Total	2.9	0.0

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AF-19 MM III PRP

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: Minuteman III PRP

AS OF DATE: December 31, 1997

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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-AIC/LM COL CARL B. OVERALL
6014 Dogwood Ave Assigned: September 30, 1997
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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INFORMATION
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SAF/PAS

98-0282

CONGRESSIONAL

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~~Downgrade instructions: [unclear] to Automatic Downgrade~~
~~Declassify on: [unclear] Agency Determination Required (OADR)~~

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Minuteman III PRP, December 31, 1997

5. (U) References:

SAR Baseline (Development Estimate):

(U) Acquisition Decision Memorandum dated June 30, 1994, Subject: Milestone II

Approved Program:

(U) AFAE Approved Acquisition Program Baseline (APB) dated December 23, 1996.

6. (U) Mission and Description:

(U) The Propulsion Replacement Program (PRP) extends the life, maintains the performance, and improves the reliability of the Minuteman (MM) III operational force by replacing the solid propellant propulsion subsystems prior to the onset of ageout. The solid propulsion systems now in the force are projected to begin aging out in 2002 and must be replaced in order to support current force planning. The PRP will be executed in two phases, Technology Insertion (TI) and Remanufacture. During the TI phase, new materials and manufacturing processes will be qualified to replace unavailable or environmentally prohibited materials. Additionally, known failure modes and design weaknesses will be corrected by incrementally inserting and qualifying current rocket motor technologies. The PRP will reuse existing components to the greatest extent possible. Another goal of TI is to maintain the industrial base so that rocket motor production capability is available when needed for motor remanufacture. During remanufacture, the solid rocket motors and interstage hardware and ordnance will be recycled from the force and remanufactured at a rate up to eight motors per month during the period FY 2000 through FY 2008.

Software changes must be incorporated because of material changes incorporated in stage manufacturing. Because both the stage 2 liquid injection thrust vector control injectant and stage 3 motor case must be replaced, the missile control dynamics, mass properties, and propulsion characterization programs must also be modified to ensure a controlled flight.

7. (U) Executive Summary:

(U) The Propulsion Replacement Program (PRP) team continues a sustained level of excellence in cost, schedule, and performance parameters. The program office has achieved a close, cohesive team involving Air Force Space Command, AFOTEC, and the government associate contractors. This approach has proven to be highly efficient and successful, as demonstrated by the recent resolution of the propellant binder issue, while maintaining critical program milestones such as delivery of the essential software data needed for the flight reference models. In addition, all contracts required to complete the Technology Insertion phase of PRP are active. The Prime Item Development Specifications have been placed under program office configuration control. As well, the PRP team is currently on track to conduct the Critical Design Reviews scheduled for June 1998.

Due to a recent change (incumbent vendor sold the product line) in vendors for the Stage 2 and Stage 3 oxidizer, Ammonium Perchlorate (AP), the team will again be challenged as it conducts a delta analysis and test program to qualify

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Minuteman III PRP, December 31, 1997

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

the new vendor's material. The PRP team has developed a comprehensive plan of attack to fold-in this additional qualification effort without impacting critical program dates.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	JAN 98	(Ch-1)
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
 IOC- Initial Operational Capability

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Minuteman III PRP, December 31, 1997

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

IOT&E- Initial Operational Test and Evaluation
LRIP- Low Rate Initial Production
PCA- Physical Configuration Audit
PDR- Preliminary Design Review

b. Current Change Explanations --

(U) (Ch-1) Actual date of completion as follows:

PDR Close-out From "Feb 98" to "Jan 98"

10. (U) Performance Characteristics:

a. Performance --

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

(b)(1)

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Minuteman III PRP, December 31, 1997

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

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)	340.0	336.8	309.2
Procurement	1911.4	1750.0	1793.9
Flyaway	(1864.7)		(1709.4)
Other Wpn System Costs	(46.7)		(84.5)
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	2103.1
Escalation	567.9	514.0	442.9
Development (RDT&E)	(30.6)	(30.5)	(23.7)
Procurement	(537.3)	(483.5)	(419.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2819.3	2600.8	2546.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	607	607	607
Total	607	607	607

(U) The LRIP quantities planned at Milestone II are 9 (first year). This does not represent more than 10% of the planned program buy.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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Minuteman III PRP, December 31, 1997

12. (U) Unit Cost Summary:

	UCR Baseline (Dec 96 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	2086.8	2103.1	
(2) Quantity	607	607	
(3) Unit Cost	3.438	3.465	+0.79
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	1750.0	1793.9	
(2) Quantity	607	607	
(3) Unit Cost	2.883	2.955	+2.50

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	-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
Current Changes:				
Economic	-2.7	-77.1	-	-79.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-22.0	+17.7	-	-4.3
Other	-	-	-	-
Support	-	+47.1	-	+47.1
Subtotal	-24.7	-12.3	-	-37.0
Total Changes	-37.7	-235.6	-	-273.3
Current Estimate	332.9	2213.1	-	2546.0

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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
Development Estimate	340.0	1911.4	-	2251.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.7	-167.1	-	-177.8
Other	-	-	-	-
Support	-	+1.1	-	+1.1
Subtotal	-10.7	-166.0	-	-176.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-20.1	+11.8	-	-8.3
Other	-	-	-	-
Support	-	+36.7	-	+36.7
Subtotal	-20.1	+48.5	-	+28.4
Total Changes	-30.8	-117.5	-	-148.3
Current Estimate	309.2	1793.9	-	2103.1

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-3.0
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Adjustment for Current and Prior Inflation. (Estimating)	+1.3	+1.4
Omnibus, Prime Integration Contract Efficiencies, and Congressional Reductions (Estimating)	-21.4	-23.4
RDT&E Subtotal	-20.1	-24.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-77.1
Inflation added to FY04 through FY07 per SAF/AQ (Jan 98) (Estimating)	+11.8	+17.7
Change in Other Wpn System Costs (Change orders and data) (Support)	+36.7	+47.1
Procurement Subtotal	+48.5	-12.3

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Minuteman III PRP, December 31, 1997

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	-0.13	--	+0.02	--	-0.42	--	+0.08	-0.45	4.19

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	-0.13	+0.01	+0.02	--	-0.36	--	+0.08	-0.38	3.65

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	2546
Total Quantity	N/A	607	N/A	607
Prog Acq Unit Cost	N/A	4.64	N/A	4.19

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

a. RDT&E --

(U) MMIII PRP STAGE 1:

THIOL, BRIGHAM CITY, UT

F42610-94-C-0031, CPAF

Award: August 1, 1994

Definitized; August 1, 1994

Initial Contract Price
Target Ceiling Qty

\$84.3 N/A 0

Current Contract Price
Target Ceiling Qty
\$87.6 N/A 0

Estimated Price At Completion
Contractor Program Manager
\$86.4 \$86.4

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Minuteman III PRP, December 31, 1997

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.5	\$-0.6
Cumulative Variances To Date (12/30/97)	<u>\$-2.5</u>	<u>\$-1.8</u>
Net Change	\$-2.0	\$-1.2

Explanation of Change:

(U) The net change in cost variance of \$-2.0M is due to unfavorable rate escalation

The net change in schedule variance of \$-1.2M is a result of difficulty processing the first Minuteman motor Thiokol has manufactured in 19 years. Change Verification Motor 1 (CVM-1) drove a behind schedule position on subsequent CVMs. Recent manufacturing improvements indicate schedule will stabilize through the remainder of the CVMs. The current plan will support the Summer 98 Critical Design Review.

These variances have no impact on the contract or the program.

The change in target price from \$86.4 to \$87.6 is due to exercising the contract option to include the second flight test motor.

(U) MMIII PRP STAGE 2: AEROJET, SACRAMENTO, CA F42610-94-C-0027, CPAF Award: July 18, 1994 Definitized: July 18, 1994	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$75.5	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>
\$76.6	N/A	0	\$78.3	\$78.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.5	\$-0.5
Cumulative Variances To Date (12/30/97)	<u>\$-0.7</u>	<u>\$-1.1</u>
Net Change	\$-0.2	\$-0.6

Explanation of Change:

(U) The net change in cost variance of \$-0.2M is insignificant.

The net change in schedule variance of \$-0.6M is insignificant.

These variances have no impact on the contract or the program.

The change in target price from \$77.2 to \$76.6 is due to contractor efficiencies and increased business which reduces the impact of original cost escalations.

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Minuteman III PRP, December 31, 1997

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

(U) <u>MMIII PRP STAGE 3:</u>			Initial Contract Price		
CHEMICAL SYSTEMS DIVISION, SAN JOSE CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F42610-94-C-0026, CPAF			\$82.0	N/A	0
Award: July 1, 1994					
Definitized: July 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>	
\$83.2	N/A	0	\$91.6	\$91.6	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/30/97)			\$-3.1	\$-0.7	
Net Change			\$-7.8	\$-1.1	
			\$-4.7	\$-0.4	

Explanation of Change:

(U) The net change in cost variance of \$-4.7M, is due to the impact of indirect rate changes which occurred shortly after contract award. Indirect rate forecasts changed dramatically when the contractor lost two significant government contracts (D-5, Titan). Since that time, the contractor has implemented a company-wide cost containment plan to minimize further growth in the indirect rates. This plan includes programmed personnel reductions and facility consolidation and closure. Though this rate containment plan has been generally successful, a significant jump in G&A rates occurred during the last quarter. This rate jump has been analyzed by the program office and the DCMC on-site office. We've evaluated the cause of this rate adjustment and determined that this rate jump is a result of abnormally high Bid and Proposal (B&P) costs and higher than planned Independent Research and Development (IR&D) costs. The contractor has presented a mitigation plan to account for this rate jump, which includes reduction in IR&D project planning and tighter controls on B&P expenditures for the out-years. In addition, both the government and the contractor program office are evaluating program scope and efficiencies which could be used to reduce the resultant cost impact to the PRP. The program office continues to work with DCMC, DCAA, and the contractor to maintain a clear picture of this and other rate issues. The contractor has been extremely open and cooperative in working with the government to provide insight to the rate issues at CSD. At present, the program has budgeted sufficient funds to account for the cost growth associated with this contract.

The net change in schedule variance of \$-0.4M is driven by additional effort required to complete the case manufacturing process.

The change in target price from \$82.0 to \$83.2 is due to exercising the contract option to include the second flight test motor.

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Minuteman III PRP, December 31, 1997

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	174.9	66.4	61.0	30.6	332.9
Procurement	-	-	-	2213.1	2213.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	174.9	66.4	61.0	2243.7	2546.0

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				61.8	65.2
1997				64.4	69.0
1998				61.0	66.4
1999				55.2	61.0
2000				27.2	30.6
Subtotal				309.2	332.9

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		106.4	110.1	125.7
2001	33		162.4	168.7	196.0
2002	86		260.9	265.2	314.3
2003	96		268.9	272.8	330.1
2004	96		244.2	261.8	323.6
2005	96		232.2	249.0	314.7
2006	96		220.0	236.0	304.7
2007	95		214.4	230.3	304.0
Subtotal	607		1709.4	1793.9	2213.1

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Minuteman III PRP, December 31, 1997

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		1709.4	2103.1	2546.0

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): \$ 181.2

(U) Percent Total Program Expended: 7.1%

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-10 COMANCHE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: Comanche (RAH-66)

AS OF DATE: December 31, 1997

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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 Joseph L. Bergantz
ATTN: SFAE-AV-RAH, Building 5681	Assigned: June 16, 1997
Redstone Arsenal	DSN 897-0846; COMM 205-313-0846
Huntsville, AL 35898-5000	

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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Downgrade instructions: None
Declassify on: OADR~~

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Comanche (RAH-66), December 31, 1997

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 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)

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Comanche (RAH-66), December 31, 1997

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

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 LRTEC 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. Boeing Sikorsky was awarded a contract modification in December 1996 for the completion of the Comanche Demonstration/Validation Program. As a result of program changes from the new contract, procurement dollars were converted into RDTE dollars to procure 10 additional LRIP aircraft for IOT&E.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 (RAR-66), December 31, 1997

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
Critical Design Review	N/A	OCT 93	DEC 93
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			
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
Depot Support Date	N/A	JUL 06	JUL 06
IOC	N/A	DEC 06	DEC 06 (Ch-1)
Organic Support Date	N/A	JUL 09	JUL 09

b. Current Change Explanations --

(U) (Ch-1) Date changed from Jul 06 to Dec 06 to allow for delivery of LRIP units for IOT&E.

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Comanche (RAH-66), December 31, 1997

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 & FMGW & 97.5% MRP)	500	750 / 500	TBD	500
Signature Levels:				

(b)(1)

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Comanche (RAH-66), December 31, 1997

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

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Self Deployable (NM) w/ 30 min. reserve	1260	N/A / N/A	TBD	N/A

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

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	5799.0
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	5799.0
Escalation	376.8	2632.4	2760.6
Development (RDT&E)	(376.8)	(2632.4)	(2760.6)
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 \$	2133.0	7976.6	8559.6

(U) Note: Increase in RDT&E current estimate due to conversion to RDT&E from APA. Acquisition Program Baseline should be increased to reflect the change in the Program.

b. (U) Quantity --

Development (RDT&E)	0	6	10
Procurement	0	N/A	0
Total	0	6	10

(U) Note: The 2 non-fully configured RDT&E prototypes are increased to eight non-fully configured RDT&E prototypes due to the use of the LRIP aircraft for IOT&E.

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

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Comanche (RAH-66), December 31, 1997

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	-65.4	-	-	-65.4
Quantity	-	-	-	-
Schedule	+265.4	-	-	+265.4
Engineering	+1154.8	-	-	+1154.8
Estimating	+4446.8	-	-	+4446.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+5801.6	-	-	+5801.6
Current Changes:				
Economic	-148.0	-	-	-148.0
Quantity	+753.2	-	-	+753.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.8	-	-	+19.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+625.0	-	-	+625.0
Total Changes	+6426.6	-	-	+6426.6
Current Estimate	8559.6	-	-	8559.6

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Comanche (RAH-66), December 31, 1997

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	+2740.4	-	-	+2740.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+3571.2	-	-	+3571.2
Current Changes:				
Quantity	+459.1	-	-	+459.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+12.5	-	-	+12.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+471.6	-	-	+471.6
Total Changes	+4042.8	-	-	+4042.8
Current Estimate	5799.0	-	-	5799.0

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-148.0
Quantity variance driven by conversion of APA dollars to RDT&E to procure 10 LRIP aircraft for IOT&E. (Quantity)	+459.1	+753.2
Adjustment for Current and Prior Inflation. (Estimating)	+5.8	+8.6
Revised estimate to reflect lower OSD approved inflation indices. (Estimating)	+17.5	+27.1
The net of undistributed reductions. (Estimating)	-10.8	-15.9
RDT&E Subtotal	+471.6	+625.0

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Comanche (RAH-66), December 31, 1997

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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	DEC 06
Total Cost	2133	0	0	8559.6
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		
Target	Ceiling	Qty
\$3772.2	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$3772.2	\$3905.6

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$4.1	\$-9.4
Cumulative Variances To Date (11/30/97)	\$-2.7	\$-8.1
Net Change	\$-6.8	\$1.3

Explanation of Change:

(U) No significant change in schedule performance.

Settlement of performance eliminated positive cost variance resulting in no significant change since the December 1996 SAR.

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Comanche (RAH-66), December 31, 1997

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

(U) T800 Growth AVS:

LHTEC, Indianapolis, IN

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
\$291.4	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$295.7	\$297.4

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.2	\$-1.2
Cumulative Variances To Date (11/30/97)	\$-3.0	\$-3.7
Net Change	\$-2.8	\$-2.5

Explanation of Change:

(U) No significant changes since last SAR.

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	3585.6	272.2	367.8	4334.0	8559.6
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3585.6	272.2	367.8	4334.0	8559.6

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
1991				259.8	338.3
1992				382.2	509.3

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Comanche (RAH-66), December 31, 1997

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 \$
1993				291.3	397.3
1994				262.8	365.2
1995				335.1	474.9
1996				196.8	284.1
1997				221.9	325.3
1998				183.1	272.2
1999				243.6	367.8
2000				285.7	438.7
2001				375.5	586.4
2002				465.2	739.4
2003				483.3	783.6
2004				472.5	782.9
2005				259.2	438.9
2006				144.3	249.7
2007				80.0	141.5
2008				56.0	101.2
2009				38.8	71.7
Subtotal	10			5799.0	8559.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	10			5799.0	8559.6

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): \$ 3840.5

(U) Percent Total Program Expended: 44.9%

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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N-17 SSN 21 / AN/BSY-2

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SSN 21 CLASS/BSY-2

AS OF DATE: December 31, 1997

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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 J.P. JARABAK

National Center 3, Room 3W30

Assigned: May 15, 1995

PMS425

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

PROCUREMENT:

No Security Objection
to Open Publication
(AS AMENDED)

98-S-0144
MAR 24 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

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

(U) APPN 1611 ICN 0204281N (Navy)
(U) APPN 1810 ICN 0204282N (Navy)
(U) APPN 1810 ICN 0204283N (Navy) (Shared)
(U) APPN 1810 ICN 0804731N (Navy) (Shared)
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 June 12, 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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SSN 21 CLASS/BSY-2, December 31, 1997

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 IIIA decision was completed in June 1988, approving low rate initial production.

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. The third SEAWOLF, SSN 23, was authorized in FY 96.

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, during which the ship demonstrated operations up to maximum speed and maximum depth. During Bravo Sea Trials, the SSN 21 sustained damage to the Wide Aperture Array (WAA) which required a significant re-engineering effort. AN/BSY-2 System Design Certification Test (SDCT) 2 was installed in October 1996 and completed functionality testing. In October 1996, the Functional Configuration Audit was completed and the AN/BSY-2 Product Baseline was established. The SSN 21 successfully completed Charlie and Delta Sea Trials in March and June 1997 respectively. The AN/BSY-2 performed exceptionally well during both trials. Additionally, AN/BSY-2 successfully completed the Naval Center for Tactical Systems Interoperability (NCTSI) testing of the Joint Maritime Command Information Systems (JMCIS) in the land-based test facility. AN/BSY-2 achieved certification from NCTSI in July 1997, and became the first submarine-based JMCIS platform to obtain full interoperability certification. Formal ashore certification occurred August 1997. Shipboard at-sea certification testing of AN/BSY-2 JMCIS has not been scheduled.

The SSN 21 delivered 1 July 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 float-off in August 1997. SSN 22 will begin sea trials later this summer.

The ship and combat system have performed exceptionally well. As the post-delivery shakedown period progresses, deficiencies are being identified and corrected. Initial acoustic trials are complete. Although the ship is in an interim condition, (hull uncoated and unfaired, and with an interim propulsor), SEAWOLF is already quieter than any submarine ever put to sea. Based on the trial results, the ship is predicted to be better than design objectives at slow speeds and to be very close to high speed acoustic design objectives, probably exceeding them slightly. The actual extent of the SEAWOLF's acoustic signature will not be known until the ship is tested in a final configuration in late 1999.

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SSN 21 CLASS/BSY-2, December 31, 1997

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	Yes
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

c. ~~(U)~~ Explanation of Breach:

(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
Initial Operational Capability	MAY 95	MAY 97	MAY 97
Complete OPEVAL (OT-III)	N/A	(b)(1)	

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Intermediate Maintenance Activity (IMA) Ready for Operation	N/A	JUN 97	JUN 97
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
AN/BSY-2			
System Design Definition Contract Award	N/A	N/A	
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
OPEVAL (AN/BQG-5)	MAR 94	N/A	N/A
Initial Operational Capability (AN/BQG-5)	(b)(1)	N/A	N/A
AN/BSY-2 TECHEVAL (DT IIE)	DEC 94	N/A	OCT 99 (Ch-1)
Complete TECHEVAL (DT III)	DEC 94	N/A	N/A
AN/BSY-2 OPEVAL (OT IIC)	JUN 95	N/A	N/A
Complete OPEVAL (OT III)	JUN 95	N/A	MAR 00
Navy Support Date	JUL 96	N/A	N/A
AN/BQG-5 Sys Design Certification Test Complete	(b)(1)		
1st System Delivered to Shipbuilder (Hardware & Thread 1-5 Software)			
Final Software Delivery to Navy			
Initial Operational Capability			
Complete OPEVAL (OT-II)			
Milestone III			
EMSP			
SEM B First Tactical System Delivery	N/A	SEP 91	SEP 91
CCAPS			
PROFUSION SYSTEM	N/A	N/A	
Reactor Vessel in Yard	(b)(1)		
Land Reactor Vessel			
Load Primary Shield Tank Complex			
Module			

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SSN 21 CLASS/BSY-2, December 31, 1997

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
111 Start Pre Fill Testing	(b)(1)		
111 Power Unit Landed			
111 Start Alpha Sea Trial			

b. Current Change Explanations --

(U) Ch-1: AN/BSY-2 TECHEVAL changed from FEB 99 to OCT 99 due to rescheduling of the SSN 21 Post Shakedown Availability (PSA).

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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
111 Operational Depth (ft)	(b)(1)			
111 Speed (knots)				
111 Endurance				
111 Fuel/Fuel				
111 Stores/Stores (days)				
111 Propulsion				
111 Type				
111 Shaft Horsepower				
111 Silencing:				
111 Radiated Noise (including Propulsor)				
111 Radiated Noise (without Special Hull Treatment)				
111 Transients				
111 Ship Control				
111 Bow Plane Extension and Operation (kts)				

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SSN 21 CLASS/BSY-2, December 31, 1997

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
1 Bow Plane Retraction	(b)(1)			
1 Arctic Operations:				
1 Ascent at zero speed (from 200 ft) (ft/min)				
1 Surface through ice:				
1 Routine (ft thick)				
1 Emergency (ft thick)				
1 Armament				
1 Torpedo Tubes				
1 Reloads				
1 Weapons Handling:				
1 Simultaneous Wire Guide (weapons: 2 port, 2 starboard)				
1 Minimum Launch Interval: (sec)				
1 Same Bank				
1 Alternate Bank				
1 Maximum Torpedo Launch Speed (kts)				
1 Reload Time (min)				
1 Load				
1 Any mix conventional diameter weapons				
1 Large Diameter Weapon				
1 Mean Time Between Failure (MTBF) (hrs)				
1 Ship System				
1 External Communications System				
1 Electronic Warfare Support Measures				
1 Mean Time to Repair (MTTR) (hrs)				
1 Ship System				
1 External Communication System				
1 Electronic Warfare Support Measures				

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SSN 21 CLASS/BSY-2, December 31, 1997

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>	
Operational Availability (Ao) (%)	(b)(1)				
Ship System External Communication System					
Electronic Warfare Support Measures					
Officers Berths					
Enlisted Berths					
Crew					
Total Billets Underway					
Combat Systems ESM					
AN/BSY-2					
PBB Detection FOM (Spherical Array) (db)					
PNB Detection FOM (TB-12X) (db)					
Wide Aperture Array Acquisition FOM (Submarine) (db)					
Average Solution Time for Torpedo Attack (>20 Kyd) (mins)					
Time to Snapshot MK 48 ADCAP (sec)					
Operational Availability (Ao) (%)					
Mean Time Between Failure (MTBF) (hrs)					Ch-1)
Mission Time Between Critical Failures (MTBCF) Hardware (hrs)					Ch-2)
Full-up Configuration (hrs)					
Self-Protect Configuration (hrs)					Ch-3)

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SSN 21 CLASS/BSY-2, December 31, 1997

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>
Performance				
Monitoring/Fault				
Localization				
1 Probability of Fault				(Ch-4)
1 Detection (%)				
1 Probability of Fault				(Ch-5)
1 Localization (%)				
1 PM False Alarms per				
100 Alerts				
Fixed Barrier Mission				
Scenario				
1 Probability of				
secure detection				
and classification				
(%)				
1 Exchange ratio				
(initial attack)				
1 Area Clearance				
Mission Scenario				
1 Probability of				
secure detection				
and classification				
(%)				
1 Secure search rate				
(NM2/hr)				
1 Exchange ratio				
(initial attack)				
1 Arctic Mission				
1 Probability of				
Bastion				
Penetration				
1 Secure Sweep Rate				
(Nm2/Hr)				
1 Probability of				
Secure Attack				
(given				
classification)				
1 Probability of Kill				
(given				
classification)				
1 Probability of				
Bastion Escape				
1 Tactical Speed (kts)				

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

b. Current Change Explanations --

(b)(1)



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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)	4335.0	4594.1	4703.5
Procurement	15686.3	7273.2	7574.6
Basic Ship Costs	(8083.6)		(4775.6)
GFE	(5952.8)		(2362.0)
Other Sailaway	(111.0)		(84.1)
OF/PD	(570.2)		(84.0)
Total Sailaway	(14717.6)		(7305.7)
OPN	(0.0)		(0.0)
AN/BSY-2 OPN	(968.7)		(268.9)
Total Other Wpn Sys	(968.7)		(268.9)
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	12303.2
Escalation	1619.2	884.4	865.4
Development (RDT&E)	(-125.0)	(-19.5)	(7.2)
Procurement	(1735.1)	(901.4)	(856.0)
Construction (MILCON)	(9.1)	(2.5)	(2.2)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	21739.1	12779.2	13168.6

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	12	3	3
Total	12	3	3

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
\$1043.5M

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12. (U) Unit Cost Summary:

	UCR Baseline (Jan 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	11894.8	12303.2	
(2) Quantity	3	3	
(3) Unit Cost	3964.933	4101.067	+3.43
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	7273.2	7574.6	
(2) Quantity	3	3	
(3) Unit Cost	2424.400	2524.867	+4.14

13. (U) Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Production Estimate	4210.0	17421.4	107.7	21739.1
Previous Changes:				
Economic	-114.1	+475.3	+3.5	+364.7
Quantity	-	-15562.8	-	-15562.8
Schedule	+21.9	+6354.0	-	+6375.9
Engineering	+161.3	-	-	+161.3
Estimating	+340.1	+632.5	-83.9	+888.7
Other	-	-	-	-
Support	+54.6	-835.6	-	-781.0
Subtotal	+463.8	-8936.6	-80.4	-8553.2
Current Changes:				
Economic	-4.9	-52.9	-	-57.8
Quantity	-	-	-	-
Schedule	+3.4	-	-	+3.4
Engineering	-	-	-	-
Estimating	+38.4	+37.8	-	+76.2
Other	-	-	-	-
Support	-	-39.1	-	-39.1
Subtotal	+36.9	-54.2	-	-17.3
Total Changes	+500.7	-8990.8	-80.4	-8570.5
Current Estimate	4710.7	8430.6	27.3	13168.6

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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
Production Estimate	4335.0	15686.3	98.6	20119.9
Previous Changes:				
Quantity	-	-12545.0	-	-12545.0
Schedule	+16.3	+4369.6	-	+4385.9
Engineering	+141.0	-	-	+141.0
Estimating	+127.6	+720.9	-73.5	+775.0
Other	-	-	-	-
Support	+52.3	-669.2	-	-616.9
Subtotal	+337.2	-8123.7	-73.5	-7860.0
Current Changes:				
Quantity	-	-	-	-
Schedule	+1.8	-	-	+1.8
Engineering	-	-	-	-
Estimating	+29.5	+42.4	-	+71.9
Other	-	-	-	-
Support	-	-30.4	-	-30.4
Subtotal	+31.3	+12.0	-	+43.3
Total Changes	+368.5	-8111.7	-73.5	-7816.7
Current Estimate	4703.5	7574.6	25.1	12303.2

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-4.9
	Realignment of Full Ship Shock	+1.8	+3.4
	Test-OPEVAL/TECHEVAL (Schedule)		
	Adjustment for Current and Prior Inflation. (Estimating)	+2.3	+2.7
	Prior Year Adjustment (Estimating)	-6.2	-6.6
	Program Recissions (Estimating)	-5.0	-5.9
	Previously unfunded requirements for OPEVAL/TECHEVAL (Estimating)	+16.1	+20.2
	Previously unfunded requirements for Full Ship Shock Test (Estimating)	+19.0	+24.0
	Unfunded requirements for Sea Trials (Estimating)	+3.3	+4.0
	RDT&E Subtotal	+31.3	+36.9
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-52.9
	Adjustment for Current and Prior Inflation. (Estimating)	+35.2	+43.3
	Re-estimate for SSN21 Class SCA (Estimating)	+59.5	+65.1
	Outfitting/Post Delivery (Estimating)	-46.3	-63.0

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Program Recissions (Estimating)	-6.0	-7.6
Adjustment for Current and Prior Inflation. (Support)	+0.8	+1.0
Program Recissions (Support)	-17.6	-23.1
Contract Awarded for Lower Price (Support)	-13.6	-17.0
Procurement Subtotal	+12.0	-54.2

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 Prod Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1811.59	+102.30	+247.18	+2126.43	+53.77	+321.63	--	-273.37	+2577.94	4389.53

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	
1451.78	+140.80	-832.24	+2118.00	--	+223.43	--	-291.57	+1358.42	2810.20

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	13168.6
Total Quantity	0	1	.12	3
Prog Acq Unit Cost	0	3875	1811.59	4389.53

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

a. Procurement --			Initial Contract Price		
(U) SSN 22 CONSTRUCTION:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
GENERAL DYNAMICS, GROTON, CT					
N00024-91-C-2902, FPIF			\$736.5	\$884.7	1
Award: May 3, 1991					
Definitized: May 3, 1991					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$913.6	\$1054.6	1	\$1046.6	\$1061.1	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-98.8	\$-3.3	
Cumulative Variances To Date (09/27/97)			\$-103.6	\$-5.4	
Net Change			\$-4.8	\$-2.1	

Explanation of Change:

(U) All numbers include anticipated escalation.

The initial Contract Price now includes 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 is attributable to labor performance and the effects of the shrinking shipbuilding industry. Schedule variance improvement is the result of extending the delivery date to December 1998 and the rescheduling of work.

(U) SSN 23 CONSTRUCTION:			Initial Contract Price		
GENERAL DYNAMICS, GROTON, CT			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-96-C-2108, FPIF					
Award: June 28, 1996			\$1220.0	\$1323.5	1
Definitized: June 28, 1996					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1214.1	\$1317.8	1	\$1231.4	\$1317.8	

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-9.2	\$0.4
Cumulative Variances To Date (09/27/97)	\$-13.7	\$-11.3
Net Change	\$-4.5	\$-11.7

Explanation of Change:

(U) All numbers include anticipated escalation.

CPR data is still in the early stage of reporting. Historically, CPR data becomes reliable for trend analysis when labor progress reaches 15% complete. Current CPR data for labor reflects approximately 13% complete. Fluctuation is still occurring due to this early stage of reporting.

The SSN 21 (NUCLEAR) Contract N00024-87-C-4000 is over 90% complete and will no longer be reported.

The SSN 21 Construction Contract N00024-89-C-2000 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 (FY00-03)</u>	<u>Total</u>
RDT&E	4483.3	68.0	39.2	120.2	4710.7
Procurement	8144.3	161.2	44.4	80.7	8430.6
MILCON	27.3	-	-	-	27.3
O&M	-	-	-	-	-
Total	12654.9	229.2	83.6	200.9	13168.6

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

b. Annual Summary -- SSN21 SUBMARINE

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 \$
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				511.0	542.0
1992				407.7	445.0
1993				157.9	176.3
1994				160.5	182.6
1995				139.7	162.1
1996				101.8	120.1
1997				73.5	88.2
1998				55.9	68.0
1999				31.7	39.2
2000				60.4	75.9
2001				9.1	11.6
2002				21.5	27.9
2003				3.6	4.8
Subtotal				4703.5	4710.7

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		2460.4	2197.6	2322.2
1990		354.8		539.3	586.3
1991	1	124.4	2130.1	1989.9	2223.7
1992		192.6		678.8	778.7
1993				2.8	3.2
1994				1.7	2.0
1995				5.5	6.6
1996	1		2043.4	570.1	699.9
1997				525.6	655.1

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SSN 21 CLASS/BSY-2, December 31, 1997

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 \$
1998				122.2	154.9
1999				16.3	21.0
2000				6.3	8.3
2001				2.1	2.8
2002				10.6	14.5
2003				9.3	13.0
2004					
Subtotal	3	671.8	6633.9	7305.7	8124.8

(U) Nonrecurring Flyaway includes \$671.8M (BY) 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				0.3	0.3
1994				3.3	3.8
1995				1.9	2.2
1996				4.0	4.8
1997				42.0	50.8
1998				5.1	6.3
1999				18.8	23.4
2000				22.8	28.9
2001				8.8	11.4
2002				1.1	1.5
2003				0.2	0.3
Subtotal				268.9	305.8

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

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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	3	671.8	6633.9	12303.2	13168.6

17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 33.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 10367.9

(U) Percent Total Program Expended: 78.7%

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 NSSN Cost and Operational Effectiveness Analysis (COEA) studies reported in Sep 1992.)

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	5.0	N/A
Unit Level Consumption	3.9	0.0
Intermediate Maintenance	2.5	0.0
Depot Maintenance	13.3	0.0
Contractor Support	0.0	0.0
Sustaining Support	4.1	0.0
Indirect Costs	5.1	N/A
Total	33.9	0.0

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A-20 MLRS UPGRADE

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: MLRS Upgrade

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): MLRS Upgrade Program

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

PROGRAM EXECUTIVE OFFICE	LTC(P) Barry M. Ward
TACTICAL MISSILES	Assigned: August 21, 1997
ATTN: SFAE-MSL-ML	DSN 746-1195; COMM 203-876-1195
AL 35898-5700	WARD-BM@REDSTONE.ARMY.MIL

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

RDTE:

(U) PE 673778 (Shared) Project 050, 054, 093, 27, 784
(U) PE
(U) PE 63778 (Shared) Project 784

PROCUREMENT:

(U) APPN 2032 ICN C65402 (Army)
(U) APPN 2032 ICN C65900 (Army)
(U) APPN 2032 ICN CA0257 (Army)
(U) APPN 2032 ICN C65400 (Army)
(U) APPN 2032 ICN C66400 (Army)

(U) Related Programs:

M77 Munitions, Bradley Fighting Vehicle (BFV), TACFIRE, 10-Ten Truck/Trailer, Scatterable Mine Warhead (German Development), Field Artillery Meteorological Data System, Test Set AN/USM-410, Army Tactical Missile System (Army TACMS) and Advanced Field Artillery Tactical Data System (AFATDS).

~~Classified by: NSA Special Classification Code, Dated 4 Sept 86~~
~~Downgrade instructions:~~
~~Declassify on:~~

(THIS PAGE IS UNCLASSIFIED)

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5. (U) References:

Launcher

SAR Baseline (Development Estimate):

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated March 23, 1998.

Tactical Rocket

SAR Baseline (Development Estimate):

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated March 23, 1998.

6. (U) Mission and Description:

(U) The Multiple Launch Rocket System (MLRS) Upgrade satisfies the need for a non-nuclear, all-weather, indirect, area fire weapon system to strike counterfire, air defense, armored formations, and other high-payoff targets at all depths of the tactical battlefield. Initial Operational Capability (IOC) of the basic system occurred in 1983. Primary missions of MLRS include the suppression, neutralization and destruction of threat fire support and forward area air defense targets. The MLRS launcher is a full-tracked, self propelled launcher/loader designed to launch the entire MLRS Family of Munitions (MFOM) tactical rocket/missile variants. The Improved Fire Control System (IFCS) and the Improved Launcher Mechanical System (ILMS) are modifications to the launch platform to produce the upgraded launcher. These two synchronized programs are the centerpieces of the next generation of the MLRS Weapon System. In concert with the application of these kits, the remanufacture of all carrier vehicles will convert the MLRS launcher fleet to the M270A1. The IFCS will correct present and future supportability problems in the current MLRS Fire Control System resulting from electronic component obsolescence in the existing design. The effort will result in reduced operation and support costs and will provide growth capabilities for existing and future MFOM weapon systems. The ILMS will decrease the stow to aim point timeline, enhance effectiveness in engaging and supporting the force, and increase MLRS platform survivability.

The system is designed for quick reaction with the capability of firing the first round within minutes of receipt of a fire mission and firing the complete load of 12 rounds in 60 seconds or less.

Simultaneously, MLRS rockets have experienced change as a result of the need for greater range and technological advances making guidance feasible. The Extended Range-MLRS (ER-MLRS) rocket will enhance the capability of the existing rocket inventory by providing improvements in range, accuracy, effectiveness, and maneuver force safety. The Guided Multiple Launch Rocket System (GMLRS) will provide longer range and improve accuracy with lower submunition hazardous dud rate for the MLRS. Utilizing various components of the ER-MLRS, GMLRS will transform the ER-MLRS freeflight rocket into a missile through the incorporation

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

of a guidance and control package, providing greater accuracy and will reduce the number of rockets required to defeat targets to maximum range, reduce the number of launchers required per fire mission, and directly contribute to reducing the logistics burden. The MLRS launcher will have the capability to support all future ATACMS versions, to include Block IA and Block II systems.

7. (U) Executive Summary:

(U) The MLRS Upgrade Program consists of several distinct product improvements for both launcher and rocket. The current M270 launcher will be modified to an improved launch designated the M270A1. This new baseline launcher configuration will enhance the MLRS weapon system performance and incorporate technologies that allow continued MFOM growth, Joint Technical Architecture (JTA) compliance, and reduction of Operation and Support Costs. In FY95, Congress authorized the initiation of the ILMS and stipulated synchronization with IFCS. The Army decided to limit production of ER-MLRS and transition to the more accurate and greater range GMLRS based on initial analysis and prototype demonstration from low cost guidance and control Advanced Technology Demonstration.

The M270A1 acquisition plan covers three phases. Phase 1 is production of the IFCS modification kits in FY98. Phase 2 is a modified Low Rate Initial Production (LRIP) to establish an initial M270A1 Production base through integration of the IFCS with the ILMS and permit an orderly increase in the production rate. This phase will also accomplish the system level Operational Test activity in preparation for Phase 3. Phase 3 is a Milestone III M270A1 full rate production decision to support all procurements in FY00 and out.

8. (U) Threshold Breaches:

Launcher

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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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

Tactical Rocket

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

Launcher

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
M270A1 ESIT	JUL 98	JUL 98	JUL 98
Modified LRIP Review	OCT 98	OCT 98	OCT 98
Kit Contract Award	NOV 98	NOV 98	NOV 98
M270A1 Operational Test (OT)			
Start	JAN 99	JAN 99	JAN 99
Complete	MAY 99	MAY 99	MAY 99
MS III	AUG 99	AUG 99	AUG 99
FUE	SEP 00	SEP 00	SEP 00

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

Launcher

b. Current Change Explanations -- None

Tactical Rocket

a. Milestones --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
ER-MLRS IOC	SEP 99	SEP 99	SEP 99
GMLRS MS II EMD	MAR 98	MAR 98	MAR 98
GMLRS LRIP Review	AUG 01	AUG 01	AUG 01
GMLRS MS III	OCT 03	OCT 03	OCT 03
GMLRS OT	JUL 03	JUL 03	JUL 03
GMLRS IOC	APR 04	APR 04	APR 04

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

Launcher

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Reaction Time				
Total Mission	8	8 / 12	TBD	8
Cycle (Min)				
Mission Reliability				
MTBOMF (Hrs)	56	56 / 37	TBD	56

b. Current Change Explanations -- None

Tactical Rocket

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Range				
GMLRS Range Max	70	70 / 60	TBD	70
GMLRS Range Min	10	10 / 15	TBD	10
Effectiveness				
GMLRS Expected	30%	30% / 30%	TBD	30%
Fractional				
Damage				
Reliability				
GMLRS	0.95	0.95 / 0.92	TBD	0.95
Hazardous Dud Rate	0%	0% / <1%	TBD	0%
Accuracy				
ER-MLRS at Range	(b)(1)			
30-40 Km				

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MLRS Upgrade, December 31, 1997

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
ER-MLRS Range	10	10 / 15	TBD	10
Min (Km)				
ER-MLRS Range	50	50 / 45	TBD	50
Max (Km)				
ER-MLRS	0.97	0.97 / 0.95	TBD	0.97

b. Current Change Explanations -- None

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	19.5	19.5	19.4
Procurement	1930.3	1930.3	1930.3
Launcher	(1820.5)		(1820.5)
Other Weapon System	(10.5)		(10.5)
Peculiar Support	(0.0)		
Initial Spares	(99.3)		(99.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 98 Base-Year \$	1949.8	1949.8	1949.7
Escalation	262.0	262.0	261.7
Development (RDT&E)	(1.4)	(1.4)	(1.5)
Procurement	(260.6)	(260.6)	(260.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2211.8	2211.8	2211.8

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	857	857	857
Total	857	857	857

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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MLRS Upgrade, December 31, 1997

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

Tactical Rocket

a. (U) Cost --	Development Estimate (SAR)	Approved Program (AFB)	Current Estimate
Development (RDT&E)	81.9	81.9	81.8
Procurement	1313.8	1313.8	1313.8
Tactical Rocket	(1313.8)		(1313.8)
Total Other Wpn Sys			(0.0)
Peculiar Support	(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 98 Base-Year \$	1395.7	1395.7	1395.6
Escalation	292.9	292.9	292.8
Development (RDT&E)	(3.4)	(3.4)	(3.5)
Procurement	(289.5)	(289.5)	(289.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1688.6	1688.6	1688.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	43182	43182	43182
Total	43182	43182	43182

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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MLRS Upgrade, December 31, 1997

12. (U) Unit Cost Summary:

Launcher

	UCR Baseline (MAR 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 98 BY\$)	1949.8	1949.7	
(2) Quantity	857	857	
(3) Unit Cost	2.275	2.275	0.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 98 BY\$)	1930.3	1930.3	
(2) Quantity	857	857	
(3) Unit Cost	2.252	2.252	0.00

Tactical Rocket

	UCR Baseline (MAR 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 98 BY\$)	1395.7	1395.6	
(2) Quantity	43182	43182	
(3) Unit Cost	0.032	0.032	0.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 98 BY\$)	1313.8	1313.8	
(2) Quantity	43182	43182	
(3) Unit Cost	0.030	0.030	0.00

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MLRS Upgrade, December 31, 1997

13. (U) Cost Variance Analysis:
Launcher

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	20.9	2190.9	-	2211.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	20.9	2190.9	-	2211.8

(U) Summary (FY 1998 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	19.5	1930.3	-	1949.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	19.5	1930.3	-	1949.8

b. Current Change Explanations -- None

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MLRS Upgrade, December 31, 1997

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

Tactical Rocket

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	85.3	1603.3	-	1688.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	85.3	1603.3	-	1688.6

(U) Summary (FY 1998 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	81.9	1313.8	-	1395.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-	-	-	-
Current Estimate	81.9	1313.8	-	1395.7

b. Current Change Explanations -- None

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

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	
2.58	--	--	--	--	--	--	--	--	2.58

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	
2.56	--	--	--	--	--	--	--	--	2.56

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	AUG 99	N/A	AUG 99
FUE/IOC	N/A	SEP 00	N/A	SEP 00
Total Cost	N/A	1949.8	N/A	1949.8
Total Quantity	N/A	857	N/A	857
Prog Acq Unit Cost	N/A	2.28	N/A	2.28

Tactical Rocket

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	
0.04	--	--	--	--	--	--	--	--	0.04

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

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	
0.04	--	--	--	--	--	--	--	--	0.04

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 98	N/A	MAR 98
Milestone III	N/A	OCT 03	N/A	OCT 03
FUE/IOC	N/A	APR 04	N/A	APR 04
Total Cost	N/A	1395.6	N/A	1395.6
Total Quantity	N/A	43182	N/A	43182
Prog Acq Unit Cost	N/A	0.03	N/A	0.03

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

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

Total Program

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

Appropriation	Prior Years (FY96-97)	Budget Year (FY98)	Budget Year (FY99)	Balance To Complete (FY00-12)	Total
RDT&E	-	18.3	20.3	67.6	106.2
Procurement	89.9	139.0	108.8	3456.5	3794.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	89.9	157.3	129.1	3524.1	3900.4

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

Launcher

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	-	0.8	2.5	17.6	20.9
Procurement	-	119.7	92.3	1978.9	2190.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	-	120.5	94.8	1996.5	2211.8

Tactical Rocket

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 (FY00-12)</u>	<u>Total</u>
RDT&E	-	17.5	17.8	50.0	85.3
Procurement	89.9	19.3	16.5	1477.6	1603.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	89.9	36.8	34.3	1527.6	1688.6

b. Annual Summary -- Launcher

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY98 Dollars Nonrec</u>	<u>Flyaway FY98 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1998		0.8		0.8	0.8
1999		2.4		2.4	2.5
2000		2.0		2.0	2.1
2001		1.5		1.5	1.6
2002		7.4		7.3	7.9
2003		5.4		5.4	6.0
Subtotal		19.5		19.4	20.9

Appropriation: 2032 Missile Procurement, Army

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY98 Dollars Nonrec</u>	<u>Flyaway FY98 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1998	35	9.0	107.6	116.6	119.7
1999	24	2.6	85.8	88.4	92.3
2000	54	1.7	153.3	155.0	164.7
2001	71	0.4	200.0	200.4	216.8

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

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY98 Dollars Nonrec	Flyaway FY98 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2002	90		208.3	208.3	229.9
2003	140		229.4	229.4	258.6
2004	145		247.2	247.3	284.9
2005	145		293.3	293.5	345.5
2006	105		217.4	217.5	261.7
2007	48		110.3	110.3	135.6
2008			33.6	33.6	42.2
2009			30.4	30.4	39.0
Subtotal	857	13.7	1916.6	1930.7	2190.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	857	33.2	1916.6	1950.1	2211.8

b. Annual Summary -- Tactical Rocket

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

Fiscal Year	Qty	Flyaway FY98 Dollars Nonrec	Flyaway FY98 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1998		17.3		17.3	17.5
1999		17.3		17.3	17.8
2000		19.5		19.5	20.4
2001		23.4		23.4	24.9
2002		4.3		4.3	4.7
2003					
Subtotal		81.8		81.8	85.3

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY98 Dollars Nonrec	Flyaway FY98 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	1326	8.7	36.2	44.9	44.6
1997	1500		44.9	44.9	45.3
1998	528		18.8	18.8	19.3
1999	522		15.8	15.8	16.5
2000	564		16.3	16.4	17.4
2001	504	1.8	15.1	17.0	18.4
2002	336	3.9	18.3	22.2	24.5

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

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY98 Dollars Nonrec	Flyaway FY98 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003	1320	2.0	51.0	53.0	59.7
2004	2760		97.0	97.0	111.8
2005	4302		136.6	136.6	160.8
2006	4404		135.0	135.0	162.4
2007	4416		105.2	105.2	129.4
2008	4332		143.8	143.8	180.7
2009	4236		140.3	140.3	180.2
2010	4140		132.8	132.8	174.3
2011	4044		96.1	96.1	128.9
2012	3948		94.2	94.2	129.1
Subtotal	43182	16.4	1297.4	1314.0	1603.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	43182	98.2	1297.4	1395.8	1688.6

17. (U) Delivery/Expenditure Information:

Launcher

a. (U) Deliveries To Date - None.

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 0.0

(U) Percent Total Program Expended: 0.0%

Tactical Rocket

a. (U) Deliveries To Date - None.

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 0.0

(U) Percent Total Program Expended: 0.0%

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MLRS Upgrade, December 31, 1997

18. (U) Operating and Support Costs:
Launcher

a. (U) Assumptions and Ground Rules --

The unit for tracking O&S costs is a firing battery. The reflected O&S costs were estimated in the August 1997 excursion Program Office Estimate (POE). The POE includes operating tempo, reliability/maintainability, maintenance concept, manning and logistics policies. This POE information is integrated into the annual update of the MLRS O&S Cost Reduction Program and provides the methodology to portray the O&S costs per battery. A typical operating year is selected from the annual POE update and divided by the number of MLRS batteries deployed to give an O&S cost per battery. This typical operating year is a point in time after the completion of fielding when the operating and support costs are neither increasing nor decreasing in magnitude due to fielding changes. There is no antecedent program for MLRS.

b. (U) Costs -- (FY 98 Constant (Base-Year) Dollars in Millions)

Cost Element	Launcher	None
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
Military Personnel Direc	5.6	N/A
Replenishment Depot-Leve	0.1	N/A
End Item Supply & Main	0.1	N/A
Training	0.3	N/A
Total	6.1	N/A

Tactical Rocket

a. (U) Assumptions and Ground Rules --

The unit for tracking O&S cost is the rocket pod. The estimated average annual unit cost per rocket pod is \$152.00. This estimate, taken from the August 1997 POE, was based upon an annual cost of \$2.12M per year for Stockpile Reliability. The total number of rocket pods planned for production is 13,987.

b. (U) Costs -- (FY 98 Constant (Base-Year) Dollars in Millions)

Cost Element	Tactical Rocket	None
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

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MLRS Upgrade, December 31, 1997

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

b. (U) Costs -- (FY 98 Constant (Base-Year) Dollars in Millions)

Cost Element	Tactical Rocket	None
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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AF-4 B-1B CMUP COMPUTER UPERADE

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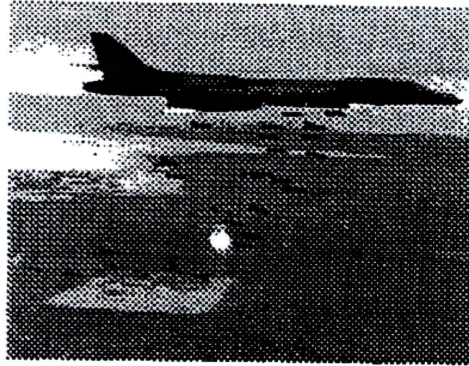
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: B-1B CMUP-Computer

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): B-1B Conventional Mission Upgrade Program - Computer Upgrade

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

ASD/YD B-1B System Program Office	Col Ben F. McCarter
Building 556	Assigned: June 1, 1997
2690 Loop Road, West, Room 104	DSN 986-9187; COMM (937) 656-9187
WPAFB, OH 45433-7148	Ben.McCarter@blb.wpafb.af.mil

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

RDT&E:

(U) PE 0604226F

PROCUREMENT:

(U) APPN 3010 ICN 0101126F (Air Force)

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5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated January 25, 1995.

Approved Program:

AFAE Approved Acquisition Program Baseline (APB) dated October 15, 1997.

~~Classified by:~~

~~Downgrade instructions:~~

~~Declassify on:~~

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DEPARTMENT OF DEFENSE

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98--0266

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98-C-0702

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B-1B CMUP-Computer, December 31, 1997

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 to 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 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 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:

In the Jan 92 publication of The Bomber Roadmap, the Secretary of the Air Force designated the B-1B as the backbone of the bomber force. In the Aug 92 Mission Need Statement and the Apr 93 Operational Requirements Document, HQ ACC specified the need for an improved conventional mission capability on the B-1B as well as computer and defensive system improvements. Conventional capability was to be accomplished in phases. First, area munitions (Conventional Bomb Units), second, guided munitions (Joint Direct Attack Munition (JDAM) and Wind Corrected Munition Dispenser (WCMD)), and third, standoff munitions (Joint Standoff Weapon (JSOW) and Joint Air-to-Surface Standoff Missile (JASSM)). Due to funding constraints and lack of an affordable solution, the computer and defensive system upgrades were delayed. This resulted in a block upgrade approach outlined as follows: The Conventional Mission Upgrade (CMUP)-JDAM (integrates a MIL-STD 1760 interface, Global Positioning System, communications upgrades and the JDAM precision munition); CMUP-Computer (upgrades the on-board computers); and the CMUP-Defensive System Upgrade (improves the electronic countermeasures suite).

Acquisition streamlining initiatives used early in the program avoided cost by accelerating the process from requirements definition through RFP development and contract award. Initiatives were taken to identify only minimal absolute

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B-1B CMUP-Computer, December 31, 1997

7. Executive Summary (Cont'd):

system requirements. Likewise the SOW and contract data requirements were tailored to assure only the most critical requirements and data needs were specified. The program continues to use acquisition reform initiatives as a key factor in all phases of the B-1 upgrade program to avoid and save unnecessary cost to the program.

On Jan. 30, 1997 the contract for Step Two System Development was awarded to Boeing North American, Seal Beach CA. This contract covers the balance of EMD for the Computer Upgrade program. All software and system-level preliminary design review (PDR) in-process reviews (IPRs) were successfully completed, culminating with a successful Executive PDR in Dec 97. Boeing was approved to begin detailed design for all software configuration items. Critical Design Review (CDR) for the new avionics computer was successfully held in Nov 97. The vendor (Lockheed Martin Federal Systems) is proceeding with fabrication of EMD computers for delivery to the software design laboratories beginning in Jun 98. CDR for the new Data Transfer Device (DTD) was successfully held in Jan 98. The vendor (OSC Fairchild) is proceeding with fabrication of the EMD DTDs for delivery to the labs beginning in Jun 98. Executive CDR is planned for May 98.

O&M (3400) shortfalls for FY98 have been a significant issue this year. HQ ACC initial funding distribution was \$57M short of the total B-1 software sustainment requirement, \$38M of which was in direct support of the Computer Upgrade. Aggressive teamwork from the SPO, HQ ACC, AFPEO/FB, and Boeing has greatly reduced these shortfalls. The SPO was able to reduce the total shortfall from \$57M to \$44M due to lower than projected industrial fund surcharges and under-runs in the CMUP-JDAM sustainment program. In Dec 97, HQ ACC provided an additional \$23M to prevent schedule impacts to the Computer Upgrade, reducing the shortfall from \$44M to \$21M (\$7.3M of the total \$21M shortfall was in support of the Computer Upgrade). During Jan 98 the SPO and Boeing have been able to further reduce the shortfall to \$13.6M as we have definitized the FY98 Computer Upgrade sustainment task. The Computer Upgrade sustainment program is now executable for both schedule and content. The remaining \$13.6M shortfall defers technical order publication and distribution and minimizes deficiency analysis capability.

Impacts of budget reductions driven by PBD 604 are reflected in changes to our current estimate. Schedule changes are driven by 3600 funding reductions while production funding (3010) reductions in FY99 and FY01 have forced changes in the Computer Upgrade production schedule. \$8.4M in FY99 funding for kitproof kits was moved to FY00, delaying Required Assets Available (RAA) by one month to 2QFY02. A \$10M cut in FY01 full rate production funding with pay back in FY04 resulted in eight aircraft kits being pushed from FY02 to FY05. The loss of an aircraft during this reporting period resulted in a quantity change from 103 to 102 modification kits. Due to the dependency of integrated development and sustainment software activities in the B-1 block upgrade process, any slips in the Computer Upgrade program would directly impact the Defensive System Upgrade, Wind Corrected Munitions Dispenser (WCMD) integration, Joint Standoff Weapon (JSOW) integration, and Joint Air-to-Surface Standoff Missile (JASSM) integration programs.

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7. Executive Summary (Cont'd):

Due to loss of an aircraft this reporting period, quantities now reflect 94 aircraft instead of 95.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	APR 93	APR 93	
Milestone II	JAN 95	JAN 95	JAN 95	
Development Contract Award	JAN 96	MAY 96	MAY 96	
Critical Design Review	JUN 98	MAY 98	MAY 98	(Ch-1)
Service Final DT&E				
Start	JAN 00	OCT 99	NOV 99	(Ch-2)
Complete	SEP 00	OCT 00	NOV 00	(Ch-2)
Low Rate Production Contract	JAN 00	JUL 99	DEC 99	(Ch-2)
Award				
Low Rate Initial Production	JUL 01	FEB 01	MAY 01	(Ch-2)
First Delivery				
IOT&E				
Start	SEP 00	OCT 99	NOV 99	(Ch-2)
Complete	JAN 01	MAR 01	APR 01	(Ch-2)
Milestone III	JAN 01	APR 01	AUG 01	(Ch-2)
Full Rate Production Contract	JAN 01	APR 01	APR 01	(Ch-2)
Award				
Organic Support Capability	DEC 02	N/A	JAN 02	(Ch-3)
Date				
Service Depot Support Date	MAR 03	N/A	JAN 02	(Ch-3)

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9a. Schedule (Cont'd):

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Initial Operational Capability (IOC)	JAN 03	N/A	N/A (Ch-4)
Required Assets Available	N/A	DEC 01	JAN 02 (Ch-2)

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 SECDEF, 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 --

Change 1 - CDR changed from Jun 98 to May 98 to reflect current APB and program manager's current estimate.

Change 2 - The following milestone changes reflect the impact of PBD 604 funding changes:

Service Final DT&E Start from Oct 99 to Nov 99

Service Final DT&E Complete from Oct 00 to Nov 00

Low Rate Production Contract Award from Jul 99 to Dec 99

Low Rate Initial Production First Delivery from Feb 01 to May 01

IOT&E Start from Dec 00 to Nov 99 (IOT&E Start date reflects start of Combined DT&E/OT&E in Nov 99, not the start of Dedicated IOT&E in Jan 01.)

IOT&E Complete from Feb 01 to Apr 01

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9b. Schedule (Cont'd):

Milestone III from Apr 01 to Aug 01
Full Rate Production Contract Award from Apr 01 to Sep 01
Required Assets Available (RAA) from Dec 01 to Jan 02

Change 3 - Supportability dates are not in the Single Managers control and are no longer required by SAF/AQ as key Acquisition Program Baseline parameters. Change in estimate from Dec 01 to Jan 02 reflects impact of PBD 604 funding cuts.

Change 4 - Required Assets Available (RAA) is used in lieu of Initial Operational Capability.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
Weapons Flexibility	N/A	Capabil- / Capabil- ity to / ity to safely / safely monitor, / monitor, ferry, / ferry, carry, / carry, arm, / arm, release / release and / and jettison/ jettison up to 3 / up to 3 differ- / differ- ent / ent conven- / conven- tional / tional weapon / weapon types (1/ types (1 type per/ type per bay) / bay) with a / with a single / single software/ software load. / load.	TBD	Capabil- ity to safely monitor, ferry, carry, arm, release and jettison up to 3 differ- ent conven- tional weapon types (1 type per bay) with a single software load.
Mission Capable (MC) Rate (%)	75%	N/C / N/C	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

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10a. Performance Characteristics (Cont'd):

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 Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	159.9	232.7	212.8
Procurement	174.5	153.7	151.3
Recurring	(152.4)		(140.2)
Nonrecurring	(14.8)		(2.4)
Total Flyaway	(167.2)		(142.6)
Total Other Wpn Sys			(0.0)
Peculiar Support	(0.8)		(0.6)
Initial Spares	(6.5)		(0.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	<u>0.0</u>	<u>211.8</u>	<u>225.0</u>
Total FY 95 Base-Year \$	334.4	598.2	589.1
Escalation	80.5	79.1	63.6
Development (RDT&E)	(23.2)	(22.7)	(16.7)
Procurement	(57.3)	(35.5)	(28.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	<u>(0.0)</u>	<u>(20.9)</u>	<u>(18.3)</u>
Total Then Year \$	414.9	677.3	652.7
b. Quantity --			
Development (RDT&E)	0	N/A	0
Procurement	<u>103</u>	<u>N/A</u>	<u>102</u>
Total	103	N/A	102

The procurement quantity of 102 in 11b. represents 94 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.

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12. Unit Cost Summary:

	UCR Baseline (N/A)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BYS)	598.2	589.1	
(2) Quantity	103	102	
(3) Unit Cost	5.808	5.775	-0.57
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BYS)	153.7	151.3	
(2) Quantity	103	102	
(3) Unit Cost	1.492	1.483	-0.60

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	-7.9	-17.0	-	-	-24.9
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	+24.7	-30.0	-	-	-5.3
Estimating	+55.5	+1.6	-	+232.7	+289.8
Other	-	-	-	-	-
Support	-	+2.8	-	-	+2.8
Subtotal	+72.3	-42.6	-	+232.7	+262.4
Current Changes:					
Economic	-2.6	-7.1	-	-3.9	-13.6
Quantity	-	-1.4	-	-	-1.4
Schedule	-	+0.5	-	-	+0.5
Engineering	-	-	-	-	-
Estimating	-23.3	-0.8	-	+14.5	-9.6
Other	-	-	-	-	-
Support	-	-0.5	-	-	-0.5
Subtotal	-25.9	-9.3	-	+10.6	-24.6
Total Changes	+46.4	-51.9	-	+243.3	+237.8
Current Estimate	229.5	179.9	-	243.3	652.7

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

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	-27.6	-	-	-5.9
Estimating	+51.1	+5.0	-	+211.8	+267.9
Other	-	-	-	-	-
Support	-	+1.8	-	-	+1.8
Subtotal	+72.8	-20.8	-	+211.8	+263.8
Current Changes:					
Quantity	-	-1.3	-	-	-1.3
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-19.9	-0.7	-	+13.2	-7.4
Other	-	-	-	-	-
Support	-	-0.4	-	-	-0.4
Subtotal	-19.9	-2.4	-	+13.2	-9.1
Total Changes	+52.9	-23.2	-	+225.0	+254.7
Current Estimate	212.8	151.3	-	225.0	589.1

b. Current Change Explanations --

(Dollars in Millions) -
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-4.1
Economic adjustment for negative program change. (Economic)	N/A	+1.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.9	+0.9
Completion of Pre-EMD Contract/underrun (Estimating)	-3.0	-3.4
Revised FY97 contractor requirements (Estimating)	-1.3	-1.6
Reduction for Acquisition Stability Reserve Tax. (Estimating)	-1.6	-1.8
Reallocation of program funds (Estimating)	-8.2	-9.7
Reduction due to the impact of funding cuts (PBD 604). (Estimating)	-6.7	-7.7
RDT&E Subtotal	-19.9	-25.9

(2) Procurement

Revised escalation indices. (Economic)	N/A	-7.3
Economic adjustment for negative program change. (Economic)	N/A	+0.2

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

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
Quantity variance associated with decrease of 1 unit. (Quantity)		-1.3	-1.4
stretchout of annual procurement buy profile. (Schedule)		0.0	+0.5
Revised production estimate (Estimating)		-0.7	-0.8
Revised peculiar support estimate (Support)		-0.3	-0.4
Revised initial spares estimate (Support)		-0.1	-0.1
Procurement Subtotal		-2.4	-9.3
(3) <u>O&M</u>			
Revised escalation indices. (Economic)		N/A	-3.9
Adjustment for Current and Prior Inflation. (Estimating)		+0.9	+0.9
Revision/Update of program content (Estimating)		+3.8	+4.3
Update of DMBA profit/loss percentage and stock fund surcharge (Estimating)		+8.5	+9.3
O&M Subtotal		+13.2	+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	
4.03	-0.38	+0.03	--	-0.05	+2.75	--	+0.02	+2.37	6.40

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	-0.24	+0.01	--	-0.29	+0.01	--	+0.02	-0.49	1.76

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B-1B CMUP-Computer, December 31, 1997

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	APR 93	N/A	APR 93
Milestone II	N/A	JAN 95	N/A	JAN 95
Milestone III	N/A	JAN 01	N/A	AUG 01
FUE/IOC	N/A	JAN 03	N/A	JAN 02
Total Cost	N/A	414.9	N/A	652.7
Total Quantity	N/A	103	N/A	102
Prog Acq Unit Cost	N/A	4.03	N/A	6.4

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

The EMD contract with Boeing NAAD (F33657-96-C-2075) was awarded January 30, 1997. This contract includes effort for both the Computer Upgrade and Wind Correct Munition Dispenser Programs. This contract includes 3600 and 3400 funds.

a. RDT&E --

Computer/WCMD:

Boeing NAAD, Seal Beach, CA

F33657-96C-2075, CPAF

Award: January 30, 1997

Definitized: January 30, 1997

Initial Contract Price
Target Ceiling Qty

\$202.2 N/A

Current Contract Price
Target Ceiling Qty
\$207.1 N/A

Estimated Price At Completion
Contractor Program Manager
\$207.1 \$207.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/31/97)	\$4.1	\$-1.6
Net Change	\$4.1	\$-1.6

Explanation of Change:

The primary cause for the cost and schedule variances is staffing delays. Personnel have not transitioned from the CMUP-JDAM contract to the Computer Upgrade contract as planned. The variances have not adversely effected the contract. The preliminary design review (PDR) was completed on schedule in December 1997 and the critical design review (CDR) is on schedule for May 1998.

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B-1B CMUP-Computer, December 31, 1997

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 (FY00-05)</u>	<u>Total</u>
RDT&E	51.2	47.8	57.8	72.7	229.5
Procurement	-	-	-	179.9	179.9
MILCON	-	-	-	-	-
O&M	33.9	53.2	77.8	78.4	243.3
Total	85.1	101.0	135.6	331.0	652.7

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			14.3	14.3	14.8
1997			33.4	33.4	35.1
1998			44.8	44.8	47.8
1999			53.3	53.3	57.8
2000			47.2	47.2	52.0
2001			18.5	18.5	20.7
Subtotal			212.8	212.8	229.5

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					
2000	3	2.4	5.0	7.4	8.4
2001	17		18.5	19.1	21.9
2002	28		37.7	41.9	49.1
2003	29		41.2	42.8	51.3
2004	25		35.2	36.4	44.6
2005			2.6	3.7	4.6
2006					
2007					
2008					
Subtotal	102	2.4	140.2	151.3	179.9

FY 2005 procurement funds are for installation of the kits procured in FY

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B-1B CMUP-Computer, December 31, 1997

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

2004.

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				4.7	4.9
1997				27.6	29.0
1998				49.9	53.2
1999				71.9	77.8
2000				51.8	57.0
2001				19.1	21.4
Subtotal				225.0	243.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	102	2.4	353.0	589.1	652.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	
Procurement	102	

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 75.3

Percent Total Program Expended: 11.5%

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 approved 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.

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B-1B CMUP-Computer, December 31, 1997

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

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 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	30.3	70.3
Indirect Costs	N/A	N/A
Total	35.3	76.1

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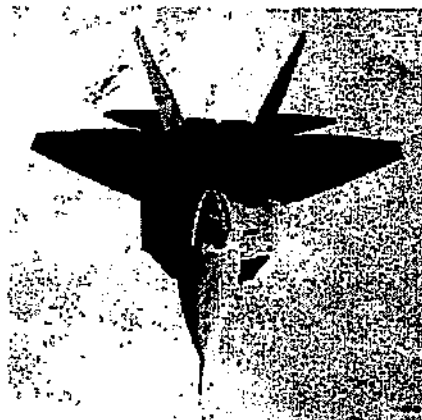
SELECTED ACQUISITION REPORT (RCS: DD-A&T(02A)823)

PROGRAM: F-22

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): F-22

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

F-22 SYSTEM PROGRAM OFFICE
AERONAUTICAL SYSTEMS CENTER
WRIGHT-PATTERSON AFB
DAYTON, OH 45433-7003

BGEN MICHAEL C. MUSHALA
Assigned: January 17, 1996
DSN 785-4167; COMM (937) 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, 643786

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

~~Classified by F-22, 19 Aug 96
Downgrade instructions:
Declassify on: X3~~

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~~Reason for Classification: E.O. 13526, Section 1.5(a)~~
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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) dated February 3, 1992.

Approved Program:

(U) DAE, Approved Acquisition Program Baseline (APB) dated February 18, 1998.

6. (U) Mission and Description:

(U) The F-22 program will develop the next-generation multi-mission 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; 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 affordability, performance, survivability, and reliability/maintainability. 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) Dem/Val 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 Apr 91, the Secretary of the Air Force announced the winners of the ATF 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, dated 1 Aug 91, authorizing F-22 EMD and long lead procurement for four pre-production verification (PPV) air vehicles. EMD contracts were

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~~Reason for Classification: E.O. 13526, Section 1.5(a)~~

~~Reason for Classification: E.O. 12958, Section 1.4(a)~~

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

awarded to LASC and P&W on 2 Aug 91.

A series of funding restructures (FY93-FY96) led to three rephases of the F-22 Program. The rephases 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 26 months and the production program slipped 32 months. The Air Vehicle Preliminary Design Review was completed on 30 Apr 93. Air Vehicle Critical Design Review was conducted on 20-24 Feb 95. In Jan 96, Lockheed Systems Company merged with Martin Marietta Corporation. As a result, LASC was renamed to Lockheed-Martin Aeronautical Systems (LMAS).

In May 96, the FY98-03 Air Force Program Objective Memorandum deferred B-Model (two-seat aircraft) development converting the B-Models to single-seat aircraft (A-models) and deleting one 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 EMD and production. The EMD and production program were restructured to reflect the findings of the JET. Specifically, the program deleted the remaining three PPVs (leaving 9 single-seat aircraft and 26 engines), adjusted Low Rate Initial Production (LRIP) Contract Award by 4 months, LRIP first delivery by 6 months, High Rate Production Contract Award by 9 months, adjusted several test milestone dates, and moved the Milestone III Decision 10 months. 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 \$19,391.1M (BY90S) or \$22,398.3M (TYS). The JET identified the potential for the production program cost to increase to \$61.2B (TYS). The revised production cost estimate incorporates a series of cost reduction initiatives to maintain the \$48.3B (TYS) program cost.

On 19 May 97, SECDEF submitted the Quadrennial Defense Review (QDR) Report, in compliance with the National Defense Authorization Act of 1996, Public Law 104-201. The QDR recommended slowing ramp-up to full rate production by procuring 12 fewer F-22s during LRIP, limiting maximum production rate to 36 aircraft per year versus the planned rate of 48 per year, and reducing procurement quantity from 438 to 339 aircraft.

First flight of aircraft 4001 took place on 7 Sep 97. The mission was very successful with the aircraft performing as predicted. LMAS accomplished another flight on 14 Sep 97 to gain additional flight test data. After the initial two flights in Sep 97, aircraft 4001 began planned modifications required to expand the allowable flight test program flight envelope. The Strength Summary and Operating Restrictions modifications were completed as scheduled on 11 Nov 97. The aircraft was loaded in a test fixture and structural loads calibration was completed on 22 Dec 97. Planning and preparations continue to initiate the flight test program at Edwards AFB. Aircraft 4001 was delivered to Edwards AFB on 5 Feb 98.

The final 1997/98 Affordability Analysis program cost estimate integrates prime

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~~Reason for Classification: E.O. 12958, Section 1.4(a)~~

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

and supplier Production Cost Reduction Plan savings to achieve a \$43B affordability target for a 339 production aircraft buy. During Jan/Feb 98, a joint Government/prime contractor team continued updating their assessment of the supplier quotes for additional substantiation of the program cost estimate in support of the Air Force budget submission. The assessment will be complete on 31 Mar 98.

The National Defense Authorization Act for FY98 capped the EMD program at \$18.688B and production at \$43.4B. SECAF advised the Congressional Defense Committees on 14 Jan 1998 that the USAF was adjusting the EMD cap upward and the production cap downward by \$352.6M for Out-of-Production Parts (OPP) redesign efforts. Additionally, per the Authorization language, the caps will require adjustments due to downward changes in inflation rate forecasts. The negative adjustments required for EMD total \$102.1M and \$2.1B for production. Accounting for OPP transfers and inflation, the adjusted cap for EMD is \$18,938.5M and \$40.9B for production. The \$102.1M for EMD is reflected in Section 13b of this report. The \$2.1B inflation estimate is based upon applying the new OSD rates against the capped QDR production program. The Act also requires the GAO review the F-22 EMD program and submit to Congress, no later than 15 March of each year, a report on the results of the review.

The F-22 Production Program remains executable given the Air Force remains committed to the funding requirements consistent with the Air Force and contractor MOU as submitted during the Program Objective Memorandum process. Funding requirements remain within the congressionally directed F-22 cap of \$43,400M.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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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 --

	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	APR 97	MAY 97	(Ch-1)
PPV Long Lead	JAN 95	N/A	N/A	
First Flight	SEP 95	MAY 97	SEP 97	(Ch-2)
DT&E				
Start	SEP 95	MAY 97	SEP 97	(Ch-2)
Complete	DEC 99	AUG 02	AUG 02	
PPV Contract Award	JAN 96	N/A	N/A	
Low Rate Initial Production (LRIP)	OCT 96	NOV 98	NOV 98	(Ch-3)
Decision				
Low Rate Production Contract Award	JAN 97	JUN 99	DEC 98	(Ch-4)
LRIP First Delivery	JAN 99	NOV 01	NOV 01	
Dedicated IOT&E				
Start	JUN 99	AUG 02	AUG 02	
Complete	SEP 99	FEB 03	FEB 03	
Milestone III	DEC 99	JUL 03	JUL 03	
High Rate Production Contract Award	JAN 01	NOV 03	NOV 03	
Initial Operational Capability	SEP 03	DEC 05	DEC 05	(Ch-5)
Organic Organizational Maintenance	SEP 03	N/A	N/A	
Capability				
Required Assets Availability (RAA)	OCT 02	SEP 05	SEP 05	(Ch-5)
Organic Depot Activation	SEP 03	N/A	N/A	

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

b. Current Change Explanations --

(U) (Ch-1) Engine Initial Flight Release (IFR)

From Apr 97 To May 97

Explanation: Foreign object damage to flight test engine 002 at Arnold Engineering Development Center (AEDC) in Nov 96 introduced unexpected delays in the qualification program which resulted in the May 97 IFR completion date. This milestone had been accomplished prior to the Jun 97 SAR but was overlooked.

(Ch-2) First Flight & DT&E Start

From Aug 97 To Sep 97

Explanation: First flight did not occur in May 97 due to fuel tank leaks, an APU overheat condition, two incidents of foreign object damage, and several other functional/ground test anomalies. First Flight occurred on 7 Sep 97. DT&E started coincident with First Flight in Sep 97.

(Ch-3) Low Rate Initial Production (LRIP) Decision

From N/A To Nov 98

Explanation: Initial LRIP DAB is in Nov 98 to gain authorization to establish full contract award for Lot 1 aircraft and associated engines. Additional incremental production decisions will be required to support future lot buys.

(Ch-4) Low Rate Production Contract Award

From Jun 99 To Dec 98

Explanation: Funds are available to the program with the FY99 appropriations and the program is contractually ready to make the award in Dec 98 at the same time as the approval of advance buy for Lot 2.

(Ch-5) Initial Operational Capability (IOC)

From Nov 04 To Dec 05

Required Assets Availability (RAA)

From May 04 To Sep 05

Explanation: The F-22 APB was approved on 18 Feb 98 which changed the above IOC and RAA dates. These were previously reported schedule breaches.

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~~Reason for Classification~~ ~~U. S. 12950, Section 1.5(a)~~

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10. (U) 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>
Combat Radius (at optimum altitude) (nm)				

(b)(1)

~~Reason for Classification~~ ~~U. S. 12950, Section 1.5(a)~~

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Reason for Classification: ~~SECRET~~

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

Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Ref.	Current Estimate
-------------------------------	--	---------------------------	---------------------

(b)(1)

(U) * Classification/control is beyond the level of this document.

(U) # Estimate reflects capability with a full primary mission load.

(U) == Current Estimate is better than threshold.

(U) ## A mission scenario was assumed for estimating purposes. The current estimate will be updated when the scenario is refined.

(U) 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. Current Change Explanations --

CH-1 Combat Radius Sub & Supersonic (nm)

(b)(1)

CH-2 Sortie Generation Rate Days 1 to 6 (# a/c)

(b)(1)

CH-3 Supercruise Vmax/Unit Air/Mil Power (Mn)

(b)(1)

(U) CH-4 Mean Time Between Maintenance (hrs)
From 3.2 to 3.1

(U) CH-5 Direct On-and-off Maintenance Personnel (spaces per a/c)
From 7.6 to 7.8

CH-6 Weight Empty (lbs)

Reason for Classification: ~~SECRET~~

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*** ~~SECRET~~ ***

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10b. ~~(S)~~ Performance Characteristics (Cont'd):

(b)(1)

~~(S)~~ Ch-7 Specific Fuel Consumption @ .9 Mach @45K @2850 lbs thrust

(b)(1)

~~(S)~~ Ch-8 Specific Fuel Consumption @ 1.5 Mach @45K @2890 lbs thrust

(b)(1)

(U) Explanation of Changes 1 through 8: All performance characteristics meet requirements with positive margins. These parameters are updated every 30 days and fluctuations are expected as results of the latest analysis data and modeling are incorporated.

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	16560.0	19614.9	19714.9
Procurement	43510.0	28286.6	28286.1
Airframe	(21485.7)		(14734.8)
Engines	(5993.7)		(3776.6)
Avionics	(9250.6)		(3473.4)
Total Nonrecurring			(712.8)
Total Flyaway	(36730.0)		(22697.6)
Other Weapon Systems	(1032.1)		(916.3)
Peculiar Support	(1896.1)		(3093.2)
Initial Spares	(3851.8)		(1579.0)
Construction (MILCON)	200.0	139.2	137.8
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year S	60270.0	48040.7	48138.8
Escalation	38839.0	17892.5	15667.7
Development (RDT&E)	(2969.0)	(3067.5)	(2949.2)
Procurement	(35762.0)	(14750.3)	(12653.8)
Construction (MILCON)	(108.0)	(74.7)	(64.7)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year S	99109.0	65933.2	63806.5
b. (U) Quantity --			
Development (RDT&E)	0	2	2
Procurement	348	339	339
Total	348	341	341

(U) Note: The numbers above reflect the FY99 President's Budget position.

The current Low Rate Initial Production (LRIP) quantity is 58 aircraft. The previous development quantity was 9 articles all of which were non-fully

~~Reason for Classification: 25 USC 552(a)(1) Exemption 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100~~

~~Reason for Classification: E.O. 12958, Section 1.4(a)~~

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

configured units. The Defense Acquisition Board approved restructure reflects 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.

Successful execution of the EMD and Production programs is contingent upon budget adjustments during the FY00 budget formulation process. These adjustments will be made under the cost cap. Section 16b describes in detail the required adjustments.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (FEB 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BYS)	48040.7	48138.8	
(2) Quantity	341	341	
(3) Unit Cost	140.882	141.170	+0.20
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BYS)	28286.6	28286.1	
(2) Quantity	339	339	
(3) Unit Cost	83.441	83.440	0.00

(U) Note: The numbers above reflect the FY99 President's Budget position.

The current Low Rate Initial Production (LRIP) quantity is 58 aircraft. The previous development quantity was 9 articles all of which were non-fully configured units. The Defense Acquisition Board approved restructure reflects 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.

Successful execution of the EMD and Production programs is contingent upon budget adjustments during the FY00 budget formulation process. These adjustments will be made under the cost cap. Section 16b describes in detail the required adjustments.

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

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	-541.8	-8258.1	-33.1	-8833.0
Quantity	-520.9	-22012.8	-	-22533.7
Schedule	+1870.2	+3748.2	-	+5618.4
Engineering	+99.8	-200.3	+5.0	-95.5
Estimating	+1959.6	-1529.7	-66.5	+363.4
Other	-	-	-	-
Support	+2.4	-2766.0	-	-2763.6
Subtotal	+2869.3	-31018.7	-94.6	-28244.0
Current Changes:				
Economic	-145.2	-501.8	-11.6	-658.6
Quantity	-	-10101.3	-	-10101.3
Schedule	-	+595.4	-	+595.4
Engineering	-	+182.4	-	+182.4
Estimating	+411.0	+2482.8	+0.7	+2894.5
Other	-	-	-	-
Support	-	+29.1	-	+29.1
Subtotal	+265.8	-7313.4	-10.9	-7058.5
Total Changes	+3135.1	-38332.1	-105.5	-35302.5
Current Estimate	22664.1	40939.9	202.5	63806.5

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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	-427.1	-10081.2	-	-10508.3
Schedule	+1415.9	+101.1	-	+1517.0
Engineering	+79.1	-113.6	+4.0	-30.5
Estimating	+1717.9	-557.3	-64.9	+1095.7
Other	-	-	-	-
Support	+45.3	-1218.1	-	-1172.8
Subtotal	+2831.1	-11869.1	-60.9	-9098.9
Current Changes:				
Quantity	-	-5143.4	-	-5143.4
Schedule	-	-	-	-
Engineering	-	+166.5	-	+166.5
Estimating	+323.8	+1595.5	-1.3	+1918.0
Other	-	-	-	-
Support	-	+26.6	-	+26.6
Subtotal	+323.8	-3354.8	-1.3	-3032.3
Total Changes	+3154.9	-15223.9	-62.2	-12131.2
Current Estimate	19714.9	28286.1	137.8	48138.8

b. (U) Current Change Explanations --

(Dollars in Millions)

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

Revised escalation indices. (Economic)	N/A	-145.2
Adjustment for Current and Prior Inflation. (Estimating)	+35.6	+43.1
Realigned Out-of-Production Parts (OPP) from the procurement appropriation (Estimating)	+277.5	+352.6
Added lab infrastructure costs through FY 03 (Estimating)	+128.4	+159.6
Congressional general reductions and miscellaneous adjustments (Estimating)	-76.7	-94.2
Adjustment due to SBIR (Estimating)	-41.0	-50.1
RDT&E Subtotal	+323.8	+265.8

(2) Procurement

Revised escalation indices. (Economic)	N/A	-2366.8
Economic adjustment for quantity change (Economic)	N/A	+1865.0
Reduced quantity from 438 aircraft to 339 aircraft. (Quantity)	-5143.4	-10101.3

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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>
Revised annual procurement buy profile. (Schedule)	0.0	+595.4
Allocation to engineering due to quantity change (Engineering)	+166.5	+182.4
Allocation to estimating due to quantity change (Estimating)	+816.8	+1393.3
Adjustment for Current and Prior Inflation. (Estimating)	+2.3	+2.8
Revised estimate of Block 4 requirements (Estimating)	+198.0	+277.4
Realigned Out-of-Production Parts (OPP) from Procurement appropriation to EMD appropriation (Estimating)	-277.5	-352.6
Incorporated impact of production inefficiencies due to maximum production rate changing from 48 to 36 aircraft per year (Estimating)	+855.9	+1161.9
Reduced Initial Spares estimate to reflect procurement quantity reduction of 99 aircraft (Support)	-157.9	-234.1
Revised estimate of Data, Training, and Support requirements (Support)	+161.9	+223.6
Change in Other Weapon Systems (Support)	+22.6	+39.6
Procurement Subtotal	-3354.8	-7313.4

(3) MILCON

Revised escalation indices. (Economic)	N/A	-11.6
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Revised estimate based on results of three operational site surveys (Estimating)	-1.4	+0.6
MILCON Subtotal	-1.3	-10.9

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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	-27.83	+42.00	+18.22	+0.25	+9.55	--	-8.02	+34.17	187.12

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	-25.84	+16.78	+12.81	-0.05	+2.81	--	-8.07	-1.56	120.77

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	TBD
Total Cost	3282	99109	N/A	63806.5
Total Quantity	N/A	648	N/A	341
Prog Acq Unit Cost	N/A	152.95	N/A	187.12

(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 --		Initial Contract Price		
(U) <u>F-22 EMD (LMAS):</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LOCKHEED MARTIN CORP, Marietta, GA				
F33657-91-C-0006, CPAF		\$9550.1	N/A	11
Award: August 2, 1991				
Definitized: August 2, 1991				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$13579.7	N/A	9	\$13712.8	\$13712.8
		<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances		\$10.0	\$-15.0	
Cumulative Variances To Date (12/31/97)		\$-3.9	\$-54.8	
Net Change		\$-13.9	\$-39.8	

Explanation of Change:

(U) The \$-13.9M net change in the cost variance through December 1997 represents a negative change since the June 1997 Selected Acquisition Report (SAR). 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 and an unfavorable \$394.8M which existed prior to the Mar 97 cost growth baseline implementation. This note will appear in all future submissions of the SAR to maintain its visibility.

The cumulative cost variance of \$-3.9M is largely driven by the negative variance in Air Vehicle which has overruns in airframe and final assembly, avionics and utilities and subsystems.

The \$-39.8M net change in the schedule variance through December 1997 represents a negative change since the June 1997 SAR. Note 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 and an unfavorable \$177.4M which existed prior to the Mar 97 cost growth baseline implementation. This note will appear in all future submissions of the SAR to maintain its visibility.

The cumulative schedule variance to date of \$-54.8M is driven by unfavorable performance within avionics, airframe and final assembly and utilities and subsystems. The avionics schedule variance is due to hardware/software integration, test problems and lower productivity in lines of code development than anticipated. The airframe schedule variance is due to producibility problems resulting in delayed deliveries of the aft booms and wing side of body castings. The utilities and subsystems schedule variance is due to armament quality test delays due to parts rework and auxiliary power system redesign problems.

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

(U) <u>EMD ENGINE (PEW):</u>			Initial Contract Price		
PRATT&WHITNEY - GOVT, WEST PALM BEACH FL			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F33657-91-C-0007, CPAF			\$1375.1	N/A	33
Award: August 2, 1991					
Definitized: August 2, 1991					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$2369.1	N/A	26	\$2408.0	\$2408.0	
			<u>Cost Variance Schedule Variance</u>		
Previous Cumulative Variances			\$2.8	\$-4.9	
Cumulative Variances To Date (11/30/97)			<u>\$-1.9</u>	<u>\$-13.2</u>	
Net Change			\$-4.7	\$-8.3	

Explanation of Change:

(U) (U) The Performance Measurement Baseline was updated to reflect the F119 EMD Restructure which was placed on contract on 25 Aug 97.

Through December 1997, the cumulative unfavorable cost variance was -\$1.9M (-0.1%) which is a decline of -\$4.7M from the June 1997 SAR. This variance does not include an unfavorable \$41.3M cost variance which existed prior to the August 1995 cost growth baseline implementation or an unfavorable \$34.8M cost variance which existed prior to the FY97 program restructure. The cumulative variance drivers include the fan, compressor, engine test, controls & diagnostics, and nozzle.

Through December 1997, the cumulative unfavorable schedule variance was -\$13.2M (-0.8%) which is a decline of -\$8.3M from the June 1997 SAR. This variance does not include an unfavorable \$21.4M schedule variance which existed prior to the August 1995 cost growth baseline implementation or an unfavorable \$11.2M schedule variance which existed prior to the FY97 program restructure. The cumulative variance drivers are the engine test, controls & diagnostics, nozzle, test facilities, and low pressure turbine.

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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 (FY83-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-15)</u>	<u>Total</u>
ROT&E	15890.7	1958.9	1582.2	3232.3	22664.1
Procurement	7.5	73.2	813.8	40045.4	40939.9
MILCON	21.1	-	-	181.4	202.5
O&M	-	-	-	-	-
Total	15919.3	2032.1	2396.0	43459.1	63806.5

(U) Successful execution of the EMD and Production programs is contingent upon budget adjustments during the FY00 budget formulation process. These adjustments will be made under the cost cap.

b. Annual Summary -- Advanced Tactical 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
1992				1463.4	1606.0
1993				1717.4	1925.2
1994				1806.0	2058.8
1995				1962.7	2280.6
1996				1819.3	2154.1
1997				1568.9	1889.0
1998				1603.0	1958.9
1999				1274.9	1582.2
2000				955.2	1204.5
2001				775.7	995.2
2002				621.1	811.1
2003				166.4	221.5

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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 \$
Subtotal	2			19714.9	22664.1

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				6.1	7.5
1998				58.7	73.2
1999	2	65.4	411.0	641.3	813.8
2000	6	63.3	939.3	1197.2	1546.8
2001	10	45.8	1398.7	1830.9	2409.4
2002	16	150.7	1804.4	2310.5	3100.7
2003	24	164.5	2154.0	3110.5	4264.9
2004	36	61.1	2540.7	3015.3	4224.4
2005	36	29.9	1997.6	2657.3	3805.2
2006	36	21.3	1940.1	2603.1	3808.4
2007	36	26.2	1868.2	2480.7	3711.1
2008	36	22.8	1841.7	2591.0	3961.6
2009	36	23.0	1967.8	2263.9	3536.2
2010	36	20.0	1991.1	2186.9	3492.5
2011	29	18.9	1130.1	1193.0	1946.9
2012				58.1	96.9
2013				46.1	78.5
2014				25.6	44.6
2015				9.9	17.7
Subtotal	339	712.9	21984.7	28286.1	40939.9

(U) 1.) The F-22 EMD program is currently Congressionally capped at \$18,688M. SECAF advised the Congressional Defense Committees on 14 Jan 1998 that the USAF was adjusting the cap upward by \$353M for OPP redesign efforts. An additional adjustment of \$102.1M for negative inflation adjusts the cap to \$18,938.5.

2.) The F-22 Program remains executable given the Air Force remains committed to funding requirements consistent with the Air Force and contractor MOU as submitted during the Program Objective Memorandum process. Funding requirements remain within the congressionally directed cap of \$43,400M. SECAF advised the Congressional Defense Committees on 14 Jan 1998 that the USAF was adjusting the cap downward by \$353M for OPP

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

redesign efforts. An additional adjustment of \$2.1B for negative inflation adjustments adjusts the cap to \$40,940M.

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					
2000				6.2	7.9
2001					
2002					
2003					
2004					
2005					
2006				25.4	36.8
2007				20.2	29.9
2008				26.5	40.1
2009				7.8	12.1
2010				18.7	29.6
2011				15.5	25.0
Subtotal				137.8	202.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	341	712.9	21984.7	48138.8	63806.8

17. (U) Delivery/Expenditure Information:

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

(U) Percent Total Program Quantities Delivered: 0.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 15505

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

(U) Percent Total Program Expended: 24.3%

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 restructure as of 31 December 1997.

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. 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 was 339. Total aircraft buy for the F-22 O&S estimate is 283, the number of PAI aircraft.

The F-15C is antecedent to the F-22; both are two engine air-to-air fighters with similar operational concepts. The F-15C estimate was updated based on the latest fleetwide data for FY96 from Visibility and Management of Operating and Support Costs. For purposes of this cost comparison, the F-15C concept of operation is a 24 aircraft fighter squadron with 297 PAI and a fleetwide utilization rate of 100,664 flying hours.

The F-22 estimate was based on a combination of AFI 65-503 Cost and Planning Factors and information provided in the 1997/98 Affordability Analysis. The F-22 cost per squadron has increased from the 1996 SAR estimate. There are two primary reasons for the increase. The reduction in total number of aircraft means fewer flying hours over which to spread the O&S costs. Also, a much more detailed analysis of software maintenance and sustaining engineering tasks caused an increase in the Sustaining Support category. There is no planned intermediate maintenance for the F-22 based on 2-Level maintenance concept.

The O&S costs are revised to reflect a refined basis of estimate and result in a total cost of ownership reduction for the F-22 program. The basis of estimate was changed to reflect the reduced aircraft quantity from QDR (438 to 339), increased fuel costs, and realigned time phasing of contractor support and the transition to an organic support posture.

The O&S costs increased 18 percent with 44 percent of that increase associated with reduced aircraft quantity and increased fuel costs. The remainder is associated with realigned time phasing of contractor support and the transition to an organic support posture. These costs are offset by three elements in production; reduction in duplicate tooling, reduction in warranty costs, and reduction in spares pipeline times. The net effect is a \$440M (BY90) total program cost savings.

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

Explanations for element increases:

Unit Level Consumption - \$0.10 per gallon increase in JP-8

Depot Maintenance - Heavy maintenance detailed task buildup for depot personnel by task. Also includes impact of low observable maintenance to F-22.

Contractor Support - Increased definition of contractor support to Training systems to include repair of Training systems.

Sustaining Support - Sustaining engineering and software maintenance estimates increased. Affordability Analysis 97/98 provided a detailed task/manhour buildup for these tasks. Previous estimates were parametric.

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	15.0	26.2
Unit Level Consumption	23.4	35.7
Intermediate Maintenance	0.0	0.0
Depot Maintenance	3.6	8.8
Contractor Support	5.7	4.2
Sustaining Support	12.5	5.8
Indirect Costs	6.2	25.3
Total	66.4	106.0

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AF-24 TITAN IV

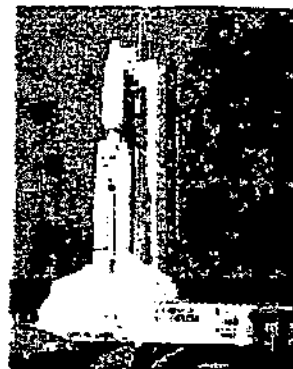
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)
PROGRAM: Titan IV

AS OF DATE: December 31, 1997

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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 michael.welborn@losangeles.af.mil

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

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AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

SAF/PAS :

98--0271

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98-C-0711

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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 did fly with Solid Rocket Motor Upgrades (SRMUs) and new avionics, both of which increase reliability, producibility, and performance for larger payload requirements. 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 13,350-pound payload into Geosynchronous Earth Orbit (GEO). When configured with No Upper Stage (NUS) and SRMU, Titan IVB can place a 40,000-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 IV's with Centaur upper stages was awarded in February 1985. As a result of the January 1986 Space Shuttle accident, the Department of Defense (DoD) began a recovery plan which included the acquisition of 13 additional Titan IV's. 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 41-vehicle program was definitized in December 1989. The Titan IV was designated a Defense Acquisition Board program in July 1991. 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 July 1992 to provide payload integration capability through FY97. The Titan Master Contract Plan, approved by the Acquisition Strategy Panel in March 1995, 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 April 1991, an explosion occurred during the static firing test of the first Solid Rocket Motor Upgrade (SRMU) Qualification motor. SRMU production began again in

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7. Executive Summary (Cont'd):

November 1993. A Titan IVA launched from Vandenberg Air Force Base (VAFB) on August 2, 1993 experienced a catastrophic failure caused by a burn through on one of the SRM segments. The program successfully recovered with the first launch of a Titan IVA/Centaur carrying the Military Strategic and Tactical Relay (MILSTAR) satellite in February 1994, the first launch from Launch Complex 40 at CCAS. Three contracts in the Titan Contracts Master Plan were awarded in 1996 (-0001 Production, -0012 Launch Base Operations, and -0035 Research and Development). The second phase of the -0019 contract close-out was completed on December 23, 1996. On July 26, 1996, three Undefined Contract Actions (UCAs) were issued to implement the Air Force Acquisition Executive (AFAE) decision to buy out the Titan program at 41 vehicles, thereby accelerating the transfer of launches to the Evolved Expendable Launch Vehicle (EELV). In FY 97, Air Force Space Command conducted an operational effectiveness assessment which led to the deletion of the Centaur Processing Facility. United Technologies (Chemical Systems Division) completed production of the last SRM in September 1996 and Alliant Techsystems achieved Initial Launch Capability of the SRMU in July 1996. In December 1996 the Atlas launch operations were merged into the Titan launch operations -0012 contract to gain further program efficiencies.

For 1997, the program has continued the Titan program completion contract actions initiated by UCAs in 1996. In early 1997, we received an estimate from Lockheed Martin for \$3.6B to buy out the program. On February 25, 1997, the AFAE directed the program office to initiate a separate trade study and contractual action to limit the buy out to unknown vendor obsolescence, unknown environmental compliance, program close-out, and deletion of the shelf life storage activity matrix. In addition, the study evaluated the acceleration of the remaining launches to conclude in FY 04 and transfer of one national payload to the EELV. The estimated net cost avoidance was \$1.8B against the original \$3.6B estimate for buy out of the 41-vehicle program. On June 10, 1997, the AFAE approved our 40-vehicle program (39 launches through FY 02 with an option for the 40th in FY 04. As a result of numerous changes in piece part and final assembly vendors for the SRMU nozzle, Air Force Program Executive Officer for Space directed the 40-Completion effort contain a full-scale static firing of an SRMU to requalify the nozzle manufacturer for the procurement of the final SRMU shipsets. The request for proposal (RFP) for the 40 Completion effort was released on July 26, 1997, and the original five month UCA was superseded by a seventeen month UCA on November 1, 1997. The proposal was received for an Not To Exceed (NTE) value of \$1.835B from Lockheed Martin on December 22, 1997. Contract award is planned for March 31, 1998. Further studies of national user requirements may reduce the requirement to only 39 launches through FY 02 only.

On September 29, 1997, a Memorandum of Agreement (MOA) between the program office, the National Reconnaissance Office (NRO) Launch Program Office, and Air Force Space Command Operations Directorate on management of the Unified Payload Integration (UPI) follow-on contract was signed. The MOA established joint teams with responsibility and authority for all payload/booster/launch base facility integration issues impacting the UPI contract. On October 1, 1997, the follow-on UPI contract was awarded for continuation of payload integration

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Titan IV, December 31, 1997

7. Executive Summary (Cont'd):

of Titan II and Titan IV payloads. An Integrated Baseline Review (IBR) of the -0001, -0012, and -0035 contracts was conducted in March 1997.

The cumulative delays and cost impacts caused by the hardware problems in July 1997 were significant. Lockheed Martin responded to schedule uncertainty by updating their projected launch schedules to reflect less optimism, but not supportive of satellite launch dates. These schedules were unacceptable to the program office, the satellite community and Air Force Space Command. If they do not develop more robust launch capability, with additional crews and subsystem spares to recover from unknown future hardware issues, we will face slips to future Defense Satellite Program (DSP), MILSTAR, and NRO missions. We are working with Lockheed Martin to develop an executable long term manifest suitable to the government.

As of December 31, 1997, 22 Titan IV's (of 23 attempts) have been successfully launched, raising the demonstrated reliability performance for the Titan IV to 96%. Four successful Titan IV launches occurred since the last report, ending with the successful launch of three Titan IV's in 23 days. This set a new Air Force heavy lift throughput record, breaking the previous record of 42 days set in 1976. The Titan Team achieved the most significant milestone in Air Force heavy-lift history with the successful first launch of the upgraded Titan IVB on February 23, 1997. This launch marked the first use of the SRMU, the upgraded flight avionics, and a new ground computer system. In April 1997, the Titan IVA-12 mission was changed to a Titan IVB configuration, eliminating the risk of a unique Titan configuration (Titan IVA core with SRMUs). Two Titan IVA vehicles (A-18 and A-17) carrying two National Reconnaissance Office (NRO) satellites were delayed three months due to several hardware failures. Once resolved, these missions, along with the second Titan IVB vehicle launching the NASA Cassini spacecraft, culminated in the final three launches for 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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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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 --

	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

Space Launch Complex - 40 (SLC-40) is referred to as Launch Complex - 40 (LC-40) throughout this document.

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
System Reliability (%)	98	98 / 96	96	97	(Ch-1)
Payload to Geosynchronous Orbit (k-lbs) (Titan IV/Centaur)					
SRM	10.0	10.0 / 10.0	10.35	10.35	(Ch-2)
SRMU	N/A	11.5 / 11.5	13.25	13.25	(Ch-2)
Payload to Transfer					

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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>	
SRMU	N/A	47.0 / 47.0	49.1	49.1	(Ch-3)
Payload to Low Earth Polar Orbit (k-lbs) (Titan IV/NUS)					
SRM	N/A	31.1 / 31.1	31.7	31.7	(Ch-4)
SRMU	N/A	38.8 / 38.8	40.0	40.0	(Ch-4)

b. Current Change Explanations --

(Ch-1) Due to four successful launches during the December 1997 SAR reporting period, Titan IV demonstrated performance for system reliability has been increased from 95% to 96%. (22 of 23 launches have been successful)

(Ch-2) Payload to geosynchronous orbit performance (k-lbs) has increased to reflect actual performance versus the specifications that were previously reported.

(Ch-3) Payload to transfer orbit performance (k-lbs) has been changed to reflect actual performance.

(Ch-4) Payload to low earth polar orbit performance (k-lbs) has been upgraded to reflect actual performance.

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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)	579.7	3194.0	2826.8
Procurement	1570.8	19868.4	11297.8
Flyaway	(1106.6)		(9887.1)
Other Wpn Sys	(464.2)		(1410.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	105.3	93.0
Acquisition O&M	0.0	0.0	0.0
Total FY 85 Base-Year \$	2150.5	23167.7	14217.6
Escalation	378.7	14545.4	4612.8
Development (RDT&E)	(61.4)	(1252.3)	(662.0)
Procurement	(317.3)	(13267.4)	(3922.7)
Construction (MILCON)	(0.0)	(25.7)	(28.1)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2529.2	37713.1	18830.4
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	10	65	40
Total	10	65	40

Note 1: Per the Secretary of the Air Force/Acquisition (SAF/AQ) decision on June 10, 1997, the Titan IV program quantity was reduced from 41 to 40 vehicles.

Note 2: Vehicle Quantity History:

DEC 85 SAR	DEC 86 SAR	DEC 88 SAR	Aug 94 DAB	DEC 94 SAR	DEC 95 SAR
10	23	57	65	47	46
DEC 96 SAR	DEC 97 SAR				
41	40				

c. Foreign Military Sales --
None.

d. Nuclear Costs --
None

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12. Unit Cost Summary:

	UCR Baseline (MAY 94 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 85 BYS)	23167.7	14217.6	
(2) Quantity	65	40	
(3) Unit Cost	356.426	355.440	-0.28
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 85 BYS)	19868.4	11297.8	
(2) Quantity	65	40	
(3) Unit Cost	305.668	282.445	-7.60

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	-70.3	-1028.9	+7.0	-1092.2
Quantity	-237.3	+1707.1	-	+1469.8
Schedule	+795.1	+4478.5	+5.0	+5278.6
Engineering	+894.8	-3630.6	-	-2735.8
Estimating	+1120.9	+12138.7	+109.1	+13368.7
Other	-	-	-	-
Support	+80.9	+2281.6	-	+2362.5
Subtotal	+2584.1	+15946.4	+121.1	+18651.6
Current Changes:				
Economic	-10.3	-176.2	-	-186.5
Quantity	-	-545.1	-	-545.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+309.2	-359.7	-	-50.5
Other	-	-	-	-
Support	-35.3	-1533.0	-	-1568.3
Subtotal	+263.6	-2614.0	-	-2350.4
Total Changes	+2847.7	+13332.4	+121.1	+16301.2
Current Estimate	3488.8	15220.5	121.1	18830.4

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	579.7	1570.8	-	2150.5
Previous Changes:				
Quantity	-138.8	+2632.1	-	+2493.3
Schedule	+377.7	+1553.1	-	+1930.8
Engineering	+651.4	-2288.6	-	-1637.2
Estimating	+885.2	+7541.3	+93.0	+8519.5
Other	-	-	-	-
Support	+228.1	+1908.5	-	+2136.6
Subtotal	+2003.6	+11346.4	+93.0	+13443.0
Current Changes:				
Quantity	-	-353.5	-	-353.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+275.8	-303.9	-	-28.1
Other	-	-	-	-
Support	-32.3	-962.0	-	-994.3
Subtotal	+243.5	-1619.4	-	-1375.9
Total Changes	+2247.1	+9727.0	+93.0	+12067.1
Current Estimate	2826.8	11297.8	93.0	14217.6

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices (Economic)	N/A	-10.3
Reduction of one SRMU re-qualification test firing. (Estimating)	-43.8	-62.8
Revised engineering and analysis estimate related to the elimination of one vehicle of Mission Integration. (Estimating)	-14.3	-18.1
Reduction in System Engineering/Program Management (SEPM) to account for 1 less SRMU re-qualification test firing. (Estimating)	-40.8	-63.8
Transferred National Reconnaissance Office (NRO) funds to RDT&E as a result of recent visibility into previously classified budget data (Refer to corresponding reduction in Procurement). (Estimating)	+392.4	+484.6
Transferred Aerospace and Program Office Support costs to Procurement. (Estimating)	-23.4	-38.8
Revised the estimate for closeout on the Titan IV 40-vehicle completion program. (Estimating)	+5.7	+8.1

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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>
Revised the estimate to reflect fewer Facilities and Aerospace Ground Equipment (AGE) projects at each launch site. (Support)	-32.3	-35.3
RDT&E Subtotal	<u>+243.5</u>	<u>+263.6</u>
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-176.2
Revised the estimate for the elimination of 1 vehicle of Mission Integration. (Quantity)	-34.5	-52.8
Revised the hardware and SEPM estimate to reflect lower costs on the new hardware contract. This revised estimate also effects revaluation of costs on the old hardware contract. (Quantity)	-319.0	-492.3
Adjustment for current and prior year escalation. (Estimating)	+18.6	+26.1
Transferred NRO RDT&E funds from Procurement as a result of recent visibility into previously classified budget data (Refer to corresponding increase in RDT&E funding) (Estimating)	-377.3	-484.6
Revised the Program Office cost estimate at complete for the hardware (-0001) contract and the launch operations (-0012) contract. (Estimating)	-118.6	-176.5
Revised the estimate for contract closeout. (Estimating)	+150.7	+236.5
Transferred the Aerospace and Program Office support costs from RDT&E. (Estimating)	+22.7	+38.8
Reduced operational duration of the Titan IV program from FY05 to FY04. (Support)	-192.4	-327.8
Descope of the 40-vehicle completion program, removal of environmental clauses, and the assumption of a follow-on procurement program. (Support)	-769.6	-1205.2
Procurement Subtotal	<u>-1619.4</u>	<u>-2614.0</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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
252.92	-31.97	-166.57	+131.97	-68.40	+332.96	--	+19.85	+217.84	470.76

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	
188.81	-30.13	-112.55	+111.96	-90.77	+294.48	--	+18.71	+191.70	380.51

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	18830.4
Total Quantity	N/A	10	N/A	40
Prog Acq Unit Cost	N/A	252.92	N/A	470.76

Titan IV had no acquisition phase milestones.

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

a. RDT&E --

Program R & D:

LOCKHEED MARTIN, DENVER, CO

F04701-96-C-0035, CPFF/AF

Award: July 1, 1996

Definitized: July 1, 1996

Initial Contract Price
Target Ceiling Qty

\$62.3 N/A 0

Current Contract Price

Target Ceiling Qty
\$84.3 N/A 0

Estimated Price At Completion
Contractor Program Manager

\$161.9 \$161.9

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.1	\$-2.0
Cumulative Variances To Date (12/31/97)	<u>\$5.2</u>	<u>\$-0.5</u>
Net Change	\$2.1	\$1.5

Explanation of Change:

The current contract target price decreased from the last due SAR to an error in the target price value reported in the 1996 SAR. The 1996 SAR should have been \$78.0M, and not \$100.2M. The net increase from the 1996 SAR is \$6.3M. During 1997 the following requirements were definitized: 1)Titan program studies, 2) Phase II mod adjustment, and 3)thermal protection system. The difference between the current target price and the estimated price at completion is due to authorized but not definitized contractual action associated with the 17 month procurement for the 40 vehicle completion program. The net change in the cumulative schedule variance is a result of Boeing's air conditioning unit, part of the thermal protection system, being completed in the payload fairing WBS. The net change in the cumulative cost variance is primarily due to less than planned Turbo Pump Assembly effort in the Aerojet subcontract.

b. Procurement --
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>Otv</u>
\$673.5	N/A	0

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Otv</u>
\$524.0	N/A	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$524.0	\$524.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$46.2	\$-4.0
Cumulative Variances To Date (09/30/97)	<u>\$63.3</u>	<u>\$0.0</u>
Net Change	\$17.1	\$4.0

Explanation of Change:

The reduction in target price and estimated price at completion are due to mission integration work transferred to the new follow on F04701-98-C-0005 contract. This contract's period of performance was completed September 30, 1997, and will no longer be reported in the SAR. The positive net change in cumulative cost variance of \$17.1M is from less than planned engineering manpower for mission integration. The positive net change in cumulative schedule variance of \$4.0M is from re-baselining to realistic payload mission schedules.

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15. Contract Information (Cont'd):

<u>Launch Base Ops:</u>			Initial Contract Price		
LOCKHEED MARTIN, DENVER, CO			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
FO4701-95-C-0012, CPAF/FF			\$1538.0	N/A	0
Award: April 1, 1996					
Definitized: April 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>
\$1654.2	N/A	0	\$1681.8	\$1648.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.6	\$-5.0
Cumulative Variances To Date (12/31/97)	\$-1.5	\$-8.9
Net Change	\$-3.1	\$-3.9

Explanation of Change:

The current contract target price decreased \$14.2M from the 1996 SAR due to an error in the target price value reported in 1996. The 1996 SAR target price value should have been \$1,634.7M, not \$1668.4M. The net increase from the 1996 SAR is \$19.5M. During 1997 the following requirements were definitized that resulted in a target price of \$1654.2M: 1)FY97 earned Award fee, 2)K-13 acceleration, and 3)LOFO phased II modification. The program manager projects a price at completion lower than the contractor value due to favorable manpower levels and organizational synergies. The net change in cumulative schedule variance is from delays and longer work weeks associated with four missions at CCAS, and one at VAFB. The net change in cumulative cost variance is from unplanned work for flow control valve problems encountered during launch of A-17 & A-18, and premium time expended for: 1)SRMU actuator fix, 2)Centaur fuel leak, and 3)Cassini support to maintain critical launch window.

<u>Unified Payload Int.(UPI):</u>			Initial Contract Price		
LOCKHEED MARTIN, DENVER, CO			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
FO4701-98-C-0005, CPAF			\$283.4	N/A	0
Award: October 1, 1997					
Definitized: October 1, 1997					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$283.4	N/A	0	\$283.4	\$283.4

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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 (12/31/97)	<u>\$0.4</u>	<u>\$-0.7</u>
Net Change	\$0.4	\$-0.7

Explanation of Change:

This is the first time this contract has been reported. The Contractor's Estimated Price At Completion of \$283.4M is the same as the Program Managers' since this contract is relatively new with only two months of Cost Performance Report (CPR) data. The positive cumulative cost variance is due to Cape Canaveral support, integration & engineering support, and mission support that has not started according to plan. Negative cumulative schedule variance is due to launch slips and activities starting at a slower pace than planned. An Integrated Baseline Review (IBR) on this contract is scheduled for May 1998.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>Production:</u> Lockheed Martin, Denver, CO F04701-96-C-0001, FPIF Award: April 1, 1996 Definitized: April 1, 1996	\$568.9	\$589.6	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>
\$1851.4	\$2142.1	0	\$1950.5	\$1918.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$10.4	\$-20.1
Cumulative Variances To Date (12/31/97)	<u>\$50.2</u>	<u>\$-4.9</u>
Net Change	\$39.8	\$15.2

Explanation of Change:

The current contract target price decreased approximately \$2.4M from the last SAR due to an error in the target price value reported in the 1996 SAR. The price was reported at \$1,853.8M. The target price value should have been reported at \$1,799.7M. The net increase from the 1996 SAR is \$51.7M. The following authorized requirements were definitized during 1997 accounting for the net increase: 1) 1997 earned award fee, 2) K-13 acceleration, 3) SRMU long lead procurement, and 4) TIVB-36 mission unique requirements. The difference between the target price and the ceiling price is the authorized, undefinitized requirements associated with the 17 month procurement effort for 40 vehicle completion program. The program manager projects an estimated price at completion lower than the contractor value due to organizational synergies that have resulted in cumulative favorable cost variance. The net change in the cumulative schedule variance is a result of the core vehicle material inventory replan and completion of solid rocket motor activities. The net change in the

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15. Contract Information (Cont'd):

cumulative cost variance is due to favorable manpower performance that resulted from organizational synergies.

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

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 (FY00-05)</u>	<u>Total</u>
RDT&E	3163.1	74.5	95.7	155.5	3488.8
Procurement	10918.5	883.9	925.4	2492.7	15220.5
MILCON	121.1	-	-	-	121.1
O&M	-	-	-	-	-
Total	14202.7	958.4	1021.1	2648.2	18830.4

b. Annual Summary -- TITAN IV (ELV)

Appropriation: 3600 Research, Development, Test + Eval, AF

<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>
1985				55.7	56.8
1986				237.3	248.0
1987				139.8	152.7
1988				392.1	439.6
1989				396.8	466.6
1990				339.3	411.2
1991				179.7	225.9
1992				230.2	297.9
1993				123.8	163.6
1994				227.7	306.0
1995				116.4	159.4
1996				113.0	157.7
1997				54.8	77.7
1998				51.7	74.5
1999				65.5	95.7
2000				44.6	66.3
2001				34.7	52.5
2002				16.2	25.0
2003				7.5	11.7
Subtotal				2826.8	3488.8

A bottoms-up review has been conducted that examined all authorized budget

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

and user funding for the lifetime of the program. Changes in all fiscal years to the program funding summary since the last SAR reflect the correction of deficiencies found in prior calculations. Additionally, due to greater insight into the -0019 contract, National Reconnaissance Office (NRO) RDT&E funds have been identified and are now reflected in the 3600 RDT&E funding summary. These NRO values were incorrectly carried in the 3020 Procurement funding summary in the last SAR.

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	35.1	90.4	95.3
1986		81.1	311.0	469.7	518.1
1987	2	159.0	483.7	756.0	869.4
1988	6	250.9	503.6	875.8	1043.9
1989	5	284.7	443.8	819.4	1020.2
1990	5	214.5	502.5	810.7	1028.0
1991	5	293.8	285.2	656.7	857.0
1992	6	244.7	379.7	681.7	900.9
1993	6	389.4	338.5	780.9	1052.7
1994	4	261.9	533.5	844.0	1161.4
1995	1	223.2	275.1	545.9	759.4
1996		153.6	333.4	584.1	824.8
1997		123.2	272.4	490.4	705.7
1998		139.0	383.2	605.0	883.9
1999		123.8	412.9	623.2	925.4
2000		116.1	286.7	470.8	711.4
2001		122.2	233.8	417.8	643.0
2002		131.6	143.2	307.8	482.6
2003		57.8	68.5	194.5	311.4
2004		66.5	48.3	136.1	222.7
2005		68.7	0.4	72.7	121.6
Subtotal	40	3548.4	6274.5	11233.6	15138.4

A bottoms-up review has been conducted that examined all authorized budget and user funding for the lifetime of the program. Changes in all fiscal years to the program funding summary since the last SAR reflect the correction of deficiencies found in prior calculations. Additionally, due to greater insight into the -0019 contract, National Reconnaissance Office (NRO) RDT&E funds have been identified and are now reflected in the 3600 RDT&E funding summary. These NRO values were incorrectly carried in the 3020 Procurement funding summary in the last SAR.

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

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

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		64.2		64.2	82.1
Subtotal		64.2		64.2	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

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	40	3612.6	6274.5	14217.6	18830.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	37	37

Percent Total Program Quantities Delivered: 92.5%

b. Total Expenditures To Date (In Millions of Dollars): \$ 11863

Percent Total Program Expended: 63.0%

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18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The costs for launch processing are based on actual contract values for the current Titan IV program and were transferred from operation and support costs to procurement costs in conjunction with the FY92/93 President's Budget. Thus, these costs are not included below. Range costs continue to be carried as operation and support costs. The FY 1996 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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AF-16 JSTARS

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

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): Joint STARS

2. (U) DoD Component: USAF

Joint Participants:
US Army

3. (U) Responsible Office and Telephone Number:

Joint STARS Program Office	Col Robert H. Latiff
Electronic Systems Center	Assigned: December 6, 1996
75 Vandenberg Drive	DSN 478-5725; COMM (781)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

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FOR OPEN PUBLICATION

AS AMENDED
MAR 03 1998 18

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

~~Classified by: Joint STARS Classification Guide dated 09 Mar 94~~
~~Downgrade instructions: No Subject Automatic Downgrade~~
~~Declassification: Originating Agency Determination Required (OADR)~~

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5. (U) References:

SAR Baseline (Production Estimate):

(U) AFAE Approved Acquisition Program Baseline (APB) dated October 24, 1996.

Approved Program:

(U) AFAE Approved Acquisition Program Baseline (APB) dated February 13, 1998.

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 AF as the 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 plays a critical C2 battle management role providing precise real-time targeting information to direct attack aircraft, friendly artillery, and standoff missile batteries. Joint STARS unique capabilities can give the Joint Force Commander a near real-time look at enemy first and second echelon force buildups, force movements, and the enemy scheme-of-maneuver on the battlefield. This early information on the enemy 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 Joint Force Commander's own choosing. Joint STARS is also identified as one of the core assets that provides rapidly employable, information superiority. Joint STARS provides SAR/MTI coverage of ground activity, with target identification and intelligence support from RIVET JOINT and works in concert with AWACS to provide a collaborative situational awareness, battle management, and precision engagement capability for the Joint Force Commander. There is no antecedent system.

7. (U) Executive Summary:

(U) The Joint Program Office (JPO) delivered P3 (the third low rate initial production aircraft) to the 93 Air Control Wing (ACW) on 25 Nov 97. Receipt of the third E-8C enabled Air Combat Command to declare Initial Operational Capability (IOC) on 18 Dec 97, indicating the wing is ready for war.

The Quadrennial Defense Review (QDR) recommended the Joint STARS fleet be reduced from 19 to 13 aircraft. The FY99 President's Budget implemented that recommendation. The FY99 Lot VII (P12 & P13) full rate production contract award will be the final production lot. The JPO awarded the Lot V (P9 & P10) full production contract on 30 Jun 97, the Lot VII advanced buy contract on 31 Oct 97 and expects to award the Lot VI (P11) full production contract in Mar 98.

The JPO held a series of CEO Forums with the Air Force Acquisition Executive and Northrop-Grumman executives focused on resolving Joint STARS production cost, schedule and performance concerns. Results include agreements to

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Joint STARS, December 31, 1997

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

rebaseline the delivery schedule for aircraft P4 through P8, continue pursuit of innovative methods/processes to contract for and perform the airframe remanufacturing work and establish contract options to quickly execute a decision to acquire aircraft beyond P13, if directed. Contract closure on the rebaselined aircraft delivery schedule is planned for Apr 98.

The JPO transferred an E-8A to the 93 ACW on 14 Oct 97 for use as an in flight trainer. This pilot proficiency trainer is improving the wing's capability to maintain and advance the skills of Joint STARS flight crews while significantly reducing the training demand on operational aircraft.

Joint STARS completed five Acquisition Program Baseline (APB) milestones in 1997. We achieved Required Asset Availability (RAA) in Feb 97 when the 93 ACW acquired 90% of the equipment, personnel and logistics to support operational capability. The Full Rate Production Contract award milestone was completed with Lot V definitization on 30 Jun 97. The Follow-On Operational Test and Evaluation (FOT&E) Start milestone was accomplished in Aug 97 with the test of Ring Laser Gyro on the T3 test aircraft. We finished Organic Support Capability in Nov 97 when the 93 ACW facilities were declared operational and ACC declared the IOC milestone complete on 18 Dec 97. Mature Reliability is the final APB milestone remaining.

The JPO completed development and fielded the Interim Release upgrade program, correcting 48 high priority system deficiencies. This effort successfully prototyped the Joint STARS Annual Release process to upgrade software and was delivered on P3 and retrofit on P1 and P2.

The Conference of NATO Armaments Directors (CNAD) met in Nov 97 and decided not to approve the US offer of "fast track" acquisition of a six aircraft Alliance Ground Support system. The Air Force is currently preparing fresh concepts and acquisition options to OSD for presentation to CNAD at their Apr 98 meeting.

This SAR reflects the current Acquisition Program Baseline which was revised and approved by the Service Acquisition Executive in Feb 98.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 IIA	SEP 85	SEP 85	SEP 85	
FSD Contract Award	SEP 85	SEP 85	SEP 85	
First Test Flight	APR 88	APR 88	APR 88	
Milestone IIB	APR 88	APR 88	APR 88	
System CDR	NOV 88	NOV 88	NOV 88	
Contractor Flight Test Start	APR 89	APR 89	APR 89	
Operational Field Demo I	JUL 90	JUL 90	SEP 90	
System-level Perf. Verf.-start	SEP 91	SEP 91	OCT 91	
DT&E Start	JUN 91	JUN 91	OCT 91	
DAB Program Review, LRIP	MAR 93	MAR 93	MAY 93	
Software Support Facility Delivery (MSSF Phase I)	MAY 96	MAY 96	AUG 96	
DT&E Complete (FOFSD)	JUN 95	JUN 95	SEP 95	
MOT&E				
Start	JUN 95	JUN 95	NOV 95	
Complete	FEB 96	FEB 96	JUL 96	
Milestone III	JUN 96	JUN 96	SEP 96	
Full Rate Production Contract Award	JUN 97	JUN 97	JUN 97	(Ch-1)
First Aircraft Delivery to ACC	FEB 96	FEB 96	JUN 96	
First Training Squad Ready for Trng	SEP 96	SEP 96	SEP 96	
Depot Support Date	JAN 96	JAN 96	MAY 96	
First SDS Installation (Group A)	FEB 96	FEB 96	FEB 96	
Required Assets Availability (RAA)	SEP 96	SEP 96	FEB 97	
Organic Support Capability	SEP 97	SEP 97	NOV 97	(Ch-2)
IOC	SEP 97	SEP 97	DEC 97	(Ch-3)

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Mature Reliability	SEP 98	MAR 02	MAR 02 (Ch-4)
Follow-On OT&E Start	FEB 98	FEB 98	AUG 97 (Ch-5)

b. Current Change Explanations --

(U) (Ch-1) The estimate for Full Rate Production Contract Award changed from MAY 97 to JUN 97 based on final Lot V definitization on 30 Jun 97 completing this milestone.

(Ch-2) The estimate for Organic Support Capability (OSC) changed from SEP 97 to NOV 97. OSC was accomplished on 30 Nov 97 when the 93rd Air Control Wing (ACW) facilities were declared operational.

(Ch-3) The Initial Operational Capability (IOC) estimate changed from SEP 97 to DEC 97. IOC was declared by the Air Combat Command on 18 Dec 97.

(Ch-4) The estimate for Mature Reliability changed from SEP 98 to MAR 02. Failure trends in several airframe related areas have lowered the Mission Reliability Rate below expectations. The user made a deliberate decision to delay airframe improvements necessary to meet the Mature Reliability milestone until FY02 in order to fund higher priority items. For example, recently funded software improvements have increased mission effectiveness.

(Ch-5) The Follow On Test and Evaluation (FOT&E) Start estimate changed from FEB 98 to AUG 97. The JPO accomplished this milestone with the successful testing of Ring Laser Gyro on the T3 test aircraft on 19 Aug 97.

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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>
MTI detection radial velocity (km/hr)	1	1	1	1

(b)(1)

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

~~(U)~~ (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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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)	3820.4	4158.8	4285.2
Procurement	5982.4	4478.3	4339.5
Recurring	(4570.5)		(2979.5)
Non-Recurring	(196.5)		(119.2)
Total Flyaway	(4767.0)		(3098.7)
Other Wpn Sys	(585.6)		(675.2)
Peculiar Support	(58.8)		(60.5)
Initial Spares	(571.0)		(505.1)
Construction (MILCON)	129.5	125.8	125.8
Acquisition O&M	0.0	0.0	0.0
Total FY 98 Base-Year \$	9932.3	8762.9	8750.5
Escalation	-170.2	-425.9	-413.3
Development (RDT&E)	(-465.8)	(-454.0)	(-430.5)
Procurement	(296.5)	(30.6)	(19.7)
Construction (MILCON)	(-0.9)	(-2.5)	(-2.5)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	9762.1	8337.0	8337.2
b. (U) Quantity --			
Development (RDT&E)	1	1	1
Procurement	19	13	13
Total	20	14	14

(U) NOTE: The Development (RDT&E) quantity under Current Estimate was incorrectly 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.

Milestone III, production, has been achieved. A new Acquisition Program Baseline (APB) was approved on 13 Feb 98. This new APB reflects the QDR recommendation that Joint STARS be reduced to a thirteen aircraft program, and it also introduces a new Base Year of 1998.

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:

	UCR Baseline (FEB 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 98 BY\$)	8762.9	8750.5	
(2) Quantity	14	14	
(3) Unit Cost	625.921	625.036	-0.14
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 98 BY\$)	4478.3	4339.5	
(2) Quantity	13	13	
(3) Unit Cost	344.485	333.808	-3.10

13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Production Estimate	3354.6	6278.9	128.6	9762.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+33.3	-163.1	-8.0	-137.8
Other	-	-	-	-
Support	-	-109.3	-	-109.3
Subtotal	+33.3	-272.4	-8.0	-247.1
Current Changes:				
Economic	-9.7	-6.4	-1.1	-17.2
Quantity	-	-1609.4	-	-1609.4
Schedule	-	-	-	-
Engineering	+295.8	+14.0	-	+309.8
Estimating	+180.7	-163.8	+3.8	+20.7
Other	-	-	-	-
Support	-	+118.3	-	+118.3
Subtotal	+466.8	-1647.3	+2.7	-1177.8
Total Changes	+500.1	-1919.7	-5.3	-1424.9
Current Estimate	3854.7	4359.2	123.3	8337.2

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

(U) Summary (FY 1998 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	3820.4	5982.4	129.5	9932.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+32.7	-124.7	-7.8	-99.8
Other	-	-	-	-
Support	-	-83.4	-	-83.4
Subtotal	+32.7	-208.1	-7.8	-183.2
Current Changes:				
Quantity	-	-1399.6	-	-1399.6
Schedule	-	-	-	-
Engineering	+263.8	+12.3	-	+276.1
Estimating	+168.3	-156.3	+4.1	+16.1
Other	-	-	-	-
Support	-	+108.8	-	+108.8
Subtotal	+432.1	-1434.8	+4.1	-998.6
Total Changes	+464.8	-1642.9	-3.7	-1181.8
Current Estimate	4285.2	4339.5	125.8	8750.5

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-9.7
Increase to Partially Fund Radar Technology Insertion Program (RTIP) Requirement (Engineering)	+263.8	+295.8
Adjustment for Current and Prior Inflation. (Estimating)	+2.6	+2.7
Increased Diminishing Manufacturing Sources (DMS) Commerical Off-The-Shelf (COTS) Requirements (Estimating)	+8.4	+9.0
Revised Estimate of Computer Replacement Program (CRP) Retrofit Capability (Estimating)	+36.8	+40.0
Revised Estimate for Last Lot Costs (Estimating)	+76.5	+80.0
Additional Funding Added to Improve Mature Reliability Rate (MRR) (Estimating)	+8.5	+9.0
Revised Estimate of Joint STARS Integrated Maintenance Information System (JIMIS) Requirements (Estimating)	+8.7	+9.0
Reduced Estimate of System Program Office (SPO) Operation Costs (Estimating)	-17.1	-18.0

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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>
Funding Added for Satellite Communications (SATCOM) Retrofit for the Last Three Production Aircraft (Estimating)	+2.7	+2.9
Revised Estimate of Software Support Facility (SSF)/Interoperability Certification Capability (ICC) (Estimating)	-9.8	-9.9
Refinement of Estimate of Computer Replacement Program (CRP) and Other Miscellaneous Changes (Estimating)	+51.0	+56.0
RDT&E Subtotal	+432.1	+466.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-98.7
Economic adjustment for negative program change. (Economic)	N/A	+92.3
Total Quantity variance associated with decrease of 6 units (from 19 to 13 aircraft).	-1288.6	-1488.4
Decrease of 6 units (from 19 to 13 aircraft). (Quantity)	-1399.6	-1609.4
Allocation to Estimating variance resulting from Quantity Change. (Estimating)	+111.0	+121.0
Added Radar Technology Insertion Program (RTIP) Requirement (Engineering)	+12.3	+14.0
Adjustment for Current and Prior Inflation. (Estimating)	+18.7	+19.0
Adjustment for Advance Buy Debit/Credit (Estimating)	+7.2	+15.3
Cost Savings Resulting From Descoped Warranty Requirements (FY96-FY99) and Decrease in Quantity (FY00-FY02) (Estimating)	-72.6	-78.9
Revised Estimate of Future Engineering Change Proposals (ECPs) and Manpower Requirements for Aircraft Reduction (Estimating)	-108.8	-121.7
Reprogramming of RDT&E Funding to Procurement for Manpower (Estimating)	+13.1	+13.9
Programmatic Change to Interim Contractor Support (ICS) (Estimating)	-13.5	-14.0
Refinement of In-House Estimates of Funding for FY93-FY03 (Estimating)	-111.4	-118.4
Adjustment for Current and Prior Inflation. (Support)	+4.1	+4.1

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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>
Increase in Initial Spares to support Computer Replacement Program (CRP) and Satellite Communications (SATCOM) Requirements (Support)	+38.1	+41.5
Increase in Peculiar Support Equipment for the Surveillance and Control Data Link (SCDL) Test Assets Requirement (Support)	+3.5	+3.5
Increase in Other Weapon System Costs to support CRP and SATCOM Requirements (Support)	+63.1	+69.2
Procurement Subtotal	<u>-1434.8</u>	<u>-1647.3</u>

(3) MILCON

Revised escalation indices. (Economic)	N/A	-1.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.9	+0.9
Added Prior Year Funding Previously Excluded (Estimating)	+3.2	+2.9
MILCON Subtotal	<u>+4.1</u>	<u>+2.7</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	
488.11	-1.23	+94.22	--	+22.13	-8.36	--	+0.64	+107.40	595.51

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	
330.47	-0.49	+28.72	--	+1.08	-25.15	--	+0.69	+4.85	335.32

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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	APR 85	SEP 85	SEP 85	SEP 85
Milestone III	N/A	SEP 96	SEP 96	SEP 96
FUE/IOC	TBD	SEP 97	DEC 97	DEC 97
Total Cost	1388.2	6741.9	9762.1	8337.2
Total Quantity	0	21	20	14
Prog Acq Unit Cost	0	321.04	488.11	595.51

(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) CRP:
Northrup-Grumman Corp, Melbourne FL
F19628-90-C-0197, CPFF
Award: May 9, 1997
Definitized: November 26, 1997

Initial Contract Price
Target Ceiling Qty

\$132.1 N/A 1

Current Contract Price
Target Ceiling Qty
\$127.5 N/A 1

Estimated Price At Completion
Contractor Program Manager
\$127.5 \$127.5

Previous Cumulative Variances Cost Variance Schedule Variance
Cumulative Variances To Date (11/21/97) N/A N/A
Net Change \$-0.2 \$-0.9

Explanation of Change:

(U) This report reflects only the Computer Replacement Engineering Manufacturing Development (EMD) program for the Joint STARS F19628-90-C-0197 contract. This effort is incorporated into this contract on two CLINs: CLIN 40 Central Computers (General Purpose Computer (GPC) and System Monitoring and Control Computers (SM&C)) and Operator Work Station Advanced Digital Display Processor (OWS ADDP) replacement effort; and CLIN 41 Programmable Signal Processor (PSP), Operator Work Station Local Area Network (OWS/LAN), and Signal Pre-Processor/Pulse Compression Unit (SPP/PCU) replacement effort.

CLIN 40 was awarded 9 May 97, with an effective date of 31 Mar 97. CLIN 41 was awarded as a UCA on 21 May 97, negotiations were completed 15 Oct 97 and definitization occurred on 26 Nov 97.

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

The Initial Contract Price is CLIN 40 contract target price of \$74.0M and CLIN 41 NTE of \$58.1M (total \$132.1M) (See Table 1 below). The Current Contract Price is the CLIN 40 contract target price of \$74.0M and CLIN 41 definitized change from an NTE of \$58.1M to \$53.4M (total \$127.5M) (see Table 2 below). The Contractor's and Program Manager's Current Estimated Cost of Completion is the Current Contract Price of \$127.5M (see table 2 below).

Table 1: Initial Contract Prices

	Cost	Fee	Total	Comments
CLIN 40	68.6	5.5	74.0	(CA: 9 May 97, Eff.: 31 Mar 97)
CLIN 41 (NTE)			58.1	(CA: 21 May 97, Eff.: MD)
Total	68.6	5.5	132.1	

Table 2: Negotiated/Definitized Contract Prices

	Cost	Fee	Total	Comments
CLIN 40	68.6	5.5	74.0	(CA: 9 May 97, Eff.: 31 Mar 97)
CLIN 41 (NTE)	49.5	3.9	53.4	(CA: 26 Nov 97, Eff.: MD)
Total	118.0	9.4	127.5	

b. Procurement --

(U) LRIP Lot II:

Grumman Aerospace, Melbourne, FL
F19628-92-C-0035, FFP OPTION
Award: June 17, 1993
Definitized: July 14, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$75.6	N/A	2

Current Contract Price		
Target	Ceiling	Qty
\$473.0	N/A	2

Estimated Price At Completion	
Contractor	Program Manager
\$473.0	\$473.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-11.6	\$-0.9
Cumulative Variances To Date (11/21/97)	\$-58.3	\$-13.7
Net Change	\$-46.7	\$-12.8

Explanation of Change:

(U) The Current Contract Target Price increase from \$464.7M to \$473.0M includes various contract modifications such as Course Heading Control Panel, Interim Release and Nose Cowl efforts. Contractor accomplished a

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

bottoms-up EAC in October 1997 which is reflected in the Estimated Price at Completion, \$504.1M; however, Government liability is limited to the Target Price, \$473.0M, on this Firm Fixed Price contract. The net change in cost variance is due to higher than planned support labor attributable to the Over and Above and Refurbishment workscope caused by extensive corrosion on P3 and P4. The poor condition of P3 resulted in an extraordinary amount of over and above aircraft restoration work that impacted normal scheduled refurbishment and aircraft flow. This in turn impacted the delivery of aircraft P3 to Melbourne, where installation of the Prime Mission Equipment takes place. Delivery of P3 occurred on 25 Nov 97. The net change in schedule variance resulted from material residing in inventory awaiting dispositioning to their final destination. P4 cost growth has been incorporated into the latest revised estimate.

(U) <u>LRIP Lot III:</u>			Initial Contract Price		
Grumman Aerospace, Melbourne, FL			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F19628-92-C-0035, FFP OPTION			\$123.2	N/A	2
Award: May 10, 1994					
Definitized: August 2, 1995					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$751.8	N/A	2	\$751.8	\$751.8

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.6	\$-5.1
Cumulative Variances To Date (11/21/97)	<u>\$-26.7</u>	<u>\$-19.6</u>
Net Change	\$-23.1	\$-14.5

Explanation of Change:

(U) Increase in Current Contract Target Price and Estimated Price At Completion from \$666.7M to \$751.8M is due to definitization of spares and Over and Aboves (O&As) plus miscellaneous contract modifications such as Course Heading Control Panel, Wire Analyzer and Phase I Interim Release. The net change in cost variance is due mainly to rework costs in O&A refurbishment and Lake Charles material and labor supporting the O&A, Remanufacturing Mod Support, and Program Management elements. Change in schedule variance is driven by late delivery of the Programmable Signal Processor by Computer Devices International (CDI), O&A material delays, and undefinitized Norden spares orders.

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

(U) <u>LRIP Lot IV:</u> 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>
\$489.4	N/A	2	\$489.4	\$489.4

Explanation of Change:

(U) Increase in Current Contract Target Price and Estimated Price at Completion from \$403.9M to \$489.4M is due to additional Over and Aboves, cost growth for airframe buy out, Configuration Update, and additional contract modifications for long lead parts.

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

(U) <u>LOT V:</u> Grumman Aerospace, Melbourne, FL F19628-96-C-0021, FFP Award: June 19, 1996 Definitized: June 30, 1997	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>
\$415.0	N/A	2	\$415.0	\$415.0

Explanation of Change:

(U) The increase in Current Contract Target Price and Estimated Price At Completion from \$104.7M to \$415.0M reflects definitization of this Firm Fixed Price (FFP) production contract.

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

(U) <u>Lot VI:</u> Grumman Aerospace, Melbourne, FL F19628-97-C-0001, TBD Award: December 31, 1996 Definitized: N/A	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$55.5	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>

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

\$55.5	N/A	1	\$55.5	\$55.5
			<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:

(U) Funding on this Contract includes long lead funds only.

(U) Contract Comments:

"Ground Support Systems, RDT&E contract F19628-93-C-0067 is over 90 percent complete, and is no longer being reported.

LRIP Lot I, Procurement contract F19628-92-C-0035 is over 90 percent complete, and is no longer being 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> (FY82-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-05)	<u>Total</u>
RDT&E	2947.1	118.3	123.8	665.5	3854.7
Procurement	2971.8	397.8	575.4	414.2	4359.2
MILCON	96.5	18.7	-	8.1	123.3
O&M	-	-	-	-	-
Total	6015.4	534.8	699.2	1087.8	8337.2

b. Annual Summary -- JSTARS

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY98 Dollars Nonrec	Flyaway FY98 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1982				51.2	32.6
1983				46.9	31.3
1984				59.2	41.0
1985				67.9	48.6
1986				212.7	156.1
1987				391.4	300.2
1988				420.2	330.7
1989				278.3	229.6

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

Appropriation: 3600 Research, Development, Test + Eval, AF

Fiscal Year	Qty	Flyaway FY98 Dollars Nonrec	Flyaway FY98 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1990				116.5	99.1
1991				263.4	232.6
1992				371.4	337.2
1993				337.7	313.4
1994				294.8	278.3
1995				162.7	156.5
1996				157.4	154.3
1997				206.4	205.6
1998				117.0	118.3
1999				120.5	123.8
2000				84.0	87.7
2001				118.2	125.5
2002				130.6	141.1
2003				102.0	112.3
2004				87.8	98.9
2005				87.0	100.0
Subtotal	1			4285.2	3854.7

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY98 Dollars Nonrec	Flyaway FY98 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992				146.1	137.3
1993	2	14.6	508.4	667.1	636.4
1994	2	6.1	519.6	545.6	528.7
1995	2	32.4	537.5	656.6	647.4
1996	2	15.3	386.6	485.9	487.4
1997	2	17.2	457.3	525.7	534.6
1998	1	15.5	223.4	385.1	397.8
1999	2	18.1	346.7	548.0	575.4
2000				154.8	165.5
2001				100.6	109.6
2002				62.3	69.1
2003				59.2	67.1
2004				2.5	2.9
2005					
2006					
Subtotal	13	119.2	2979.5	4339.5	4359.2

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

Appropriation: 3300 Military Construction, Air Force

Fiscal Year	Qty	Flyaway FY98 Dollars Nonrec	Flyaway FY98 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1989				0.6	0.5
1990				0.5	0.4
1991				2.0	1.8
1992				20.3	18.8
1993				11.4	10.8
1994				25.2	24.4
1995				14.6	14.3
1996				6.9	6.9
1997				18.4	18.6
1998				18.3	18.7
1999					
2000				7.6	8.1
2001					
Subtotal				125.8	123.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	14	119.2	2979.5	8750.9	8337.2

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	1	1
Procurement	3	3

(U) Percent Total Program Quantities Delivered: 28.6%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 4556.4

(U) Percent Total Program Expended: 54.7%

(U) P1 was delivered on 4 Mar 96. P2 was delivered on 12 Dec 96. P3 was delivered on 25 Nov 97.

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18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --
O&S Costs were based on 13 refurbished Boeing 707 aircraft operating hours at 63 hours per aircraft per month 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	68.6	N/A
Intermediate Maintenance	N/A	N/A
Depot Maintenance	7.3	N/A
Contractor Support	44.9	N/A
Sustaining Support	70.0	N/A
Indirect Costs	22.0	N/A
Mission Personnel	61.1	N/A
	N/A	N/A
Total	273.9	N/A

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PROGRAM: Sensor Fuzed Weapon

AS OF DATE: December 31, 1997

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CBU-97/B

BLU-108/B

PROJECTILE

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 WILLIAM M. WISE

Assigned: June 28, 1996

DSN 872-5382; COMM (904) 882-5382

WISEW@EGLIN.AF.MIL

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 3011 ICN 273520 (Air Force)

(U) APPN 3011 ICN 353520 (Air Force)

(U) APPN 3080 ICN 813520 (Air Force)

CLEARED
FOR OPEN PUBLICATION

AS AMENDED
17 MAR 5 1998

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

~~Classified by: SFW Security Classification Guide, 1 Sep 96~~
~~Downgrade instructions: Originating Agency Determination Required~~
~~Declassify on: Not Subject to Automatic Downgrade~~

(THIS PAGE IS UNCLASSIFIED)

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SAF/PAS

98--0260

CONGRESSIONAL

98-C-0709

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Sensor Fuzed Weapon, December 31, 1997

5. (U) References:

SAR Baseline (Production Estimate):

(U) OSD/CAIG Briefing, June 96. (Approved by OSD),

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated August 28, 1996.

6. (U) Mission and Description:

The objective of the Sensor Fuzed Weapon (SFW) program is to develop, produce and deploy a conventional munition capable of multiple kills per pass against operating armored vehicles and other support vehicles. The SFW system represents state-of-the-art technology that provides a multiple armored target kill capability.

Since this system is unlike "traditional" munitions, we do not have a historical data base to compare to SFW expected kill criteria. Consequently, we have relied on information provided by the Air Combat Command (ACC) Joint Studies Group and the Scientific Applications International Corporation (SAIC) model that quantifies expected mobility kills per pass. (b)(1)

(b)(1)

(b)(1)

e.g., winter vs. desert environments, can affect system effectiveness. The Wind Corrected Munitions Dispenser (WCMD), a program currently in development, will provide a guidance kit for the CBU-97/B dispensers that provides inertial navigation to compensate for ballistic errors caused by wind when these munitions are released from medium to high altitudes.

The SFW does not replace any existing system but will enhance current capabilities. The requirement for SFW is the HQ ACC System Operational Requirements Document (SORD) (CAF 302-78-I/II/III-A (Revision 4), 5 Aug 96). The primary platform for the 5,000 units is the F-16. Additional platforms are compatible.

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7. (U) Executive Summary:

(U) Air Combat Command officially declared that SFW achieved Initial Operational Capability in January 1997.

The SPO conducted a Lot Acceptance Test (LAT) for the 12th lot of SFWs on March 12, 1997, and the 13th lot on April 29, 1997. In both cases, the weapon was delivered over a standard target array from an F-16. All submunitions functioned properly and the weapon exceeded user kill requirements.

On May 28, 1997, LAT 14A was accomplished with a B-1 aircraft, the first time SFW has been delivered from a bomber. The weapon was dropped over a target array consisting of tanks, armored personnel carriers, and trucks. The weapon achieved 13 hits on four targets and exceeded user kill requirements. Even though the LAT criteria was met, some anomalies were observed and the decision was made to repeat LAT after some minor hardware rework.

On October 20, 1997, LAT 14B was successfully conducted for the last lot of Low Rate Initial Production (LRIP) units. The weapon was delivered in conditions that simulate the delivery characteristics of a Wind Corrected Munitions Dispenser (WCMD). Delivery of the 63 units in Lot 14 completes LRIP. LRIP 4 deliveries were completed five months behind schedule because of faulty infrared detectors that had to be replaced in a number of production weapons.

On November 15, 1997, LAT 15 was conducted on a B-1. The test was planned to drop two SFWs in separate passes at 15,000 feet mean sea level (MSL), with the weapons' proximity sensors set at 1,500 feet above-ground level (AGL). The LAT was suspended when the first bomb functioned prematurely. Failure analysis is on-going.

Lot 15A (first lot of Full Rate Production (FRP)1) was successfully tested and accepted on December 18, 1997. The LAT consisted of a single SFW dropped from an F-16. Delivery of Lot 15 (130 weapons) brings the operational inventory to over 500 CBU-97s.

The first CBU flight test in the Producibility Enhancement Program (PEP) 2 configuration was conducted on September 24, 1997. The test identified technical deficiencies in the PEP2 design. As a result, the remaining four PEP2 flight tests were put on hold. A detailed review of the PEP2 recovery was conducted in early December. The recovery is estimated to cost \$5.4M, and the cut-in date will slip by 13-17 months. Textron Systems Corporation (TSC) agreed to use \$500K of their award fee to fund their effort through Recovery Review 2 (RR-2). RR-2 will be held in March 1998 and will offer a better assessment of the cause of the failure, corrective actions required and the associated program risks. The fate of the program will be decided at this time, keeping in mind that the added capabilities of the new altimeter have become critical elements of SFW Pre-planned Product Improvement (P3I).

The SFW P3I program is anticipating a four-month schedule slip and a funding shortfall of \$4M as a result of difficulties with the design of the P3I active sensor. The SPO is reviewing options to execute the program.

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

The third SFW full rate production contract was awarded 11 February 1998 to TSC.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 (APR)	Current Estimate
Milestone II (SAF/AL)	NOV 85	NOV 85	NOV 85
DT&E Start	DEC 88	DEC 88	DEC 88
Many-On-Many Test	JUL 89	JUL 89	JUL 89
Critical Design Review Complete	AUG 89	AUG 89	AUG 89
IOT&E Start	JUL 90	JUL 90	AUG 90
DAB Program Review	SEP 91	SEP 91	MAR 92
Production Contract Award	DEC 91	DEC 91	MAR 92
Complete DT&E/IOT&E	MAR 92	MAR 92	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
Lot 4 Contract Award	DEC 94	DEC 94	JAN 95

(b)(1)

(U) IOC - 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

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

Required Assets Available (RAA). The user takes the RAA materials and implements them to achieve IOC.

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>
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 MIRAGE / V) / USMC/USN/	F-16 A/B/C/D, F-15E, 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 7\
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	+1.5 to +4	+1.5 to +5
System Reliability	.89	.89 / .79	.83	.89 5\

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Sensor Fuzed Weapon, December 31, 1997

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(b)(1) Lethality - Kills per Pass (Counter- measured Environment)	(b)(1)			
(b)(1) Lethality - Kills per Pass (Uncounter- measured Environ- ment)				
(b)(1)				

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

Milestone III decision per DoD IG, Dec 1997.)

9/ Performance characteristics are for deliveries below 3000 feet in multiple countermeasured environment ensuring multiple kills per pass per 4 SFW with baseline BLU-108.

(b)(1)

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	158.2
Procurement	734.1	734.1	740.3
Recurring Flyaway	(694.0)		(669.6)
Nonrecurring Flyaway	(39.4)		(70.1)
Total Flyaway	(733.4)		(739.7)
Other Wpn Systems Costs	(0.7)		(0.6)
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	898.5
Escalation	1195.5	1195.5	1167.9
Development (RDT&E)	(118.9)	(118.9)	(117.5)
Procurement	(1076.6)	(1076.6)	(1050.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2087.9	2087.9	2066.4

(U) Procurement funding does not include SEEK EAGLE funding of \$10.8M.

Current estimate does not include anticipated funding shortfalls for PEP2 and P3I.

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Sensor Fuzed Weapon, December 31, 1997

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

b. (U) Quantity --	Production Estimate (SAR)	Approved Program (APR)	Current Estimate
Development (RDT&E)	84	84	83
Procurement	5000	5000	5000
Total	5084	5084	5083

Note: Excludes 80 RDT&E 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 increased to 524 due to contract underrun (LRIP 1 - 98, LRIP 2 - 22, LRIP 3 - 131, LRIP 4 - 273). The LRIP quantity currently exceeds 10 percent of the total procurement buy primarily because of the FY94 reduction from 10,000 units to 5,000 units.

Current estimate changed from 84 to 83 to delete one unit that was erroneously counted.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (AUG 96 APR)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 79 BYS)	892.4	898.5	
(2) Quantity	5084	5083	
(3) Unit Cost	0.176	0.177	+0.57
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 79 BYS)	734.1	740.3	
(2) Quantity	5000	5000	
(3) Unit Cost	0.147	0.148	+0.68

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Sensor Fuzed Weapon, December 31, 1997

13. (U) Cost Variance Analysis:

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

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	277.2	1810.7	-	2087.9
Previous Changes:				
Economic	-0.2	-10.2	-	-10.4
Quantity	-	-	-	-
Schedule	-	-1.1	-	-1.1
Engineering	-	-	-	-
Estimating	+2.1	-2.0	-	+0.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.9	-13.3	-	-11.4
Current Changes:				
Economic	-0.4	-29.6	-	-30.0
Quantity	-	-	-	-
Schedule	-	+11.6	-	+11.6
Engineering	-	-	-	-
Estimating	-3.0	+11.5	-	+8.5
Other	-	-	-	-
Support	-	-0.2	-	-0.2
Subtotal	-3.4	-6.7	-	-10.1
Total Changes	-1.5	-20.0	-	-21.5
Current Estimate	275.7	1790.7	-	2066.4

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

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	158.3	734.1	-	892.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+4.0	-	+4.0
Engineering	-	-	-	-
Estimating	+1.2	-1.9	-	-0.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+1.2	+2.1	-	+3.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.3	+4.2	-	+2.9
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	-1.3	+4.1	-	+2.8
Total Changes	-0.1	+6.2	-	+6.1
Current Estimate	158.2	740.3	-	898.5

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

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
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.3
FY98 Congressional General Reductions. (Estimating)	-1.4	-3.3
RDT&E Subtotal	-1.3	-3.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-29.6
Adjustment for Current and Prior Inflation. (Estimating)	+1.7	+3.8
Increased non-recurring costs for P3I; delayed cut-in of the Producibility Enhancement Program (PEP). (Estimating)	+2.5	+7.7
Annual procurement buys adjusted due to budget changes and program stretched one year. (Schedule)	N/A	+11.6
Data requirements decreased due to program maturity. (Support)	-0.1	-0.2
Procurement Subtotal	+4.1	-6.7

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	
0.41	-0.01	+0.32	--	--	--	--	--	+0.31	0.72

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	-0.01	+0.32	--	--	--	--	--	+0.31	0.67

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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	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
FUE/IOC	N/A	N/A	TBD	JAN 97
Total Cost	N/A	2405.8	2087.9	2066.4
Total Quantity	N/A	14075	5084	5083
Prog Acq Unit Cost	N/A	0.17	0.41	0.41

(U) IOC - 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 Availability (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) P31:
 Textron Systems Corp., Wilmington MA
 F08626-96-C-0162, CPAP
 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>
\$40.9	N/A		\$42.8	\$44.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/30/97)	\$-1.4	\$-1.8
Net Change	\$-1.4	\$-1.8

Explanation of Change:

(U) The change (increase) to Current Contract Price is due to addition of funds for one additional CBU, six additional submunitions and Captive Flight Test 1B.

The change (increase) to Estimated Price at Completion Contractor reflects a projected cost overrun of \$1.9M. The change (increase) to Estimated Price at Completion Program Manager reflects a projected \$4.0M overrun.

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

The latter estimate is considered most probable and is based on using the cost and schedule performance indices to date to calculate the cost of the total program. We believe this is a better estimate of the cost risk remaining in the program given the problems we've already experienced with the active sensor design. Also, the contractor acknowledges that the cost overrun could grow to as much as \$4.0M.

The unfavorable cost variance is due to the extensive effort associated with the active sensor design. Specifically, difficulties encountered with the Compute Range Module (CRM) and the application specific integrated circuit (ASIC) design have led to the unfavorable cost variance.

The unfavorable schedule variance is primarily attributed to the Projectile Upper Housing. Electrical design efforts were impacted by late completion of the Maxtek CRM. The delay in the CRM resulted from the need for a larger chip than originally planned and greater design complexity than originally anticipated.

b. Procurement --	Initial Contract Price		
(U) LRIP 4:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Textron Systems Corp., Wilmington MA			
F08626-94-C-0006, FPIF/FFP	\$106.4	\$119.3	260
Award: January 11, 1995			
Definitized: December 30, 1994			

	Current Contract Price		Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$108.9	\$121.8	\$104.2	\$104.2
		<u>Qty</u>		
		281		
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$1.2	\$-4.8
Cumulative Variances To Date (10/26/97)			<u>\$3.7</u>	<u>\$-0.7</u>
Net Change			\$2.5	\$4.1

Explanation of Change:

(U) Since LRIP4 is 99 percent complete, this is the last time it will be reported in the SAR.

The change (decrease) to Current Contract Price is due to two declared contract underruns and a rate adjustment.

The changes (decrease) to estimated price at completion for both contractor and program manager are due to the contractor currently underrunning the contract (99% complete at 95% of the contract price).

The favorable change in cost variance is due to manufacturing management underrunning in the floor support, sustaining product engineering, and production planning and control areas due to operating efficiencies, uncompensated time and lower labor rates.

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

The favorable change in schedule variance is due to delivery of Lot 14 weapons.

(U) <u>FRP 1:</u>			Initial Contract Price		
Textron Systems Corp., Wilmington MA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F08626-96-C-0001, FPIF			\$157.1	\$172.3	500
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>
\$157.7	\$172.9	521	\$155.2	\$155.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/30/97)	<u>\$1.2</u>	<u>\$-15.6</u>
Net Change	\$1.2	\$-15.6

Explanation of Change:

(U) The change (decrease) in Current Contract Price and Estimated Price at Completion is due to Forward Pricing Rate Adjustment and a contract underrun.

Quantity changed (increased) to add 21 CBUs procured with underrun funds.

The favorable cost variance is due to an underrun in manufacturing management due primarily to lower labor costs.

The unfavorable schedule variance is due to the first two lots of weapons not being delivered as scheduled in September and December.

(U) <u>FRP 2:</u>			Initial Contract Price		
Textron Systems Corp., Wilmington MA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F08626-97-C-0003, FPIF			\$145.2	\$157.0	576
Award: February 18, 1997					
Definitized: February 18, 1997					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$149.8	\$164.8	576	\$149.8	\$149.8

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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 (12/30/97)	<u>\$0.6</u>	<u>\$4.7</u>
Net Change	\$0.6	\$4.7

Explanation of Change:

(U) This is the first time this contract is reported in the SAR.

The difference between Initial Contract Price and Current Contract Price is due to adding 34 additional CBUs to the contract.

The favorable cost variance is due to underrunning manufacturing management due to delays in FKPI. This is considered only a temporary cost variance and will dissipate as the production build ramps up.

The favorable schedule variance is due to material being required earlier than originally scheduled for the altimeters, batteries, rocket motor and tactical munitions dispenser (TMD).

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> (FY00-05)	<u>Total</u>
RDT&E	255.7	16.4	3.6	-	275.7
Procurement	640.5	150.1	126.0	874.1	1790.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	896.2	166.5	129.6	874.1	2066.4

b. Annual Summary -- SFW

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>
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

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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 \$
1989				19.2	33.9
1990				14.9	27.1
1991				12.0	22.7
1992				5.0	9.7
1993					
1994					
1995				0.7	1.4
1996				4.5	9.5
1997				8.8	18.7
1998				7.6	16.4
1999				1.6	3.6
2000					
2001					
2002					
Subtotal	83			158.2	275.7

Appropriation: 3011 Procurement of Ammunition, Air Force

Fiscal Year	Qty	Flyaway FY79 Dollars Nonrec	Flyaway FY79 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	273	4.3	43.2	47.7	108.5
1996	521	4.7	64.8	69.5	160.8
1997	542	6.9	56.5	63.4	149.5
1998	556	5.8	56.9	62.7	150.1
1999	295	3.1	48.7	51.8	126.0
2000	455	2.0	59.3	61.3	151.8
2001	326	1.9	44.9	46.8	118.0
2002	277	1.9	40.6	42.5	109.2
2003	538	7.2	64.8	72.1	189.0
2004	538	2.1	59.2	61.3	164.2
2005	428	2.1	49.7	51.8	141.9
Subtotal	4749	42.0	588.6	630.9	1569.0

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	7.8	8.7	17.7

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

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 \$
1994	131	11.5	32.4	44.1	91.1
Subtotal	251	28.1	81.0	109.4	221.7

(U) Procurement funding does not include SEEK EAGLE funding of \$10.8M. (\$2.0M - FY94, \$4.2M - FY95, \$4.6M - FY96)

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	5083	70.1	669.6	898.5	2066.4

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	83	75
Procurement	750	620

(U) Percent Total Program Quantities Delivered: 13.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 629.1

(U) Percent Total Program Expended: 30.4%

(U) The RDT&E quantities were adjusted to remove 80 RDT&E prototypes that were not fully configured.

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.

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N-7 E-2C REPRO

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: E-2C AEW (HAWKEYE)

AS OF DATE: December 31, 1997

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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:
PEO(T) Aircraft Programs (FMA-231) Mr. Walter E. Bahr
Bldg #2272, Suite 455, NAVAIRSYSCOM Assigned: August 2, 1996
47123 Buse Road Unit IPT DSN 757-7361; COMM (301) 757-7361
Patuxent River, MD 20670-1547 bahrwe.ntpr@navair.navy.mil
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

No Security Objection
to Open Publication
(AS AMENDED)
98-C-0151
MAR 24 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

Derived from:
Downgrade instructions: ID 02A-38 OF NAVINST S5513.2B
Declassify on: X3

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Amendment on page 5

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DEPARTMENT OF DEFENSE

98-C-0898

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5. (U) References:

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 April 24, 1997.

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.

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) in September 1994. An Engineering and Manufacturing Development (E&MD) contract for MCU development and integration was signed with Grumman Aerospace Corporation in November 1994. Successful first flight of an MCU equipped developmental test aircraft took place January 24, 1997. Low Rate Initial Production (LRIP) approval was granted in August 1997. Final system testing is planned for FY99, with full rate production and Initial Operational Capability (IOC) planned for FY00.

Significant Developments Since Last Report

MISSION COMPUTER UPGRADE (MCU)

LRIP permission was granted on 19 August 1997 for a total of 13 LRIP units. This equates to approximately 16% of the total production buy for the MCU. Budget reductions in FY98 resulted in the elimination of four of the 13 LRIP units. This brings the LRIP to 11% of the total production run. The three production aircraft procured in FY98 will not be configured with the MCU, but instead will carry the current L-304 mission computer and displays.

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

The cancellation of upgrades to the three new production units will require each to be budgeted as a retrofit at a future date.

E-2C PRODUCTION

The fourth production aircraft in FY98 was a Congressional plus-up which will be configured with the new mission computer and displays. Our plan is to add the 4th aircraft to the FY98 for FY99 AAC contract which will be awarded in March 1998.

For FY99 through FY03, the Navy plans to purchase 21 E-2C airframes under a fully-funded five year firm-fixed-price multi year procurement (MYP). This new plan accelerates the procurement schedule by one year, and buys out the remaining E-2C inventory requirement of 36 aircraft.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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>
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
Mission Computer Upgrade (MCS)			
Milestone II	SEP 94	SEP 94	SEP 94
Navy Program Review	MAR 97	MAR 97	AUG 97 (Ch-1)
- LRIP I			
First Flight of Production Representative Aircraft	SEP 98	SEP 98	SEP 98
Initial Operational Capability (IOC)	JUN 99	JUN 99	JUL 99 (Ch-2)
Milestone III	NOV 99	NOV 99	NOV 99

(U) All schedule estimates relating to the Mission Computer Upgrade (MCU) have been carried forward from the previous SAR and incorporated into the E-2C aircraft end-item.

b. Current Change Explanations --

(U) Change 1. Changed from July 1997 to August 1997 to reflect the actual date of accomplishment.

Change 2. Current estimate revised from June 1999 to July 1999 to reflect a one month delay in software development. This delay is described further in section 15 - MCU contract.

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>
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- 427	T56-A- / T56-A- 427 / 427	T56-A- 427	T56-A- 427
Crew	5	5 / 5	5	5
Speed (KIAS)				
Max Speed @13,500 ft (KIAS)	315	315 / 315	315	315

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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>
Cruise Speed @ 24,540 ft.	270	270 / 270	270	270
Time on Station @200 nm (hrs)	4.0	4.0 / 4.0	4.0	4.0
Service Ceiling (ft)	28100	28100 / 28100	28100	28100
Passive Detection System				

(b)(1)

(U) All performance estimates relating to the Mission Computer Upgrade (MCU) have been carried forward from the previous SAR and incorporated into the E-2C aircraft end-item.

b. Current Change Explanations --

(U) Load time estimate revised from 45 seconds to 243 seconds. This change reflects the current design characteristics for the COTS Multilevel Security (MLS) Operating System (OS) within the Mission Computer Upgrade (MCU).

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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)	205.7	379.7	379.3
Procurement	2422.0	2719.1	2607.8
Airframe & Changes	(1914.2)		(1854.1)
Engine & Accessories	(206.2)		(203.1)
Electronics	(87.5)		(149.1)
Armament & Other GFE	(5.6)		(10.2)
Non-recurring			(93.0)
Total Flyaway	(2213.5)		(2309.5)
Other Weapons Sys Cost	(141.1)		(191.9)
Peculiar Support	(0.0)		(49.0)
Initial Spares	(67.4)		(57.4)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 94 Base-Year \$	2627.7	3098.8	2987.1
Escalation	560.2	488.8	362.7
Development (RDT&E)	(18.2)	(37.7)	(31.9)
Procurement	(542.0)	(451.1)	(330.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3187.9	3587.6	3349.8

(U) Dollars values (both then-year and base-year) in the SAR and APB baselines and current estimate represent the dollar values of both the E-2C aircraft and MCU end-items. These two end-items have been consolidated into the one end-item as of April 1997.

The reduction in the Procurement Current Estimate is primarily due to savings associated with restructuring the APN-1 budget for multiyear procurement.

b. (U) Quantity --

Development (RDT&E)	N/A	N/A	0
Procurement	36	36	36
Total	36	36	36

(U) There are no Low Rate Initial Production (LRIP) quantities approved for the E-2C reprocurd 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

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

	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.

12. (U) Unit Cost Summary:

	UCR Baseline (APR 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	3098.8	2987.1	
(2) Quantity	36	36	
(3) Unit Cost	86.078	82.975	-3.60
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	2719.1	2607.8	
(2) Quantity	36	36	
(3) Unit Cost	75.531	72.439	-4.09

(U) The reduction in PAUC and APUC unit cost is primarily due to savings associated with restructuring the APN-1 budget for multiyear procurement and changes in the escalation indices for RDT&E and Procurement.

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	223.9	2964.0	-	3187.9
Previous Changes:				
Economic	-5.9	-166.2	-	-172.1
Quantity	-	-	-	-
Schedule	-	+84.2	-	+84.2
Engineering	+178.4	-	-	+178.4
Estimating	+30.7	+31.0	-	+61.7
Other	-	-	-	-
Support	-9.7	+68.1	-	+58.4
Subtotal	+193.5	+17.1	-	+210.6
Current Changes:				
Economic	-6.0	-47.4	-	-53.4
Quantity	-	-	-	-
Schedule	-	-64.9	-	-64.9
Engineering	-	+110.4	-	+110.4
Estimating	-0.2	-67.9	-	-68.1
Other	-	-	-	-
Support	-	+27.3	-	+27.3
Subtotal	-6.2	-42.5	-	-48.7
Total Changes	+187.3	-25.4	-	+161.9
Current Estimate	411.2	2938.6	-	3349.8

(U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	205.7	2422.0	-	2627.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+67.8	-	+67.8
Engineering	+154.7	-	-	+154.7
Estimating	+27.6	+10.1	-	+37.7
Other	-	-	-	-
Support	-8.3	+62.1	-	+53.8
Subtotal	+174.0	+140.0	-	+314.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-42.6	-	-42.6
Engineering	-	+94.2	-	+94.2
Estimating	-0.4	-33.5	-	-33.9
Other	-	-	-	-
Support	-	+27.7	-	+27.7
Subtotal	-0.4	+45.8	-	+45.4
Total Changes	+173.6	+185.8	-	+359.4
Current Estimate	379.3	2607.8	-	2987.1

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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>		
Revised escalation indices. (Economic)	N/A	-6.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.6	+1.7
SBIR & Minor Business Adjustments (Estimating)	-2.0	-1.9
RDT&E Subtotal	-0.4	-6.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-70.3
Economic adjustment for negative program change. (Economic)	N/A	+22.9
Acceleration/Stretchout of annual procurement buy profile. (Schedule)	0.0	-5.1
Additional Schedule Variance (Schedule)	-42.6	-59.8
L304 Mission Computer/Enhanced High Speed Processor (EHSP) to be removed from budget estimate beginning FY00. Will be replaced by Mission Computer Upgrade (MCU). (Engineering)	-18.0	-21.2
Enhanced Main Display Units (EMDU) to be removed from E-2C platform beginning in FY00. To be replaced by Advanced Control Indicator Set (ACIS). (Engineering)	-19.3	-22.8
Cooperative Engagement Capability (CEC) to be added beginning FY00. (Engineering)	+64.8	+76.1
Advanced Control Indicator Sets (ACIS) to replace obsolete EMDU in FY00. (Engineering)	+11.0	+13.0
Mission Computer Upgrade (MCU) replaces obsolete L304 and EHSP beginning FY00. (Engineering)	+12.2	+14.4
Outer Wing Panel reprocurement for new production aircraft beginning FY99. (Engineering)	+43.5	+50.9
Adjustment for Current and Prior Inflation. (Estimating)	+8.7	+9.5
Budget adjustments to Advance Procurement account in FY 95,96,98 and 04. (Estimating)	+13.6	+20.2
Revised airframe contract costs based on actuals (FY97). (Estimating)	-14.8	-19.6
Adjustment for Current and Prior Inflation. (Support)	+1.0	+1.0
Multi-Year procurement savings (FY99-03). (AR) (Estimating)	-49.6	-90.4
Non-recurring shutdown expenses in FY04-05. (Estimating)	+0.4	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>
Additional negative schedule adjustment	+8.2	+12.4
partially attributable to multi-year Advanced		
Procurement allocations. (Estimating)		
Change in Initial Spares (Support)	+5.0	+5.4
Change in Peculiar Support (Support)	-10.5	-13.8
Change in Other Weapon Systems (Support)	+32.2	+34.7
Procurement Subtotal	+45.8	-42.5

AR = Acquisition Reform related changes.

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	
88.55	-6.26	--	+0.54	+8.02	-0.18	--	+2.38	+4.50	93.05

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	-5.93	--	+0.54	+3.07	-1.03	--	+2.65	-0.70	81.63

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	2938.6
Total Quantity	0	0	36	36
Prog Acq Unit Cost	N/A	N/A	82.33	81.63

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E-2C AEW (HAWKEYE), December 31, 1997

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

a. RDT&E --
 (U) Mission Computer Upgrade:
 Grumman Aerospace Corp, Bethpage NY
 N00019-93-C-0205, CPIAF
 Award: November 30, 1994
 Definitized: November 30, 1994

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$155.2	N/A	0	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$155.2	N/A	0	\$140.0	\$140.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$5.3	\$-2.9
Cumulative Variances To Date (11/30/97)	\$1.2	\$-2.6
Net Change	\$-4.1	\$0.3

Explanation of Change:

(U) Cost: The cumulative Cost Variance (CV) is \$1,180K as of the November 1997 reporting period. The decrease was due to a direct and indirect rate adjustment covering the period March 1996 through November 1997. This single point adjustment brings the cumulative Cost Performance Index to 1.01.

Our current CV is principally a result of lower than budgeted indirect charges against the contract. These favorable charges offset a negative CV of approximately -\$848K and are associated with the Prime Mission Product Application Software. When indirect costs are excluded from the calculations, the CPI increases slightly from 1.01 to 1.02.

Schedule: The cumulative Schedule Variance (SV) is -\$2,661K as of November 1997. This represents a \$249K improvement over the last 12 months. The cumulative variance, however, is likely to remain negative through the 1998 reporting period while work is completed on elements of the Prime Mission Product Application Software (PMPAS). The PMPAS is a function of Build 1 Code and Build 1 Test cost accounts which were adversely affected as a result of a hiring freeze. The necessary personnel have since been hired to support this effort and the variance should decrease as work is completed. The total program SPI is 0.97; and with indirect costs removed, it improves slightly to 0.98.

b. Procurement --
 (U) FY 95 PRODUCTION A/C:
 GRUMMAN AEROSPACE CORP, BETHPAGE NY
 N00019-94-C-0020, FFP
 Award: December 16, 1994
 Definitized: April 25, 1996

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$231.2	N/A	4	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>

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

\$230.3	N/A	4	\$230.3	\$230.3
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Explanation of Change:

None.

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

(U) FY 96 Production A/C:
Grumman Aerospace Corp, Bethpage NY
N00019-94-C-0020, FFP
Award: December 16, 1994
Definitized: April 25, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$168.5	N/A	3

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$168.5	N/A	3

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$168.5	\$168.5

Explanation of Change:

None.

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

(U) FY 97 Production A/C:
Grumman Aerospace Corp, Bethpage NY
N00019-96-C-0049, FFP
Award: April 4, 1996
Definitized: N/A

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$241.5	N/A	4

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$241.5	N/A	4

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$241.5	\$241.5

Explanation of Change:

None.

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

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E-2C AEW (HAWKEYE), December 31, 1997

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

(U) FY 98 PRODUCTION A/C:
 Grumman Aerospace Corp, Bethpage NY
 N00019-96-C-0195, FFP
 Award: December 15, 1996
 Definitized: October 31, 1997

		Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$186.6	N/A	3	

Current Contract Price			Estimated Price At Completion
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u> <u>Program Manager</u>
\$186.6	N/A	3	\$186.6 \$186.6

Explanation of Change:

None.

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

(U) Contract Comments:

The FY98 Congressional plus-up aircraft is not included on this contract. Contract award for the original three FY98 aircraft was in Dec 1996 and negotiated in conjunction with the FY97 aircraft buy as a second lot. Aircraft prices were finalized in August 1997 with funds obligated in October 1997. The plus-up aircraft funds were received in December 1997, which was too late to take advantage of a quantity buy of four aircraft. The plus-up aircraft will be included on the FY98 for FY99 AAC contract as a not-to-exceed effort.

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> (FY00-05)	<u>Total</u>
RDT&E	187.3	62.5	47.8	113.6	411.2
Procurement	841.0	317.7	409.4	1370.5	2938.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1028.3	380.2	457.2	1484.1	3349.8

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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	36	3

(U) Percent Total Program Quantities Delivered: 8.3%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 740.9

(U) Percent Total Program Expended: 22.1%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Flight Hours Per Aircraft Per Month	42
Number of Aircraft/Squadron	4
Consumption Rate, Gal/Hr	344.0
FOL Cost, JP-5, Per Barrel, FY 90	35.7

Date of estimate 12/94.

There is no antecedent program.

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Squadron	Avg Annual Cost Per (Antecedent)
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

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A-15 JAVELIN

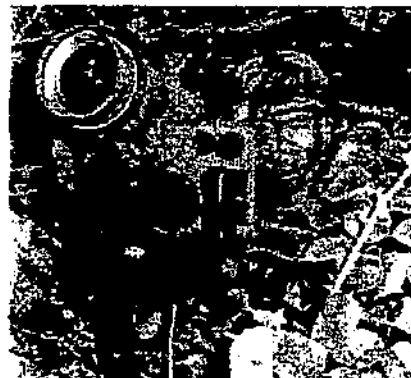
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: Javelin

AS OF DATE: December 31, 1997

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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	COL William D. Knox
PEO - Tactical Missiles	Assigned: August 22, 1996
ATTN: SFAE-MSL-AM	DSN 746-4266; COMM (205) 876-4266
RSA, AL 35898-5720	knox-wd@redstone.army.mil

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

RDT&E:

(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)

~~Classified by: Javelin PEO Tactical Missiles~~
~~Downgrade instructions: X3~~
~~Declassify on: 9 May 96~~

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DEPARTMENT OF DEFENSE

98-C-0942

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5. (U) References:

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated June 15, 1989.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated September 18, 1997.

6. (U) Mission and Description:

(U) The Javelin system is medium range, imaging infrared, fire-and-forget, manportable, antitank weapon system being developed for the U.S. Army and U.S. Marine Corps (USMC) to meet the Combat Developer's (CSTDEV's) requirements as specified in the Joint Service Operational Requirement (JSOR), dated 12 December 1988. Javelin will satisfy an operational requirement to provide increased reliability, survivability, higher hit/kill probability, and greater effective range against current and future armored threats. The JAVELIN tactical system is composed of two major items: a tactical round and a command launch unit (CLU). Javelin training devices include the missile simulation round (MSR), basic skills trainer (BST), and the field tactical trainer (FTT). The missile, sealed in a disposable launch tube assembly, is comprised of the seeker, guidance electronics, warhead and fuze, propulsion unit, and the control actuator system. The missile is ~~described~~ as a "wooden round", i.e., having no field level repair and an expected minimum shelf life of ten years. The CLU consists of an integral visible day telescope and a long-wavelength infrared nightsight with wide and narrow fields of view. The CLU is used for battlefield surveillance, target acquisition, missile launch, and damage assessment. The Javelin may be used at the gunner's discretion in either top attack (the normal mode of operation) or direct mode (used for engaging targets under cover). The system is capable of defeating conventional and reactive armor in day/night engagements in excess of the design requirement of 2,000 meters. The Javelin soft launch capability enables firing from enclosures or covered fighting positions which reduce the gunner's vulnerability to counterfire. A secondary capability against helicopters and bunkers has been demonstrated but will not inhibit the primary mission of defeating armored targets. The Javelin will replace the Dragon.

7. (U) Executive Summary:

(U) This Selected Acquisition Report (SAR) is being submitted to document the significant accomplishments for the Javelin program during the calendar year of 1997.

Prior to the start of 1997, the Javelin Project Office had just concluded development of a competitive request for proposal (RFP) for the first multiyear procurement contract (FY97-FY99) since the Texas Instruments -Martin Javelin Joint Venture (JV) had submitted a proposal that exceeded cost curve limits of the Cost Reduction Plan (CRP). Without the agreement of the JV to support the elements of the CRP, the Javelin program would not have been executable since \$1.4B had previously been reduced from the Javelin total procurement budget in accordance with Office of the Secretary of Defense (OSD) direction as a provision in the CRP. From this effort the CRP Addendum was developed in April 1997 which essentially made execution within the sole source multiyear procurement environment workable without diminishing any of the original objectives.

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

At the conclusion of the multiyear procurement fact-finding, agreements were reached with the contractor which precluded the requirement for competition. Therefore, the Javelin program retained the advantages of sole source procurement with savings equivalent to competition but without the additional costs associated with initiating a competitive procurement. Cost reduction initiatives forced the contractor to the lowest achievable price for the multiyear contract which was awarded on schedule at its respective projected level as established by the cost curve in August 1994 while maintaining performance parameters.

The Javelin Program received the Department of the Army approval for MS III in May 1997 to successfully transition from low rate initial production (LRIP) into full rate production. This effort required incorporation of an Addendum to the CRP, completion of a series of development/user tests initiated during LRIP, which demonstrated successful achievement of LRIP Decision exit criteria, culminating with the award of the first multiyear procurement contract. Since the Defense Acquisition Executive delegated Milestone III Decision approval to the Army Acquisition Executive (AAE), subject to meeting specified exit criteria, Javelin was subsequently designated as an Acquisition Category 1C program after Milestone III.

In March 1997, Javelin participated in the U.S. Army's Advanced Warfighting Experiment (AWE) at the National Training Center (NTC), Fort Irwin, California. The Javelin system gained both user and public notoriety as a superb weapon in a series of exercises aimed at demonstrating progress toward achieving the Chief of Staff of the Army (CSA) vision for the Army, Force XXI, at the turn of the century. As a result of Javelin success during AWE, the CSA recommended acceleration of fielding. Previously scheduled fielding to the Ranger Battalions was completed in April 1997 and fielding to the five of nine 82d Airborne battalions was completed in November 1997.

During October 1997, the Javelin program received the 1997 Department of Defense Logistics Life Cycle Cost Reduction Award as the Army recipient. The first Interim Contractor Support cost-plus-fixed-fee contract was awarded for \$6.6M for 15 months with not-to-exceed options established for subsequent year buys. LRIP II deliveries and the Enhanced Producibility Program (EPP) missile flight test program were completed. Fielding of the software upgrade, version 8.04, was begun which will solve problems primarily with launch motor ignition delay for LRIP and EPP missiles and bore-sight offset for EPP missiles. The CRP Addendum was approved by the acting AAE, Hon. Robert Walker, in November 1997. On 1 December 1997, program-year two of the multiyear contract was funded. Results of the FY97 value engineering efforts exceeded the JAVELIN goal by 183%. The original goal was \$5.9M, and final savings realized totaled \$10.8M.

Of special interest to note for the publication of this SAR, is the significant impact of the FY98 Congressional adjustments, Program Budget Directive (PBD) 604, to the Javelin Program. The FY98 Congressional Adjustments combined with the OSD inflation adjustments will be absorbed in the Javelin budget by reducing Army missile quantities (which will occur the next time the official database is updated). The JAVELIN program will preserve the FY97-99 fixed price multiyear contract by deferring and unfunding Army rounds. The FY98 USMC Congressional plus-up to procure additional rounds makes this deferment possible

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

without breaking the multiyear contract in FY99 due to the combined effect of the FY98 Congressional withholds and FY98-99 OSD inflation adjustments. The money for missiles, Command Launch Units (CLU), and Training Device procurements for FY98 and FY99 will be realigned to preserve the total quantity purchased in the multiyear contract.

When the JAVELIN Project Office committed to the JAVELIN CRP in FY94 and returned \$1.4B to the Army and Marine Corps TOAs, nearly all flexibility for dealing with budget adjustments was lost in return for a promise of program stability. The Javelin program sustained a cumulative \$49.378 million inflation adjustment from PBD 604 (through FY03), although the Javelin fixed price multiyear contract does not contain economic adjustment provisions. The multiyear contract was negotiated at one percent under the Defense Contract Management Center's Forward Rate Pricing Agreement. Due to the pressure from the CRP provisions, the contract was negotiated at rates very favorable to the Government and well below the contractor's target profit. Further downward adjustments are not possible without breaking the multiyear contract, with a significant termination liability based on the number of rounds canceled, and would require reopening negotiations resulting in terms much less favorable to the Government. The program office has already reduced program support to a minimally acceptable level. Additional decrements will break the cost reduction agreement made with industry and damage Government credibility in the next Javelin multiyear negotiation. The bottom line is that any additional negative FY99 funding impacts to the program will break the existing multiyear contract.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

The intent of the System Maturity Program is to eliminate the necessity for Follow-on Operational Test and Evaluation (FOTE). Therefore, the current schedule estimate for FOTE in Section 9 has been designated as "not applicable". There are

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

no additional scheduled milestones with respect to T&E for Javelin.

The Program Deviation Report is in process and the Acquisition Program Baseline is being staffed to accommodate the above change in schedule.

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (AFB)	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)	JUN 89	JUN 89	JUN 89	
FSD Contract Award	JUN 89	JUN 89	JUN 89	
Pre-Prod Qual Test				
Start	JUN 90	JUN 90	JUN 90	
Complete	DEC 93	DEC 93	DEC 93	
Training Force Dev Test and Experimentation (FDT&E)				
Start	FEB 93	FEB 93	FEB 93	
Complete	APR 93	APR 93	APR 93	
Prototype Delivery	NOV 92	NOV 92	NOV 92	
IOT&E				
Start	SEP 93	SEP 93	SEP 93	
Complete	DEC 93	DEC 93	DEC 93	
LRIP Decision (DAB)	JUN 94	JUN 94	JUN 94	
LRIP I Contract Award	JUN 94	JUN 94	JUN 94	
LRIP II Contract Award	MAR 95	MAR 95	MAR 95	
First LRIP Delivery	OCT 95	OCT 95	OCT 95	
Prod Verification Test				
Start	NOV 95	NOV 95	NOV 95	
Complete	APR 96	APR 96	APR 96	
LRIP III Contract Award	FEB 96	FEB 96	FEB 96	
LRIP II Delivery	OCT 96	OCT 96	OCT 96	
Limited User Test				
Start	APR 96	APR 96	APR 96	
Complete	JUN 96	JUN 96	JUN 96	
Live Fire Test				
Start	JUN 96	JUN 96	JUN 96	
Complete	DEC 96	DEC 96	DEC 96	
First Unit Equipped	JUN 96	JUN 96	JUN 96	
IOC	OCT 96	OCT 96	OCT 96	
Full Rate Production (ASARC)	MAY 97	MAY 97	MAY 97	
Full Rate Production Contract Award	MAY 97	MAY 97	MAY 97	
LRIP III Delivery	OCT 97	OCT 97	OCT 97	
First Full Rate Production Delivery	OCT 98	OCT 98	OCT 98	
Follow-on Operational Test and Evaluation				
Start	JAN 99	JAN 99	N/A	(Ch-1)
Complete	APR 99	APR 99	N/A	(Ch-1)
Organic Field Level Support Capability	JAN 99	JAN 99	JAN 99	

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Organic Depot Level Support Capability	JUL 01	JUL 01	JUL 01

b. Current Change Explanations --

(U) Ch-1 The intent of the System Maturity Program is to eliminate the necessity for Follow-on Operational Test and Evaluation. Therefore, the current estimate has been designated as "not applicable". There are no additional scheduled milestones with respect to T&E for Javelin.

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Min range (m)	(b)(1)				
Degraded					
Full					
Max range (m)					
Hit probability (Ph/reliable rnd)	(b)(1)				
Kill probability					
Given a reliable shot (Pk/s)					
Given engagement opportunity (Pk/e)					
System weight (lbs)	35	35 / 49.5	49.36	49.36	
Missile operational reliability	.92	.92 / .92	.84	.92	
Cmd Launch Unit MTBOMF (hrs)	129	129 / 129	153	204	(Ch-1)
Cmd Launch Unit MTR (hrs)	<1.5	<1.5 / 1.5	.77	.77	

(b)(1)

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 P(h/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)

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

(b)(1)

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5. (U) Missile Operational Reliability is established at system maturity which is three years after MSIII (May 00).

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.

11. ~~Current Change Explanations --~~

(b)(1)

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	877.0	877.0	868.8
Procurement	2914.1	2914.1	2906.3
Round Flyaway	(2018.1)		(2018.8)
CLU Flyaway	(516.8)		(515.8)
Total Flyaway	(2534.9)		(2534.6)
Other Wpn System Costs	(51.1)		(49.4)
Training Devices	(245.5)		(245.3)
Plant Closure	(16.6)		(17.5)
			(0.0)
			(0.0)
Total Other Wpn Sys	(313.2)		(312.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(66.0)		(59.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 97 Base-Year \$	3791.1	3791.1	3775.1
Escalation	134.9	134.9	76.8
Development (RDT&E)	(-109.7)	(-109.7)	(-106.8)
Procurement	(244.6)	(244.6)	(183.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3926.0	3926.0	3851.9

(U) Values shown include USMC program.

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

b. (U) Quantity --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	48	48	48
Procurement	28453	28453	28453
Total	28501	28501	28501

Note: Excludes 165 RDT&E prototypes from the SAR Baseline and 154 from the Current Estimate that are not considered fully configured.

(U) A system is comprised of a round, a Command Launch Unit (CLU), four Training Devices and initial spares. The round is the designated unit of measure. Of the total procurement quantity shown above, 2585 rounds (FY94-703, FY95-872, and FY96-1010 or 9.1% of total) will be produced during low rate initial production (LRIP).

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

12. (U) Unit Cost Summary:

	UCR Baseline (SEP 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 97 BY\$)	3791.1	3775.1	
(2) Quantity	28501	28501	
(3) Unit Cost	0.133	0.132	-0.75
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 97 BY\$)	2914.1	2906.3	
(2) Quantity	28453	28453	
(3) Unit Cost	0.102	0.102	0.00

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	767.3	3158.7	-	3926.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	+1.9	-58.9	-	-57.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-7.2	-0.4	-	-7.6
Other	-	-	-	-
Support	-	-9.5	-	-9.5
Subtotal	-5.3	-68.8	-	-74.1
Total Changes	-5.3	-68.8	-	-74.1
Current Estimate	762.0	3089.9	-	3851.9

(U) Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	877.0	2914.1	-	3791.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-8.2	-0.3	-	-8.5
Other	-	-	-	-
Support	-	-7.5	-	-7.5
Subtotal	-8.2	-7.8	-	-16.0
Total Changes	-8.2	-7.8	-	-16.0
Current Estimate	868.8	2906.3	-	3775.1

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	+1.9
	Adjustment for Current and Prior Inflation. (Estimating)	-2.3	-2.0
	Adjustment to prior years for actuals (Estimating)	-8.2	-5.1
	Revised estimate for system changes (Estimating)	+2.3	-0.1
	RDT&E Subtotal	-8.2	-5.3
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-59.4
	Economic adjustment for negative program change. (Economic)	N/A	+0.5
	Adjustment for Current and Prior Inflation. (Estimating)	+5.1	+5.2
	Revised Estimating Change (Estimating)	-5.4	-5.6
	Adjustment for Current and Prior Inflation. (Support)	+0.8	+0.8
	Revised Estimate in Initial Spares (Support)	-7.1	-8.6
	Revised estimate in DATA and New Equipment Training (Support)	-1.7	-2.3
	Revised estimate in Training Devices (Support)	-0.3	-0.4
	Revised estimate in Plant Closure (Support)	+0.8	+1.0
	Procurement Subtotal	-7.8	-68.8

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 Init Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.06	-0.01	+0.03	+0.03	--	+0.02	--	+0.01	+0.08	0.14

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

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	
0.14	--	--	--	--	--	--	--	--	0.14

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

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.05	-0.01	+0.02	+0.03	--	+0.02	--	+0.01	+0.06	0.11

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	
0.11	--	--	--	--	--	--	--	--	0.11

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	MAY 96	MAY 86
Milestone II	N/A	MAY 89	JUN 89	JUN 89
Milestone III	N/A	JUN 94	MAY 97	MAY 97
FUE/IOC	N/A	DEC 95	OCT 96	OCT 96
Total Cost	N/A	3936.5	3926	3851.9
Total Quantity	N/A	70631	28501	28501
Prog Acq Unit Cost	N/A	0.06	0.14	0.14

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

a. Procurement --			Initial Contract Price		
(U) LRIP III:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
TI/Martin Joint Venture, Lewisville TX					
DAAH01-96-C-0147, FFP/CRIF			\$164.8	N/A	1015
Award: February 29, 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>	
\$162.7	N/A	1015	\$162.7	\$162.7	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.4	\$-0.5
Cumulative Variances To Date (08/31/97)	\$0.4	\$-0.6
Net Change	\$0.0	\$-0.1

Explanation of Change:

(U) All variances pertain only to the cost-plus-incentive-fee Interim Contractor Support (ICS) costs. The hardware portion is a firm-fixed-price contract which has no requirement for variance analysis. The unfavorable schedule variance on ICS is not expected to result in a cost variance.

(U) Multiyear I:			Initial Contract Price		
TI/Martin Joint Venture, Lewisville TX			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-97-C-0209, FFP					
Award: May 31, 1997			\$745.0	\$745.0	6492
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>	
\$745.0	\$745.0	6492	\$745.0	\$745.0	

Explanation of Change:

(U) This is a three year firm-fixed-price multi-service multi-year contract. Pricing data shown is for all three years of this contract. The annual Target (equals Ceiling) in millions and quantities are as follows: Program Year 1) \$192.4 & 1161 Rounds; Program Year 2) \$157.3 & 1274 Rounds; Program Year 3) \$395.3 & 4057 Rounds. Program Years 1 & 2 are funded and awarded.

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

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

a. 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 (FY00-08)</u>	<u>Total</u>
RDT&E	748.9	7.8	5.3	-	762.0
Procurement	868.3	196.9	407.5	1617.2	3089.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1617.2	204.7	412.8	1617.2	3851.9

b. Annual Summary -- Javelin

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY Dollars Nonrec</u>	<u>Flyaway FY Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1986				73.7	55.1
1987				54.1	41.7
1988				36.8	29.5
1989				118.5	98.9
1990				157.8	136.7
1991				88.9	79.9
1992				132.9	122.3
1993				105.8	99.7
1994				49.2	47.2
1995				30.4	29.8
1996				2.2	2.2
1997				5.8	5.9
1998				7.6	7.8
1999				5.1	5.3
Subtotal	48			868.8	762.0

Appropriation: 1109 Procurement, Marine Corps

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY Dollars Nonrec</u>	<u>Flyaway FY Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1997	141	0.7	28.2	37.3	38.2
1998	380	1.9	45.2	55.5	57.8
1999	741	5.2	64.4	78.2	82.8
2000	888	4.3	61.5	74.1	79.8
2001	403		21.2	25.5	28.0
2002					
2003					
Subtotal	2553	12.1	220.5	270.6	286.6

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

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY Dollars Nonrec	Flyaway FY Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1993				19.1	18.3
1994	703	49.3	175.5	210.7	206.1
1995	872	9.8	176.5	210.8	210.0
1996	1010	1.7	173.2	199.5	200.9
1997	1020	3.4	158.8	190.3	194.8
1998	1080	4.0	119.5	133.7	139.1
1999	3316	21.1	254.9	306.5	324.7
2000	5458	24.5	351.6	425.9	458.9
2001	5403		322.6	368.6	404.4
2002	7038	5.5	448.0	418.5	468.3
2003				71.0	81.1
2004				54.7	63.9
2005				4.4	5.2
2006				4.6	5.6
2007				9.6	12.0
2008				7.8	10.0
Subtotal	25900	119.3	2182.6	2635.7	2803.3

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	25948	119.3	2182.6	3504.5	3565.3
Navy	2553	12.1	220.5	270.6	286.6
Grand Total	28501	131.4	2403.1	3775.1	3851.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date

	<u>Plan</u>	<u>Actual</u>
RDT&E	48	48
Procurement	1570	1569

(U) Percent Total Program Quantities Delivered: 5.7%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1270

(U) Percent Total Program Expended: 33.0%

(U) The last planned round was delivered in early January 1998.

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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 June 1996. The CLU sustainment period covers 20 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, also covers 20 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.

Data source: Javelin - Project Office Estimate, updated September 1997, 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 August 1984, 20 years sustainment, Army only.

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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	Avg Annual Cost Per Year JAVELIN	Avg Annual Cost Per Year DRAGONII (ANTECEDENT)
Mission Pay & Allowances	55.3	103.8
Unit Level Consumption	11.3	26.0
Intermediate Maintenance	0.0	0.4
Depot Maintenance	0.6	24.2
Contractor Support	7.4	0.0
Sustaining Support	3.7	5.4
Indirect Costs	11.0	40.1
Total	89.3	199.9

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(06A)823)
PROGRAM: MMIII GRP

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): Minuteman III Guidance Replacement Program

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

OO-ALC/LM

COL CARL B. OVERALL

6014 DOGWOOD AVENUE

Assigned: September 30, 1997

HILL AFB, UT 84056-5816

DSN 777-8645; COMM (801) 777-8645

4. (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)

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17 MAR 20 1998

DIRECTORATE FOR FREEDOM OF INFORMATION
 AND SECURITY REVIEW
 DEPARTMENT OF DEFENSE

SAF/PAS

98 - - 0302

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~~Downgrade instructions subject to Automatic Downgrade~~

~~Declassify on: Originating Agency Determination Required (OADR) (X2)~~

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5. (U) References:

SAR Baseline (Development Estimate):

(U) Acquisition Decision Memorandum dated August 31, 1993.

Approved Program:

(U) AFAE Approved Acquisition Program Baseline (APB) dated May 12, 1997.

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 and unsupportable as early as 2001. 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) On 20 November 1996, the Program Executive Officer directed a rebaseline of the program due to the impacts of negative cost and schedule trends that were being experienced at the time. Several milestones were slipped due to the restructure. A new Acquisition Program Baseline for the restructured program was approved by SAF/AQ in May 97. An equitable adjustment was received by Boeing in May 97 to support the restructured program, and after several technical evaluation and negotiation periods, was formally definitized in December 97.

The proposal for Low Rate Initial Production (LRIP) was received by the System Program Office (SPO) in November 97. Prior to receiving the proposal, discussions with Boeing indicated higher than expected Average Unit Production Cost (AUPC) figures were being experienced for the LRIP units and would be reflected in the proposal. The SPO decided to reduce the number of LRIP units from 46 to 40 to cover this higher AUPC, and move the other 6 units into full rate production. Evaluation of the LRIP proposal is ongoing, with expected contract award in March 98.

In December 97, a reduction in procurement funding was directed to support higher DoD priorities. The impacts of this reduction have driven a new production profile for the program. The details of developing the new profile are still being worked at this time. It is expected that the reduction will cause at least a one year extension to kit production and installation.

A draft Program Office Estimate (POE) was developed by the SPO in December 97 based on data from the LRIP proposal. An Independent Cost Estimate (ICE) of the program was completed by the Air Force Cost Analysis Agency in January 98. The SPO is currently working jointly with the contractor to develop a cost estimate for Full Rate Production. Once this final estimate is complete, the

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

POE will be updated to reflect the new production profile and the most accurate Life Cycle Cost estimate for the program. This summer, the ICE will be reconciled with the latest POE to develop the Service Cost Position that will support the Milestone III AFSARC, scheduled for December 98.

Operational Model (OM) weapon system testing completed successfully in January 98. Results from this testing support the combined DT&E/IOT&E aspect of the program. The AFOTEC operational assessment has been completed and briefed to senior Air Force and OSD leadership. The assessment concludes that there are no operational show stopper issues on the program and that we are on track for entering formal IOT&E in April 98. Aerospace Vehicle Equipment (AVE) box level qualification testing, an LRIP entry criteria, is currently underway and is expected to complete in late March 98. Missile Guidance Set (MGS) Flight Proof testing, also an LRIP entry criteria, is also underway and is expected to complete in February 98.

Operational Ground Program and Operational Flight Program software qualification testing is underway at the Boeing Anaheim facility and is on schedule to support the first Integrated Demonstration Flight, scheduled for June 98.

Major design reviews and readiness reviews have been completed on every aspect of the program. Critical Design Reviews and Software Test Readiness Reviews have been conducted and closed out for the AVE, Peculiar Support Equipment (PSE), and MOD-7 Telemetry wafer.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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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 --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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	JUN 97	JUL 97
AF QT&E			
Start	MAY 95	MAY 96	JUN 96
Complete	MAY 97	JAN 98	APR 98
Low Rate Initial Production (LRIP)	JUL 96	JAN 98	MAR 98
Contract Award			
AF QOT&E Integration Demonstration	NOV 96	JUL 98	OCT 98
Flight (IDF)			
Milestone III AFSARC	MAY 97	NOV 98	DEC 98
First Asset Delivery (FAD) to User	SEP 97	JAN 99	MAY 99
Organic Support Capability	SEP 97	N/A	N/A
Service Depot Support Date	SEP 98	N/A	N/A
Initial Operational Capability (IOC)	MAR 98	NOV 99	JAN 00

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Verf	Current Estimate
(S) Accuracy (G&C)	497	(b)(1)		
(Miss other than reentry - MOTR) (ft)	---			
(S) Weapon System	0.96			
Reliability (G&C)				
(S) Weapon System	0.99			
Availability (G&C)				
(S) Reaction Time (sec)	<= 30			

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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 --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	423.3	496.0	524.2
Procurement	1040.3	1128.8	1297.2
Total Fly-Away	(950.9)		(1181.1)
Total Weapon Other System	(6.8)		(8.5)
Peculiar Support	(47.9)		(57.5)
Initial Spares	(34.7)		(50.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 93 Base-Year \$	1463.6	1624.8	1821.4
Escalation	172.6	264.3	293.5
Development (RDT&E)	(29.0)	(35.9)	(37.0)
Procurement	(143.6)	(228.4)	(256.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year S	1636.2	1889.1	2114.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	652	652	652
Total	652	652	652

Note: Excludes 11 RDT&E 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. After receiving the LRIP proposal, the SPO has decided to change this quantity to 40 (see executive summary for further explanation). The LRIP quantity does not represent more than 10% of the total planned program buy.

c. (U) Foreign Military Sales --
None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (May 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 93 BYS)	1624.8	1821.4	
(2) Quantity	652	652	
(3) Unit Cost	2.492	2.794	+12.12
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 93 BYS)	1128.8	1297.2	
(2) Quantity	652	652	
(3) Unit Cost	1.731	1.990	+14.96

13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	452.3	1183.9	-	1636.2
Previous Changes:				
Economic	-6.1	-13.4	-	-19.5
Quantity	-	-	-	-
Schedule	+63.7	+91.8	-	+155.5
Engineering	-26.0	+18.9	-	-7.1
Estimating	+48.0	+51.5	-	+99.5
Other	-	-	-	-
Support	-	+24.5	-	+24.5
Subtotal	+79.6	+173.3	-	+252.9
Current Changes:				
Economic	-2.0	-30.0	-	-32.0
Quantity	-	-	-	-
Schedule	-	+18.6	-	+18.6
Engineering	-	-	-	-
Estimating	+31.3	+194.2	-	+225.5
Other	-	-	-	-
Support	-	+13.7	-	+13.7
Subtotal	+29.3	+196.5	-	+225.8
Total Changes	+108.9	+369.8	-	+478.7
Current Estimate	561.2	1553.7	-	2114.9

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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	+41.1	+30.9	-	+72.0
Other	-	-	-	-
Support	-	+16.2	-	+16.2
Subtotal	+72.7	+88.5	-	+161.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+28.2	+157.9	-	+186.1
Other	-	-	-	-
Support	-	+10.5	-	+10.5
Subtotal	+28.2	+168.4	-	+196.6
Total Changes	+100.9	+256.9	-	+357.8
Current Estimate	524.2	1297.2	-	1821.4

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+1.6
Omnibus, SAF Directed Adjustments (Estimating)	+26.8	+29.7
RDT&E Subtotal	+28.2	+29.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-30.0
Rephasing in annual buy profile and stretch-out of program to FY05. (Schedule)	0.0	+18.6
Adjustment for Current and Prior Inflation. (Estimating)	+1.1	+1.2
Increase due to Air Force needs (Estimating)	+36.0	+48.3
Prime Integration Contract efficiencies. (Estimating)	-10.9	-12.9
Increase in contractor production costs (Estimating)	+131.7	+157.6
Adjustment for Current and Prior Inflation. (Support)	+0.4	+0.4
Increase in initial spares cost (Support)	+1.1	+1.3

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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>
Change in factory, maintenance and depot support equipment. (Support)	+6.9	+9.4
Change in data and training. (Support)	+2.1	+2.6
Procurement Subtotal	+168.4	+196.5

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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.51	-0.08	-0.01	+0.27	-0.01	+0.50	--	+0.06	+0.73	3.24

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	-0.07	-0.01	+0.17	+0.03	+0.38	--	+0.06	+0.56	2.38

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	2114.9
Total Quantity	N/A	652	N/A	652
Prog Acq Unit Cost	N/A	2.51	N/A	3.24

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

a. RDT&E --			Initial Contract Price		
(U) <u>MMIII GRP - Electronics:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Boeing North Ame. Intl, Anaheim CA					
F04704-93-C-0020, CPAF			\$253.2	N/A	0
Award: August 31, 1993					
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>	
\$425.7	N/A	0	\$425.7	\$425.7	
			<u>Cost Variance Schedule Variance</u>		
Previous Cumulative Variances			\$-26.6	\$-9.4	
Cumulative Variances To Date (12/28/97)			\$-1.1	\$-2.6	
Net Change			\$25.5	\$6.8	

Explanation of Change:

(U) The improvement in cost variance of \$25.5M is due to the restructure of the program in accordance with the May 97 Acquisition Program Baseline.

The improvement in schedule variance of \$6.8M is due to the restructure per the May 97 Acquisition Program Baseline.

(U) Contract Comments:

In December 1997, an Equitable Adjustment Proposal was definitized for \$41M, and also included a \$1.8M increase in the available award fee. The "option to protect" the GRP for inclusion of the MK21 resulted in an additional \$10M increase in the current target contract price. Finally, additional engineering drawings and technical support were required, increasing the target price another \$.5M.

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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 (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	455.3	77.5	20.6	7.8	561.2
Procurement	72.6	103.4	89.7	1288.0	1553.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	527.9	180.9	110.3	1295.8	2114.9

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				81.6	84.5
1995				88.1	93.0
1996				103.3	111.1
1997				103.4	113.0
1998				69.9	77.5
1999				18.3	20.6
2000				6.8	7.8
Subtotal				524.2	561.2

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	0.2	9.0	9.2	10.0
1997	10	4.2	30.3	56.4	62.6
1998	26	4.9	74.6	91.8	103.4
1999	26	5.8	57.8	78.3	89.7
2000	87	12.0	146.8	178.4	207.7
2001	163	19.0	256.1	290.8	344.9
2002	113	18.0	163.1	194.6	235.3
2003	97	18.2	133.6	159.7	197.1
2004	97	16.4	134.8	160.3	202.1
2005	29	14.5	43.8	59.7	77.0
2006		11.9		11.9	15.7
2007		6.1		6.1	8.2

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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	131.2	1049.9	1297.2	1553.7

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	652	131.2	1049.9	1821.4	2114.9

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): \$ 450.4

(U) Percent Total Program Expended: 21.3%

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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AF-13 JDAM

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

AS OF DATE: December 31, 1997

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1. Designation and Nomenclature (Popular Name): Joint Direct Attack Munition (JDAM)

2. DoD Component: USAF

Joint Participants:
USAF, Navy

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	solero@eglin.af.mil

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4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604618F
PE 0604618N

PROCUREMENT:

APPN 1507 ICN 0550 (Navy)
APPN 3011 ICN 353620 (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.

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

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5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline (APB) dated September 20, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated December 19, 1997.

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 primary platforms for the JDAM development are the B-1B, B-2A, B-52H, FA-18C/D and the F-22A (for the MK-83/BLU-110 only). The services will certify other aircraft (e.g. F-16C/D, F-14D, F-15E, FA-18E/F, S-3, P-3, AV-8B) 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:

In January 1997, JDAM completed a first-of-its-kind Integrated Systems Evaluation (ISE). JDAM worked with Air Combat Command (ACC) to employ F-16 FOT&E pilots (422nd Test Squadron at Nellis AFB) to drop 22 weapons in 3 weeks over the Navy's China Lake complex. All 22 drops were successful with the last 6 drops being live warheads. This exercise showed JDAM can be deployed from aircraft using operational pilots and load crews.

JDAM obtained approval for LRIP on 30 April 1997 and exercised the option for Lot 1 with McDonnell Douglas for 2000 lb tail kits. First deliveries of the 937 units start in May 1998.

In June 1997, the B-2 IOT&E culminated in the first ever drop of 16 Precision Guided Munitions on a single pass. The 16 JDAMs were individually targeted against eight targets in two target complexes with one to four JDAMs going against each target. All drops were successful. This completed B-2 testing.

On 4 August 1997, McDonnell Douglas and Boeing merged and the Boeing Company is now the JDAM contractor.

Efforts of the Joint JDAM Government and contractor Integrated Product Team (IPT) to establish early Foreign Military Sales (FMS) resulted in a Request for Information (RFI) from the Government of Israel on 29 August 1997.

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7. Executive Summary (Cont'd):

The JDAM BLU-109 footprint performance fell short of early predictions which made it unsuitable for the users. The solution was the fabrication of a new strake design which has been flight tested. Preliminary analysis indicates that the new design will likely provide an acceptable footprint.

Lot 1 and Lot 2 procurement buys were changed to all MK-84 variants due to the redesign of the BLU-109.

JDAM has experienced Inertial Measurement Unit (IMU) vibration, fin movement and fin shaft fatigue on the F/A-18C/D inboard stations on low altitude, high speed flights. This is caused by both a weakness in the brake structure that relaxes braking torque and the presence of a large, unexpected bending force component. This will have an impact on the start of dedicated F/A-18C/D operational testing.

Initial MK-83 autopilot analyses revealed some potential stability problems at high angles-of-attack. A change in strake configuration should correct the stability problem. Flight tests are underway.

An Over Target Baseline (OTB) of \$17.6 million was established on the Engineering and Manufacturing Development (EMD) Phase II contract in November 1997. This OTB covers an overrun of the baseline development program.

In December 1997, a contract modification was signed to change the JDAM container vapor barrier bag material and foam dunnage to comply with anti-static requirements and add drain hole screens.

As of 31 December 1997, 133 JDAMS have been delivered for B-2 Early Operational Capability.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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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:

Structural problems in the tail assembly and shortfalls in BLU-109 maneuverability have delayed the start of operational testing. This delay will prevent the program from meeting the APB threshold date of October 1998 for Milestone III. The following milestones are impacted:

IOT&E/OPEVAL (Dedicated) Start changed from September 1997 to June 1998.

IOT&E/OPEVAL Complete (2000 lb Kit) changed from December 1997 to December 1998.

Milestone III (2000 Lb)/LRIP (1000 Lb) changed from April 1998 to April 1999.

OT&E/OPEVAL Complete (1000 lb Kit /F-22) changed from May 2001 to March 2003 and Milestone III (1000 LB on F-22) changed from September 2001 to January 2005 to coincide with the availability of the F-22 test aircraft.

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	JUN 98 (Ch-1)	
Complete (1000 lb Kit) - Weapon Only	FEB 98	FEB 98	AUG 98 (Ch-1)	
Operational Assessment				
Start	OCT 95	OCT 95	OCT 95	
Complete	MAR 97	MAR 97	JAN 97	
IOT&E/OPEVAL (Dedicated)				
Start	SEP 97	SEP 97	JUN 98 (Ch-1)	
Complete (2000 lb Kit)	DEC 97	DEC 97	DEC 98 (Ch-1)	
OT&E/OPEVAL				
Complete (1000 lb Kit/F-22)	MAY 01	MAY 01	MAR 03 (Ch-2)	
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	MAY 98 (Ch-1)	
Milestone III (2000 Lb)/LRIP (1000 Lb)	APR 98	APR 98	APR 99 (Ch-1)	
Required Assets Availability	N/A	N/A	N/A	
Required Assets Availability (AF)	MAR 99	MAR 99	MAR 99	

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9a. Schedule (Cont'd):

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APH)</u>	Current <u>Estimate</u>
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	JAN 05 (Ch-2)
Milestone I JDAM PIP	SEP 99	SEP 02	SEP 02 (Ch-3)

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, F/A-18C/D, B-2, B-1, and F-16.

ACRONYMS: AUR - All Up Round

LRIP - Low Rate Initial Production

RAA - Required Assets Availability

b. Current Change Explanations --

(Ch-1) Structural problems in the tail assembly and shortfalls in BLU-109 maneuverability have delayed the start of operational testing. This delay will prevent the program from meeting the October 1998 threshold date for Milestone III. A plan to incorporate a second Low Rate Initial Production (LRIP) lot in April 1998 and reschedule Milestone III to April 1999 has been submitted to the Under Secretary of Defense Acquisition and Technology. The first and second LRIP lots will consist of MK-84 variants only and allow the program to sustain manufacturing at key component suppliers while operational testing is completed. The tail assembly is being strengthened to improve fatigue life in the severe low altitude, high speed environment experienced on inboard weapons stations of the FA-18 C/D. Initial testing of a redesigned BLU-109 has been successful and our confidence is high that the design meets or exceeds requirements. The following milestones are impacted:

DT&E/TECHEVAL Complete (2000 lb Kit) changed from October 1997 to June 1998.

DT&E/TECHEVAL Complete (1000 lb Kit) - Weapon Only changed from February 1998 to August 1998.

IOT&E/OPEVAL (Dedicated) Start changed from September 1997 to June 1998.

IOT&E/OPEVAL (Dedicated) Complete (2000 lb Kit) changed from December 1997 to December 1998.

Lot 1 Production First Delivery changed from April 1998 to May 1998.

Milestone III (2000 Lb)/LRIP (1000 Lb) changed from April 1998 to April 1999.

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9b. Schedule (Cont'd):

(Ch-2) The Milestone III decision for 1000 lb (MK-83) on the F-22 was scheduled for September 2001. Test aircraft are unavailable to meet this schedule. A revised Milestone III date will be submitted to USD(A&T) that aligns with F-22 operational testing. The following milestones changed to coincide with the availability of the F-22 test aircraft.

OT&E/OPEVAL Complete (1000 lb Kit/F-22) changed from September 2000 to March 2003.

Milestone III (1000 LB on F-22) changed from September 2001 to January 2005.

(Ch-3) The JDAM Product Improvement Program (PIP) schedule breach has been resolved by rescheduling milestones to align with available Navy program funding. The following milestones are impacted:

Milestone I JDAM PIP Approved Program changed from September 1999 to September 2002. Milestone I JDAM PIP current estimate changed from N/A to September 2002.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR) Adverse	Approved Program (APB) Obj/Threshold Adverse / Adverse	Demon- strated Perf Adverse	Current Estimate Adverse
Weather Capability				
Accuracy (CEP)				
(Meters)				
GPS Available,	13	13 / 13	9.9	13
Impact Angles >	Horizon-	Horizon-/ Horizon-		Horizon-
60 Deg	tal	tal / tal		tal
Inflight Re-targeting	Targets	Targets / Targets		Targets
Capability (captive	Yes	Yes / Yes	Yes	Yes
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	Yes	B-52H
	B-2	B-2 /		

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Fighter Attack	FA-18 C/D (MK-83), F-16 C/D, FA-18 E/F, F-117A, F-15E, P-3, S-3, F-14 A/B/D	FA-18 / FA-18C/ C/D / D, (MK-83), / F-22A, F-16 / AV-8B C/D, / FA-18 / E/F, / F-117A, / F-15E, / P-3, / S-3, / F-14 / A/B/D /	Yes	FA-18C/ D, F-22A, AV-8B	
Mission Reliability	.90	.90 / .90	.95	.90	
JDAM PIP Accuracy (CEP) (Meters)	3	3 / 3	TBD	3	(Ch-1)
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

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10a. Performance Characteristics (Cont'd):

Naval Operations (CNO) Letter, Serial Number N880D5/4UG59112, dated 2 February 1994. The F-111F has been deleted (Reference AF/XOR Message 260111Z January 1994).

6/ F-22 compatibility will be limited to internal carriage of the MK-83/BLU-110 configuration. The AV-8B is a funded, 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.

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 --

Ch-1 JDAM PIP Accuracy changed from 8 to 3 due to available Navy program funding.

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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)	490.3	490.3	440.8
Procurement	2090.6	2090.6	1689.9
Hardware	(1638.9)		(1376.3)
Tooling & Test Equipmen	(7.9)		(1.1)
System Engineering & Pr	(40.5)		(11.1)
Containers	(39.9)		(26.1)
Warranty	(73.3)		(4.1)
Engineering Change Orde	(46.8)		(39.9)
Lot Acceptance Test	(15.8)		(0.0)
Nonrecurring Flyaway	(60.7)		(51.0)
Total Flyaway	(1923.8)		(1509.6)
Warhead	(65.4)		(48.3)
Product Support Cost	(79.8)		(106.7)
Total Other Wpn Sys	(145.2)		(155.0)
Peculiar Support	(21.6)		(25.3)
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	2130.7
Escalation	811.4	811.4	325.0
Development (RDT&E)	(27.0)	(27.0)	(14.7)
Procurement	(784.4)	(784.4)	(310.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3392.3	3392.3	2455.7

NOTE: This baseline does not include Navy funding for the Joint Programmable Fuse (JPF) (\$7.1M TYS for RDT&E) (\$71.9M TYS for Procurement). Navy Procurement funding includes BLU-109 (2,848 units for \$56.2M TYS).

Air Force and Navy RDT&E funding includes the Product Improvement Program (PIP). Air Force and Navy Procurement funding does not include PIP funding.

This Acquisition Program Baseline (APB) includes JDAM PEs 0604618F and 0604618N for Research, Development, Test and Evaluation (RDT&E), and 0207583F (3011) and Appropriation 1507N, ICN 0550, for Procurement.

b. Quantity --

Development (RDT&E)	630	630	620
Procurement	87496	87496	87496
Total	88126	88126	88116

Note: Excludes 81 RDT&E prototypes from the SAR Baseline and 81 from the Current Estimate that are not considered fully configured.

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

NOTE: The Low Rate Initial Production (LRIP) quantities approved in the Acquisition Decision Memorandum (ADM) at Milestone II were 425 units for Lot 1. Subsequent FY97 budget cycle decisions approved a buy-to-budget approach for determining annual quantities. With the lower than expected unit costs, LRIP quantities are 937 for Lot 1. The concept of adding a second LRIP (Lot 2) was briefed to the WIPT and OIPT in December 1997. This second LRIP will include 3,068 JDAMS.

c. Foreign Military Sales --
To be determined.

d. Nuclear Costs --
None.

12. Unit Cost Summary:

	UCR Baseline (SEP 95 APR)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BYS)	2580.9	2130.7	
(2) Quantity	88126	88116	
(3) Unit Cost	0.029	0.024	-17.24
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BYS)	2090.6	1689.9	
(2) Quantity	87496	87496	
(3) Unit Cost	0.024	0.019	-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	-7.3	-148.8	-	-156.1
Quantity	+16.8	-	-	+16.8
Schedule	-	-2.4	-	-2.4
Engineering	-19.0	-	-	-19.0
Estimating	-46.1	-723.5	-	-769.6
Other	-	-	-	-
Support	-	-24.9	-	-24.9
Subtotal	-55.6	-899.6	-	-955.2
Current Changes:				
Economic	-1.4	-49.7	-	-51.1
Quantity	-	-	-	-
Schedule	-	+44.0	-	+44.0
Engineering	-	-	-	-
Estimating	-4.8	+6.3	-	+1.5
Other	-	-	-	-
Support	-	+24.2	-	+24.2
Subtotal	-6.2	+24.8	-	+18.6
Total Changes	-61.8	-874.8	-	-936.6
Current Estimate	455.5	2000.2	-	2455.7

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	+15.7	-	-	+15.7
Schedule	-	-6.9	-	-6.9
Engineering	-16.5	-	-	-16.5
Estimating	-43.7	-445.7	-	-489.4
Other	-	-	-	-
Support	-	-4.7	-	-4.7
Subtotal	-44.5	-457.3	-	-501.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	+32.7	-	+32.7
Engineering	-	-	-	-
Estimating	-5.0	+5.7	-	+0.7
Other	-	-	-	-
Support	-	+18.2	-	+18.2
Subtotal	-5.0	+56.6	-	+51.6
Total Changes	-49.5	-400.7	-	-450.2
Current Estimate	440.8	1689.9	-	2130.7

NOTE: Difference between Planning Estimate (PE) and Development Estimate (DE) has been accounted for in previous estimating changes.

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13a. 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	-1.5
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.6
Navy funds decreased due to Below Threshold Reprogramming, Small Business Innovative Research (SBIR), and various Department of the Navy balancing adjustments. (Estimating)	-5.5	-5.8
Revised estimate due to changes in Product Improvement Program (PIP) (Navy). (Estimating)	+1.4	+1.5
Navy funds increased for Tactical Air Mission Planning System (TAMPS). (Estimating)	+4.3	+4.8
Revised estimate due to changes in estimating methodology (Navy). (Estimating)	+0.5	+0.5
Congressional Adjustments of funds (Air Force). (Estimating)	+2.2	+2.4
Congressional Rescissions for the Bosnia Supplemental (Air Force) (Estimating)	-3.9	-4.1
Reduction due to Air Force Reprogramming. (Estimating)	-4.0	-4.1
Reduction in RDT&E funds due to nonpay inflation (Air Force). (Estimating)	-0.5	-0.5
Revised estimate due to changes in estimating methodology (Air Force). (Estimating)	-0.1	-0.1
RDT&E Subtotal	-5.0	-6.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-49.7
Revision of annual procurement buy profile for the Navy. (Schedule)	+17.8	+22.4
Revision of annual procurement buy profile for the Air Force. (Schedule)	+14.9	+21.6
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
Revised estimate due to changes in estimating methodology (Navy). (Estimating)	+5.5	+6.2
Revised estimate due to change in estimating methodology (Air Force). (Estimating)	-0.1	-0.2
Adjustment for Current and Prior Inflation. (Support)	+0.4	+0.4
Change in Peculiar Support for the Navy. (Support)	+2.9	+3.3

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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 Warhead costs for the Navy. (Support)	-1.4	+0.5
Change in Product Support Cost for the Air Force. (Support)	+16.3	+20.0
Procurement Subtotal	<u>+56.6</u>	<u>+24.8</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	
0.04	--	--	--	--	-0.01	--	--	-0.01	0.03

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	
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 99
FUE/IOC	SEP 99	SEP 99	N/A	SEP 99
Total Cost	681.5	3392.3	N/A	2455.7
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.

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

a. RDT&E --			Initial Contract Price		
<u>JDAM:</u>			<u>Target</u>	<u>Ceiling</u>	<u>OLV</u>
McDonnell Douglas Corp, St Louis MO			\$70.5	\$0.0	630
F08626-94-C-0003, CPAP					
Award: October 11, 1995					
Definitized: October 11, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>OLV</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$95.2	\$0.0	620	\$95.5	\$95.5	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (11/30/97)			\$0.0	\$-1.0	
Net Change			<u>\$0.0</u>	<u>\$0.0</u>	
			\$0.0	\$1.0	

Explanation of Change:

The current contract price changed from \$75.2M to \$95.2M to include the following contract modifications: Common Field Memory Reprogramming Equipment (CFMRE) Data and Maintenance, DAMASK and Additional Load Trainers, F-16 Block 50 Interim Support, B-2 Support at Northrop, Vapor Bag Study, A/W/E Requalification for B-2, Safety Assessment Reports/Review Support for Common Munitions Bit Reprogrammable Equipment (CMBRE)/CFMRE, Global Positioning System (GPS) Jamming Risk Reduction Flights, B-2 IOT&E, B-2 Air Force Mission Support System (AFMSS) A/W/E Updates, Airframe Upper Aerosurface Assembly, Update Mission Computer for 1009 Configuration, Over Target Baseline (OTB) Deobligation for CALSPAN Wind Tunnel, F-16 Block 50 Integration, GPS Keeper Battery Deletion, Tail Actuator System (TAS) Brake Resolution, Inertial Measurement Unit (IMU) Alternate Isolator Development, BLU-109/MK-83 Strake Redesign, B-2 Interface Ionospheric Delay, Time and Material for AFMSS GFE Maintenance, Additional MK-83/BLU-109 STVs, GPS Coax Cable-Flex Configuration, Preparation of 1921/1921-1 Forms, Correction to Earnings/Baseline segregation, AV-8B STVs and WSEP Unique CMBRE Map, OTB, Collins GPS Receiver Integration Support and TAS Motor Magnet Failure Analysis.

Cost and Schedule variances are zero due to the Government authorizing McDonnell Douglas Corporation to implement an Over Target Baseline. The program has been rebaselined to include a \$17.6M overrun.

Cost and Schedule Variances are based on Contract Performance Report (CPR) dated 30 November 1997.

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15b. Contract Information (Cont'd):

b. Procurement --
JDAM:
McDonnell Douglas Corp. St Louis MO
F08626-94-C-0003, FFP
Award: April 30, 1997
Definitized: April 30, 1997

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$19.4	S	937

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$19.4	N/A	937	\$19.4	\$19.4

Explanation of Change:

None.

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

Contract Comments:

This is the first time this contract is being reported 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</u> <u>Years</u> (FY93-97)	<u>Budget</u> <u>Year</u> (FY98)	<u>Budget</u> <u>Year</u> (FY99)	<u>Balance To</u> <u>Complete</u> (FY00-07)	<u>Total</u>
ROT&E	363.1	32.9	23.7	35.8	455.5
Procurement	23.0	80.9	91.6	1804.7	2000.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	386.1	113.8	115.3	1840.5	2455.7

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

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				25.3	26.1
1997				26.0	27.2
1998				10.3	11.0
1999				10.6	11.5
2000				10.6	11.6
2001				13.6	15.2
2002				2.1	2.4
2003				2.1	2.4
Subtotal	114			155.7	161.6

The Joint Programmable Fuze (JPF) funding (\$7.1M TYS) 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				73.7	76.4
1997				31.1	32.9
1998				20.3	21.9
1999				11.1	12.2
2000				1.2	1.4
2001				1.0	1.2
2002				1.4	1.6
Subtotal	506			285.7	293.9

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

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	868	5.2	11.7	24.1	26.0
1999	898	5.8	16.1	34.9	38.4
2000	785	4.4	14.4	30.1	33.6
2001	841	4.6	11.9	24.8	28.2
2002	809	4.4	13.7	24.4	28.3
2003	2622	4.9	42.9	49.3	58.4
2004	2685	3.2	42.9	54.4	65.9
2005	4928	3.7	77.5	90.2	111.6
2006	6269	4.5	97.3	108.2	136.8
2007	5191	5.1	80.6	88.0	113.7
Subtotal	25496	45.8	409.0	528.4	640.9

The Joint Programmable Fuse (JPF) funding (\$71.9M TYS) 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 \$56.2M TYS).

Appropriation: 3011 Procurement of Ammunition, 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	2400	1.2	42.1	50.6	54.9
1999	2148	0.4	38.4	48.3	53.2
2000	5561	0.9	101.6	114.3	128.0
2001	10656	1.9	198.0	215.6	246.0
2002	10184		171.3	186.0	216.3
2003	10049		164.3	176.9	210.0
2004	10315		164.8	177.4	215.2
2005	8072		126.8	137.8	170.9
2006	1698		26.3	33.0	41.8
Subtotal	62000	5.2	1049.6	1161.5	1359.3

Note: FY98 procurement funding of \$54.9M includes \$0.3 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	45.8	409.0	683.5	802.5
USAF	62508	5.2	1049.6	1447.2	1653.2

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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 \$
Grand Total	88116	51.0	1458.6	2130.7	2455.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RD&E	502	375
Procurement	0	0

Percent Total Program Quantities Delivered: 0.4%

b. Total Expenditures To Date (In Millions of Dollars): \$ 324.4

Percent Total Program Expended: 13.2%

Contractually, 502 Guided Test Vehicles (GTVs) were planned to be delivered by 31 December, 1997. Late deliveries are due to hardware redesign and test issues.

Expenditures reflect program office records as of 31 December 1997.

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

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JDAM, December 31, 1997

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

overseas transportation costs. Estimate does not take into account any Defense Business Operations Fund (DBOF) 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 Air-4.2.5 Air-Launched Missile Model. Twelve carriers deployed per year. Three hundred and fifty JDAMs per carrier. Fifty firings per year. Ten percent container failure rate per year. Contractual support identified for first two years of operations. Twenty 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.

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

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JDAM, December 31, 1997

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

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Total Cost for 87,496 JDAM Units	N/A
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
IM/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-23 UHF FOLLOW-ON

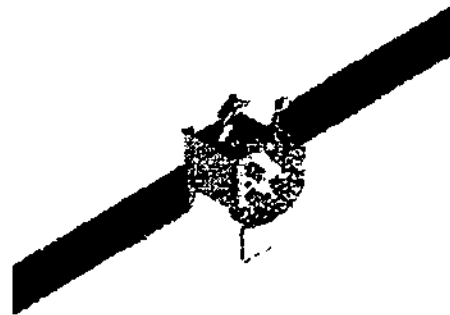
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: UHF FOLLOW-ON

AS OF DATE: December 31, 1997

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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. Loiselle
Communications Satellite Program	Assigned: January 21, 1996
4201 Pacific Hwy	DSN 524-7759; COMM 619-524-7759
San Diego, CA 92110-3215	loisellj@spawar.mil

CLEARED
FOR OPEN PUBLICATION

4. Program Elements/Procurement Line Items:

PROCUREMENT:
APPN 1507 ICN 30243000 (Navy) (Shared)

MAR 24 1998 9

5. References:

SAR Baseline (Production Estimate):

Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-on Communication Satellite Baseline."

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY
REVIEWED BY

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated June 16, 1993.

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No Security Objection
to Open Publication
(AS AMENDED)

98-C-0134
MAR 23 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

98-C-0887

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UHF FOLLOW-ON, December 31, 1997

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 (COMOPTEVFOR) 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 (COMOPTEVFOR) 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 (F7) 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 program has three remaining launches. The F8 spacecraft has successfully

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UHF FOLLOW-ON, December 31, 1997

7. Executive Summary (Cont'd):

completed all contractor testing and is on schedule for launch on 16 March 1998. F9 and F10 are progressing through the production line on schedule for their launches in September 1998 (F9) and in March 1999 (F10). Study efforts continue within the DoD space community to determine an overall plan for replacement of the major DoD owned communication satellite constellations.

The UFO total program acquisition expenditures have exceeded the 90% threshold criteria. This is the final 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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
Designation as a Major Defense Acquisition Program	MAY 88	N/A	MAY 88
Milestone IIA (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

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UHF FOLLOW-ON, December 31, 1997

9a. Schedule (Cont'd):

IOC (Satellite No. 4 w/EHF)

Production Estimate (SAR)	Approved Program (APB)	Current Estimate
TBD	MAY 95	MAR 95

b. Current Change Explanations -- None

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 / Expend- launch / able compat- / launch ible / vehicle	Expend- able launch vehicle	Expend- able launch vehicle
Nuclear Hardening	Comply with SM- 416-84 levels	Comply / Comply with SM- / with SM- 416-84 / 416-84 levels / levels	Comply with SM- 416-84 levels	Comply with SM- 416-84 levels
Anti-jam uplink channel capacity for fleet broadcast (per satellite)	3	3 / 1	3	3
Effective Isotropic Radiated Power (EIRP) and capacity for UHF channels:				
25 KHz channels w/28 dBW (channels)	3	3 / 2	3	3
25 KHz channels w/26 dBW (channels)	15	15 / 14	15	15
5 KHz channels w/20 dBW (channels)	21	21 / 20	21	21
UHF Interoperability	Compat- ible with all existing UHF termi- nals except fre- quency hoppers	Compat- / Compat- ible / ible with all / with all existing / existing UHF / UHF termi- / termi- nals / nals except / except fre- / fre- quency / quency hoppers / 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, 1997

10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
EHF Crossbanding	EHF uplink may be down- linked on SHF, (20 GHZ) UHF, or both	EHF / EHF uplink / uplink may be / may be down- / down- linked / linked on SHF / on SHF (20 GHZ) / (20 GHZ), / GHZ), UHF, or / UHF or both / 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	Compa- tible with Milstar termi- nals and MIL-STD- 1582	Compat- / Compat- ible / ible with / with Milstar / Milstar termi- / termi- nals and/ nals and MIL-STD- / MIL-STD- 1582 / 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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UHF FOLLOW-ON, December 31, 1997

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>
	<u>Success-</u>	<u>Success-/ Success-</u>	<u>Success-</u>	<u>Success-</u>
Cryptographically secure command & telemetry links	ful command execu- tion & teleme- try recep- tion using NSA approved devices	ful / ful command / command execu- / execu- tion & / tion & teleme- / teleme- try / try recep- / recep- tion / tion using / using NSA / NSA approved/ approved devices / devices	ful command execu- tion & teleme- try recep tion using NSA approved devices	ful command execu- tion & teleme- try recep- tion using NSA approved devices
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 MJCS 68-88	As required by MJCS 68-88

b. Current Change Explanations -- None

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UHF FOLLOW-ON, December 31, 1997

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	1559.7
Flyaway	(1479.1)		(1559.7)
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>1559.7</u>
Escalation	237.0	318.9	305.7
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(237.0)	(318.9)	(305.7)
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>1865.4</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>10</u>	<u>10</u>	<u>9</u>
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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UHF FOLLOW-ON, December 31, 1997

12. Unit Cost Summary:

	UCR Baseline (JUN 93 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 88 BY\$)	1526.4	1559.7	
(2) Quantity	10	9	
(3) Unit Cost	152.640	173.300	+13.54
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 88 BY\$)	1526.4	1559.7	
(2) Quantity	10	9	
(3) Unit Cost	152.640	173.300	+13.54

13. Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Production Estimate	-	1716.1	-	1716.1
Previous Changes:				
Economic	-	+20.5	-	+20.5
Quantity	-	-113.2	-	-113.2
Schedule	-	-	-	-
Engineering	-	+149.7	-	+149.7
Estimating	-	+92.8	-	+92.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+149.8	-	+149.8
Current Changes:				
Economic	-	-3.3	-	-3.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+2.8	-	+2.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-0.5	-	-0.5
Total Changes	-	+149.3	-	+149.3
Current Estimate	-	1865.4	-	1865.4

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UHF FOLLOW-ON, December 31, 1997

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	-	+54.6	-	+54.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+78.5	-	+78.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+2.1	-	+2.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+2.1	-	+2.1
Total Changes	-	+80.6	-	+80.6
Current Estimate	-	1559.7	-	1559.7

b. Current Change Explanations --

(Dollars in Millions)

	Base-Year	Then-Year
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-3.3
Adjustment for Current and Prior Inflation. (Estimating)	+2.5	+3.3
FY97 Navy Working Capital Fund budget reduction. (Estimating)	-0.4	-0.5
Procurement Subtotal	+2.1	-0.5

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UHF FOLLOW-ON, December 31, 1997

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	+1.91	+6.50	--	+16.63	+10.62	--	--	+35.66	207.27

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	+1.91	+6.50	--	+16.63	+10.62	--	--	+35.66	207.27

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	1865.4
Total Quantity	N/A	N/A	10	9
Prog Acq Unit Cost	N/A	N/A	171.61	207.27

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
Target Ceiling Qty
\$1755.1 N/A 10

Estimated Price At Completion
Contractor Program Manager
\$1755.1 \$1755.1

Explanation of Change:

None.

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UHF FOLLOW-ON, December 31, 1997

15. Contract Information (Cont'd):

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

Contract Comments:

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	1865.4	-	-	-	1865.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1865.4	-	-	-	1865.4

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		481.4	207.8	251.7
1993				200.6	247.4
1994				132.7	167.1
1995		5.1		102.6	131.3
1996		14.6		67.2	87.4
1997		6.0		83.4	110.1
Subtotal	9	204.8	1354.9	1559.7	1865.4

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):

resulting from the loss of the first satellite (F1).

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	9	204.8	1354.9	1559.7	1865.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	7	7

Percent Total Program Quantities Delivered: 77.8%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1713.3

Percent Total Program Expended: 91.8%

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 borne 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
Orbital Support	1.6	2.0
Anomaly Analysis	N/A	0.6
GSE&I	N/A	0.5
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

AS OF DATE: December 31, 1997

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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) 492-3300
WOODBIDGE, VA 22191-1215

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0603611M 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 capability to execute the full spectrum of military missions from humanitarian operations to conventional combat operations. The AAAV replaces the AAV7A1 Vehicle.

7. Executive Summary:

(U) The AAAV program held a successful prototype Preliminary Design Review in December 97 and is continuing detail design of the prototypes. The Prime Contractor's General and Administrative (G&A) rates and year-end financial reconciliation activities contributed to the slight decrease in program cost efficiency since the last report. The prototype Critical Design Review is planned for June 1998. The \$8 million FY98 Congressional funding enhancement is planned to be released to the program office in January 98 to support the construction of a third prototype under the existing Dem Val (PDOR) contract. The three Demonstration Validation prototypes will be tested in 1999 and 2000.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
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	JUL 00
Operational Test (OT1/EDA)			
Start	JUN 01	JUN 01	JUL 00
Complete	OCT 01	OCT 01	OCT 00
Milestone II DAB Review	JAN 02	JAN 02	JAN 01
Award of E&MD Contract	FEB 02	FEB 02	FEB 01
EMD Prototype Deliveries			
Start	OCT 04	OCT 04	MAR 03
Complete	MAR 05	MAR 05	JUL 03
Developmental Testing II			
Start	NOV 04	NOV 04	JUN 03
Complete	SEP 06	SEP 06	MAR 05
Award of LRIP	JUL 05	JUL 05	OCT 03
LRIP Vehicle #1 Delivery	JAN 07	JAN 07	APR 05
IOT&E			
Start	JAN 07	JAN 07	APR 05
Complete	JUL 07	JUL 07	SEP 05
Live Fire Testing (LFT&E)			
Start	JAN 06	JAN 06	MAY 04
Complete	JAN 07	JAN 07	MAY 05
Milestone III DAB Review	OCT 07	OCT 07	DEC 05
IOC	DEC 07	DEC 07	FEB 06
Full Rate Production Deliveries Start	JUL 09	JUL 09	SEP 07
Organic Support Capability	MAY 10	MAY 10	FEB 09
Service Depot Support	MAY 10	MAY 10	FEB 09
FOC	MAY 14	MAY 14	AUG 12

b. Current Change Explanations --

No changes since last report.

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10. Performance Characteristics:

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
High Water Speed (kts) (SS-3, 36 in SWH)	25	25 / 20	TBD	22	(Ch-1)
Forward Speed on a Hard Surface Road (kph)	72	72 / 69	TBD	72	(Ch-1)
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	2000	(Ch-1)
Reliability (hrs) MTBCMF	95	95 / 70	TBD	95	(Ch-1)

*Performance Characteristics reflect JROC approved key performance parameters, dated 27 February 1995.

b. Current Change Explanations --

(U) Ch-1 The AAAV (P) Prototype Preliminary Design Review held in December 1997 approved a AAAV preliminary design that will meet objective performance requirements. High Water speed current estimate was changed from 20 to 22(kts), Forward Speed estimate on a hard surface road changed from 69 to 72 (kph), Firepower changed from 1500 to 2000, and Reliability changed from 70 to 95 and it will meet it's threshold value for Armor Protection and Carrying Capacity. Previous reports did not reflect these values due to lack of maturity in the design.

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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	802.8
Procurement	0.0	N/A	(0.0)
Total Sailaway			(0.0)
Total Other Wpn Sys			
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	802.8
Escalation	209.1	209.1	131.3
Development (RDT&E)	(209.1)	(209.1)	(131.3)
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	N/A
Total	N/A	0	0

Note: Excludes 13 RDT&E 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)

	RDTE	PROC	MILCON	TOTAL
Planning Estimate	934.1	-	-	934.1
Previous Changes:				
Economic	-25.9	-	-	-25.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+25.9	-	-	+25.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.0	-	-	+0.0
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
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)

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	725.0	-	-	725.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+56.9	-	-	+56.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+56.9	-	-	+56.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+20.9	-	-	+20.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+20.9	-	-	+20.9
Total Changes	+77.8	-	-	+77.8
Current Estimate	802.8	-	-	802.8

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RD&E</u>		
Increase, due to lower escalation rates impacting the base year dollars. (Estimating)	+20.9	0.0
RD&E Subtotal	+20.9	0.0

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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	MAR 95	N/A	N/A	MAR 95
Milestone II	JAN 02	N/A	N/A	JAN 01
Milestone III	OCT 07	N/A	N/A	DEC 05
FUE/IOC	DEC 07	N/A	N/A	FEB 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		\$217.0	N/A	0
M6785496-C-0038, CPAF				
Award: June 13, 1996				
Definitized: June 13, 1996				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$234.7	N/A	0	\$222.6	\$227.2
Previous Cumulative Variances		Cost Variance Schedule Variance		
Cumulative Variances To Date (12/31/97)		\$-1.4	\$-2.8	
Net Change		\$-3.2	\$-3.5	
		\$-1.8	\$-0.7	

Explanation of Change:

Change in Current Contract Target Price: Corrected to reflect options exercised to date. Last period Target of \$246.8 included unexercised options.

Change in Cost Variance: The largest contributor to the change in Cost variance is the Prime Contractor's G&A rate which is heavily influenced by their business base. The rate increased due to a smaller than projected increase in the business base. There is potential increase in the rate near term since the contractor General Dynamics Land Systems (GDLS) included a significant amount of international business in the base and much of that projected business has been delayed. Another contributing factor was an end of year adjustment for fringe benefits and other direct cost.

Change in Schedule Variance: Schedule variance amounts to approximately a three to four week delay. The variance is due to some differences in

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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: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 115.7

Percent Total Program Expended: 12.4%

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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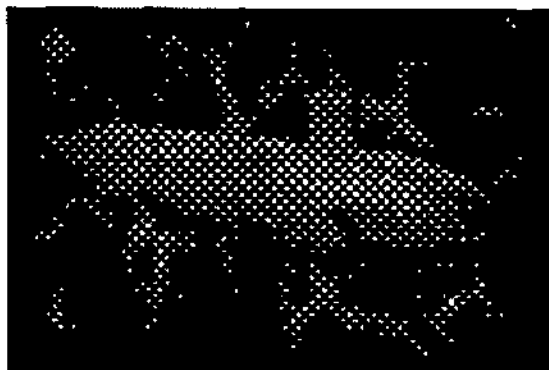
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: NEW ATTACK SUB

AS OF DATE: December 31, 1997

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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 BURGESS_DAVE_CAPT@hq.navsea.navy.mi
1
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0603561N
(U) PE 0603570N
(U) PE 0604556N
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 October 27, 1997.

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:

(U) As early as February 1991, a program to develop a new attack submarine class to complement, yet be more affordable than SEAWOLF was acknowledged as needed to accommodate the inevitable, impending end of service life of the SSN 688 class. Further impetus for the program was provided by nuclear submarine industrial base analyses which concluded that the extensive design knowledge acquired through the SEAWOLF program needed to be captured and the nation's ability to build nuclear submarines needed to be preserved through low rate production of nuclear submarines if we were to sustain a credible submarine force in the future. In August 1992, the Under Secretary of Defense for Acquisition signed out the New Attack Submarine Acquisition Decision Memorandum approving Milestone 0. Following two years of extensive review of requirements and rigorous systems definition effort, the Defense Acquisition Board approved New Attack Submarine Milestone I with the signing of an Acquisition Decision Memorandum on August 18, 1994, initiating a program to develop and build a new attack submarine as a more cost effective follow-on to SEAWOLF with construction beginning at General Dynamics Electric Boat Division in FY98.

The New Attack Submarine Program successfully passed Milestone II with the signing of an Acquisition Decision Memorandum (ADM) on June 30, 1995. A waiver from full-up, system-level live fire testing was approved jointly by USD (A&T) and DOT&E with notification letters sent to Congressional Defense Committees on June 29, 1995.

In the FY96 Authorization Act, Congress directed that a second nuclear submarine builder would also be engaged in the New Attack Submarine program and

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

provisions for including Newport News Shipbuilding in the construction program were undertaken. The approach eventually determined to be most cost effective for including two constructors was a unique teamed construction plan under which each builder would consecutively fabricate selected modules for each ship and the two builders would alternate final assembly, integration, test, outfitting and delivery of completed submarines.

On May 9, 1996 the Integrated Process and Product Development 1996 Design/Build Contract with Electric Boat Corporation was definitized. Contract award for the NSSN Command, Control, Communications and Intelligence (C3I) System was executed April 24, 1996 to Lockheed Martin Federal Systems.

During this period:

The program was reviewed for readiness to proceed with lead ship construction by an OIPT convened October 3, 1997. The ADM providing authorization to proceed was approved October 18, 1997. The acquisition program baseline (APB) was revised to reflect the co-construction teaming arrangement between Electric Boat (EB) and Newport News Shipbuilding (NNS) as approved in the FY98 Authorization and Appropriations Acts. The revised APB was approved on October 27, 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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 --

	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	
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	MAY 05	MAY 05	(Ch-1)
Initial Operational Test & Evaluation Start	JUL 04	JUL 04	JUL 04	
Complete	OCT 04	JUN 07	JUN 07	(Ch-1)
IOC (Lead Ship)	OCT 05	JAN 06	JAN 06	(Ch-1)
Intermediate Support (by IOC)	OCT 05	JAN 06	JAN 06	(Ch-1)
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 is tracking and reports the six year earlier delivery of the MK-48 ADCAP weapon system, for associated weapons system coordination purposes only.

b. Current Change Explanations --

(U) Ch-1. New Acquisition Program Baseline (APB) approved by USD (A&T) on 27 October 1997 revised the following schedule milestones to accommodate scheduling additional post-delivery shakedown period testing:

LFT&E Shock Test from Oct 04 to May 05

Initial Operational T&E complete from Oct 04 to Jun 07

IOC (Lead Ship) from Oct 05 to Jan 06

Intermediate Support (By IOC) from Oct 05 to Jan 06

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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>
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)		
Greater than or	Figure	Figure / Figure	TBD	Figure
equal to 15	A.1 (All	A.1 (All/ A.1		A.1
knots	horizon-	horizon-/ (beam		
	tal	tal / aspect		
	aspects)	aspects)/ only)		

(b)(1)

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

(b)(1)



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

(b)(1)



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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 --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	3405.0	3408.1	3498.0
Procurement	42228.1	43932.0	45438.8
Flyaway	(42130.9)		(45377.6)
Other Wpn System Costs	(16.5)		(57.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(80.7)		(3.8)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 95 Base-Year \$	45633.1	47340.1	48936.8
Escalation	25447.7	18682.0	14755.2
Development (RDT&E)	(409.0)	(299.1)	(249.4)
Procurement	(25038.7)	(18382.9)	(14505.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	71080.8	66022.1	63692.0

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	30	30	30
Total	30	30	30

c. (U) Foreign Military Sales --
None

d. (U) Nuclear Costs --
\$11,986M (TY\$).

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12. (U) Unit Cost Summary:

	UCR Baseline (OCT 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	47340.1	48936.8	
(2) Quantity	30	30	
(3) Unit Cost	1578.003	1631.227	+3.37
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	43932.0	45438.8	
(2) Quantity	30	30	
(3) Unit Cost	1464.400	1514.627	+3.43

13. (U) Cost Variance Analysis:

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

	RDTEE	PROC	MILCON	TOTAL
Development Estimate	3814.0	67266.8	-	71080.8
Previous Changes:				
Economic	-125.6	-6105.4	-	-6231.0
Quantity	-	-	-	-
Schedule	-	+1524.6	-	+1524.6
Engineering	-31.6	-	-	-31.6
Estimating	+50.4	+686.0	-	+736.4
Other	-	-	-	-
Support	-	-45.3	-	-45.3
Subtotal	-106.8	-3940.1	-	-4046.9
Current Changes:				
Economic	-60.8	-4315.5	-	-4376.3
Quantity	-	-	-	-
Schedule	-	-589.6	-	-589.6
Engineering	+96.7	+62.0	-	+158.7
Estimating	+4.3	+1456.0	-	+1460.3
Other	-	-	-	-
Support	-	+5.0	-	+5.0
Subtotal	+40.2	-3382.1	-	-3341.9
Total Changes	-66.6	-7322.2	-	-7388.8
Current Estimate	3747.4	59944.6	-	63692.0

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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	TOTAL
Development Estimate	3405.0	42228.1	-	45633.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+88.6	-	+88.6
Engineering	-27.7	-	-	-27.7
Estimating	+30.8	+2046.9	-	+2077.7
Other	-	-	-	-
Support	-	-40.2	-	-40.2
Subtotal	+3.1	+2095.3	-	+2098.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+86.7	+53.1	-	+139.8
Estimating	+3.2	+1058.1	-	+1061.3
Other	-	-	-	-
Support	-	+4.2	-	+4.2
Subtotal	+89.9	+1115.4	-	+1205.3
Total Changes	+93.0	+3210.7	-	+3303.7
Current Estimate	3498.0	45438.8	-	48936.8

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-60.8
Technology insertion for the following:	+86.7	+96.7
Alternate bow dome design, Advanced Submarine		
(RSM) Combat System development, C3I		
integration and advanced sail design.		
(Engineering)		
Adjustment for Current and Prior Inflation.	+11.4	+12.0
(Estimating)		
Adjustment for Small Business Innovative	-19.8	-21.0
Research, various undistributed reductions		
and Adjustments by FMB/OSD (Estimating)		
Increases due to Navy Working Capital Fund	+4.7	+5.2
and pay rate estimate changes (Estimating)		
Military and Civilian Pay rate increases	+5.1	+5.8
(Estimating)		
Revised estimate to reflect lower OSD	+1.8	+2.3
approved indices. (Estimating)		
RDT&E Subtotal	+89.9	+40.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4315.5

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Acceleration of build profile. (Schedule)	0.0	-589.6
Technology insertion for the following:	+53.1	+62.0
Advanced sail design, Conformal Acoustic		
Velocity Sensors Light Weight Wide		
Aperture Array design, and Elasto Metric		
ejection system development. (Engineering)		
Adjustment for Current and Prior Inflation.	+109.2	+118.1
(Estimating)		
FY 98 Appropriations Act reductions	-64.1	-69.8
(Estimating)		
Recission to FY 97 Advanced Procurement	-4.4	-4.7
(Estimating)		
Revised estimate to reflect lower OSD	+1017.4	+1412.4
approved indices. (Estimating)		
Increase in support costs based on new	+4.2	+5.0
requirements (OPN) (Support)		
Procurement Subtotal	+1115.4	-3382.1

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	
2369.36	-353.58	--	+31.17	+4.24	+73.22	--	-1.34	-246.29	2123.07

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	-347.36	-0.02	+31.17	+2.07	+71.40	--	-1.34	-244.08	1998.15

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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 (P&E)	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
FOE/IOC	OCT 05	OCT 05	N/A	JAN 06
Total Cost	N/A	71080.8	N/A	63692
Total Quantity	N/A	30	N/A	30
Prog Acq Unit Cost	N/A	2369.36	N/A	2123.07

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

a. RDT&E --
 (U) Design Studies IPPD:
 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
\$517.2	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$517.2	\$517.2

Previous Cumulative Variances
 Cumulative Variances To Date
 Net Change

Cost Variance	Schedule Variance
N/A	N/A
N/A	N/A
N/A	N/A

Explanation of Change:

(U) Increase in contract value is associated with the issuance of orders under the contract's Basic Ordering Agreements for material procurement. This is a level of effort contract and does not invoke Earned Value Measurement.

(U) Contract Comments:

This is a level of effort type contract with cost reporting at the task level.

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

(U) <u>NSSN/Sonar Combat Ctrl:</u>			Initial Contract Price		
Lockheed Martin Fed Syst, Manassas VA			Target	Ceiling	Qty
N00024-96-C-6226, CPAF			\$99.6	N/A	1
Award: April 24, 1996					
Definitized: April 24, 1996					

Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$148.1	N/A	1	\$148.1	\$156.0	

Previous Cumulative Variances	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/23/97)	\$-0.9	\$-1.1
Net Change	\$-2.9	\$-2.5
	\$-2.0	\$-1.4

Explanation of Change:

(U) The cost variance primarily is a result of Sonar subsystem hardware development cost growth. Development team personnel (Navy and industry) have been co-located to streamline future development effort and enhance risk management effectiveness. Also contributing to the cost variance was a productivity deficit in Combat Control software development. The skill/experience mix on the software development team is being improved and added training for the team is being provided.

The schedule variance has resulted from delays in Sonar hardware mechanical design; Combat Control Software Specification staffing shortfalls; and, difficulty migrating drawings to Computer Aided Design tools. Staffing is being added selectively and new design tool training is being implemented. No system level milestones impact is anticipated.

Current contract target price increased \$27.6M for planned modification to add Platform Integration effort.

(U) <u>Nuclear Components:</u>			Initial Contract Price		
Westinghouse Electric Co., Monroeville PA			Target	Ceiling	Qty
N00024-96-C-4051, CPFF			\$105.6	N/A	0
Award: December 15, 1995					
Definitized: December 15, 1995					

Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$253.3	N/A	0	\$257.5	\$257.5	

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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:

None.

b. Procurement --			Initial Contract Price		
(U) IPPD96 Contract:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Gen Dyn, KB Corp, Groton, CT			\$1437.7	N/A	0
N00024-95-C-2100, CPFF					
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>	
\$1474.9	N/A	0	\$1219.0	\$1378.5	

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-13.0	\$-9.6
Cumulative Variances To Date (12/23/97)	\$-18.5	\$-8.7
Net Change	\$-5.5	\$0.9

Explanation of Change:

(U) Cost variance erosion resulted from higher than projected labor rates and some design product rework. Design effort sequencing is being adjusted to mitigate the potential for higher than expected future level of rework.

Schedule variance is improving as a result of process improvements being implemented in the Systems Engineering work accounts.

Contract target price increased with a contract modification to add FY98 Long Lead-Time Material and effort to prepare for starting construction.

(U) Nuclear Components:			Initial Contract Price		
Westinghouse Electric, Schenectady NY			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-96-C-4053, CPFF			\$61.6	N/A	0
Award: December 15, 1995					
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>	
\$147.7	N/A	0	\$144.4	\$144.4	

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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:

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 (FY92-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-19)</u>	<u>Total</u>
RDT&E	1793.3	390.6	299.6	1263.9	3747.4
Procurement	1566.0	2530.0	2002.9	53845.7	59944.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3359.3	2920.6	2302.5	55109.6	63692.0

b. Annual Summary -- NEW ATTACK SUBMARINE

Appropriation: 0400 RDT&E, Defense Agencies

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1992					
Subtotal					

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				58.0	56.3
1994				367.4	365.3
1995				449.5	455.7
1996				416.0	429.0
1997				433.4	454.2
1998				367.3	390.6
1999				277.4	299.6
2000				223.4	245.2

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

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 \$
2001				207.9	232.2
2002				161.4	183.4
2003				164.1	190.1
2004				76.9	91.0
2005				116.5	141.0
2006				86.5	107.0
2007				51.4	65.0
2008				7.0	9.0
Subtotal				3498.0	3747.4

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 \$
1996		146.1		749.0	790.3
1997		278.1		724.1	775.7
1998	1	823.7	1893.3	2322.6	2530.0
1999	1	50.1	1875.0	1806.5	2002.9
2000				661.8	747.4
2001	1		1810.5	1491.7	1718.0
2002	1		1815.3	1753.1	2051.1
2003				853.1	1024.8
2004	1		1473.7	1769.4	2172.3
2005	2		3073.6	2974.5	3732.1
2006	2		2910.3	3229.1	4140.7
2007	2		2883.6	3380.2	4429.8
2008	3		4210.2	3805.0	5097.4
2009	3		4144.7	3920.1	5365.8
2010	2		2801.2	2988.3	4180.4
2011	3		4100.7	3879.7	5546.8
2012	2		2846.2	3311.4	4838.3
2013	3		4151.7	3040.4	4540.3
2014	3		4089.6	2398.9	3650.9
2015				65.6	102.3
2016				66.4	105.9
2017				65.6	106.9
2018				79.2	131.9
2019				40.9	69.6
2020					
Subtotal	30	1298.0	44079.6	45377.6	59871.6

(U) Note- Nonrecurring Flyaway consists of Detail Design and Design Transfer

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NEW ATTACK SUB, December 31, 1997

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

for FY 96-98

Schedule change approved by APB signed 27 OCT 97 revised build profile from DEC 96 SAR from: 2 to 3 ships in 2008, 2009 and 2011; and, reduced 2012 from 3 to 2 ships and 2015 from 2 to 0 ships.

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				25.3	29.1
2003				4.1	4.8
2004				4.5	5.4
2005				14.5	17.7
2006				12.8	16.0
Subtotal				61.2	73.0

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD					
Navy	30	1298.0	44079.6	48936.8	63692.0
Grand Total	30	1298.0	44079.6	48936.8	63692.0

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): \$ 2105.4

(U) Percent Total Program Expended: 3.3%

(U) Total expenditures as of 10 Feb 98.

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

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NEW ATTACK SUB, December 31, 1997

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

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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AF-3 AWACS RSIP

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

PROGRAM: E-3 AWACS RSIP

AS OF DATE: December 31, 1997

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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 GARY S. CONNOR

3 EGLIN STREET

Assigned: January 13, 1997

HANSCOM AFB, MA 01731-2115

DSN 478-6899; COMM (781) 377-6899

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

RD&E:

(U) PE 0207417F (Shared) Project 67411L (Shared)

PROCUREMENT:

(U) APPN 3010 ICN 11411L (Air Force)

(U) APPN ICN (Army)

CLEARED

FOR OPEN PUBLICATION

AS AMENDED

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SAF/HAS

98-0263

CONGRESSIONAL

98-C-0743

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

~~Classified~~ by: E-3 SECURITY CLASSIFICATION GUIDE, 24 June 1993
Downgrade instructions: Not Subject to Automatic Downgrade
Declassify on: Originating Agency Determination Required (OADR)

(THIS PAGE IS UNCLASSIFIED)

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E-3 AWACS RSIP, December 31, 1997

5. (U) References:

SAR Baseline (Production Estimate):

(U) AFAE Approved Acquisition Program Baseline (APB) dated October 29, 1997.

Approved Program:

(U) AFSAE Approved Acquisition Program Baseline (APB) dated October 29, 1997.

6. (U) Mission and Description:

(U) The purpose of the RSIP modification is to provide 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 Milestone II approval to start EMD occurred in December 1988. EMD contracts were awarded in September 1989 to Northrop Grumman (formerly Westinghouse) for the radar upgrade, and to Boeing for system integration and testing. Test flights conducted in February-March 1990 successfully demonstrated the RSIP pulse compression waveform concept. Radar algorithm simulations in June 1990 confirmed the viability of the RSIP two-slant signal processing technique. The 8.6 dB lab radar demo was successfully completed in September 1992, 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 November 1993, Test System-3 (TS-3) Installation & Check Out (I&CO) was completed, and the first Development Test and Evaluation flight occurred. The qualification phase of the DT&E flight test program began in November 1994;

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E-3 AWACS RSIP, December 31, 1997

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

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 October 1995. 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 the dense clutter environment of Europe. Consequently, IOT&E was extended in order to satisfactorily resolve these issues.

In February 1996, a production contract was awarded to Boeing for 13 US kits (basic [2], plus 3 options [1]), 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 January-July 1996, software updates were developed and tested, critical Deficiency Report (DR) fixes were implemented and training/tech order handbook deficiencies were resolved. In July 1996, a final IOT&E software version was released, following successful integration, regression and flight testing. U.S. and NATO operational flight tests in August-September 1996 confirmed the validity of the software fixes and provided the basis for NATO's full-rate production decision in November 1996. The award of US production option #1 for 2 additional LRIP units and U.S. IOT&E completion both occurred in October 1996.

The Milestone III full rate production decision was made on September 11, 1997. Key events leading to the Milestone III and NATO retrofit readiness decisions in September 1997 included the development and implementation of new radar software versions to resolve remaining critical software deficiencies, the establishment and execution of a joint US/NATO EMD closeout plan and completion of development and test of the SRC R4400 processor to replace the Diminishing Manufacturing Sources R3000. The Option II award for 4 additional RSIP kits was awarded on October 31, 1997. In addition, the RSIP production and retrofit contract was modified to implement a process for making software updates (managed by the software change working group (SCWG)) similar to the process that was successfully used as part of the IOT&E and post-IOT&E corrective action plans. The SCWG will manage the software updates to resolve discrepancies remaining from EMD and any new discrepancies discovered during the US, NATO and UK retrofit programs.

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E-3 AWACS RSIP, December 31, 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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 AFSARC	DEC 88	DEC 88	DEC 88
Brassboard Flight Tests	APR 91	APR 91	MAR 91
System Design Review	FEB 90	FEB 90	FEB 90
Critical Design Review	SEP 91	SEP 91	SEP 91
Test System-3 (TS-3) I&CO	NOV 93	NOV 93	NOV 93
Flight Test DT&E			
Start	JAN 94	JAN 94	NOV 93
Complete	JAN 95	JAN 95	MAR 95
IOT&E			
Start	AUG 95	AUG 95	AUG 95
Complete	NOV 96	NOV 96	OCT 96
Physical Configuration Audit	DEC 95	DEC 95	JUN 96
Low Rate Initial Production Decision	NOV 95	NOV 95	NOV 95
Trial Installation	MAR 98	MAR 98	APR 98 (Ch-1)
Required Assets Available	JUN 00	JUN 00	JUN 00

b. Current Change Explanations --

(U) (Ch-1) The Trial Install milestone was changed from March 1998 to April 1998 to match the delivery of the trial install aircraft to Oklahoma City - Air Logistics Command (OC-ALC).

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E-3 AWACS RSIP, December 31, 1997

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Improve System	(b)(1)			
Sensitivity (dB)				
Detection Range				
Towed-Sphere (.1M^2)				
() Low Altitude (nm)				
() High Altitude (nm)				
Overland Mission				
MTBCF (hrs)				
Detection Range (360 degrees)				
() Fighter-size target				
() Low Altitude (nm)				
() High Altitude (nm)				
ECCM				
() 3 millirad strobe				
azimuth, accuracy				
strobe on mainbeam				
noise jammer at				
100 nm (dBW/MHz)				
() Detect fighter-size				
target (.8m^2) (nm)				
(dBW/MHz)				
Detect 16 degrees				
off main beam				
jammer (nm)				
(dBW/MHz)				
() Inband frequency				
change (msec)				
Maintainability				
(SRC/SRCMP)				
Mean Repair Time				
(hrs)				
Fraction of Failures				
detected (%)				
Reliability (Radar				
Set)				

~~SECRET~~ Performance Characteristics, Reference Notes

(b)(1)

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E-3 AWACS RSTP, December 31, 1997

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

(b)(1)

Approved Program
Threshold

Scaled
Threshold

Demonstrated

(b)(1)

(b)(1)

(U) 8. US IOT&E

b. Current Change Explanations -- None

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E-3 AWACS RSIP, December 31, 1997

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	465.5	465.5	465.5
Procurement	424.6	424.6	437.9
Flyaway	(296.2)		(277.1)
Other Weapon Systems	(102.6)		(134.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(25.8)		(25.9)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 97 Base-Year \$	890.1	890.1	903.4
Escalation	1.2	1.2	-8.5
Development (RDT&E)	(-41.1)	(-41.1)	(-41.1)
Procurement	(42.3)	(42.3)	(32.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	891.3	891.3	894.9

(U) Initial spares reflect Obligation Authority (OA).

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	32	32	32
Total	32	32	32

(U) Development: Excludes 6 RDT&E units which are not fully configured end items. This number includes the Test System-3 (TS-3), Avionics Integration Lab (AIL), Reliability Verification Testing (RVT), Environmental Qualification (EQ), Performance Qualification Lab (PQL). The NATO kit was added in 1992 when RSIP became a joint cooperative program.

Production: LRIP quantities are numbered at four; two in FY96 and two in FY97. This quantity of two per year was selected for economic reasons; the original buy of 34 production kits plus software maintenance facility, training, and partial spares kits was rounded to four kits.

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 May 7, 1992, sets forth the terms for the RSIP Cooperative Development Program. Two U.S. RSIP EMD contracts were modified with Boeing and Northrop Grumman for the NATO RSIP Phase I effort. During Phase I Northrop Grumman is providing one more RSIP Group B radar set modification kit and instrumentation for the NATO E-3A aircraft. Boeing Phase I effort has provided one RSIP Group A Kit and the NATO Airborne Operational Computer Program (AOCP) software. In Phase II, added in January 1994, Northrop Grumman has developed the logistics support for the RSIP hardware and software components and

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E-3 AWACS RSIP, December 31, 1997

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

supported Boeing during the test program; Boeing has installed and integrated the RSIP prototype Group A and B kits into the NATO E-3A test aircraft and conducted the test 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 March 31, 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) July 13, 1993 with the Northrop Grumman Corporation placed on directed subcontract on September 1, 1993 to support Phase I. Including the \$5.8M Phase IB LOA option, the study lasted for approximately two years. UK requirements include acquisition of production kits for all 7 UK aircraft and 1 ground laboratory.

The U.S., NATO and UK joined together and awarded a contract on February 9, 1996 to purchase 28 RSIP aircraft kits (2 U.S., 18 NATO, and 8 UK) under the production program. The U.S. has contracted for 11 more aircraft kits in three follow-on options in FY97, FY98 and FY99. Option 1 to acquire two kits for the U.S. was awarded on October 31, 1996. Option 2 was awarded October 31, 1997 to acquire four kits and the award of Option 3 in FY98 will be for an additional 5 kits. The initial set of kits for NATO, N-2 and N-1, were delivered on September 30, 1997 and October 31, 1997, respectively and retrofit for N-2 began on December 8, 1997.

d. (U) Nuclear Costs --
None.

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E-3 AWACS RSIP, December 31, 1997

12. (U) Unit Cost Summary:

	UCR Baseline (SEP 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 97 BY\$)	890.1	903.4	
(2) Quantity	32	32	
(3) Unit Cost	27.816	28.231	+1.49
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 97 BY\$)	424.6	437.9	
(2) Quantity	32	32	
(3) Unit Cost	13.269	13.684	+3.13

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	424.4	466.9	-	891.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-7.5	-	-7.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+11.1	-	+11.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+3.6	-	+3.6
Total Changes	-	+3.6	-	+3.6
Current Estimate	424.4	470.5	-	894.9

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E-3 AWACS RSIP, December 31, 1997

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

(U) Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	465.5	424.6	-	890.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+13.3	-	+13.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+13.3	-	+13.3
Total Changes	-	+13.3	-	+13.3
Current Estimate	465.5	437.9	-	903.4

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

0.0 0.0

RDT&E Subtotal

0.0 0.0

(2) Procurement

Revised escalation indices. (Economic)

N/A -7.5

Adjustment for current and Prior Inflation.
(Estimating)

+5.9 +2.4

Actual Diminishing Manufacturing Source (DMS)
costs (above estimated costs) to acquire
Multi Chip Module for R4400 processor.

+0.7 +0.7

(Estimating)

Depot install hours and rate increase.
(Estimating)

+6.7 +8.0

Procurement Subtotal

+13.3 +3.6

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E-3 AWACS RSIP, December 31, 1997

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	
27.85	-0.23	--	--	--	+0.35	--	--	+0.12	27.97

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	
14.59	-0.23	-0.01	--	--	+0.35	--	--	+0.11	14.70

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	SEP 97	SEP 97
FUE/IOC	N/A	SEP 96	N/A	N/A
Total Cost	N/A	689.9	891.3	894.9
Total Quantity	N/A	34	32	32
Prog Acq Unit Cost	N/A	20.29	27.85	27.97

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

(U) No cost reporting for FFP contract.

a. RDT&E --

(U) AWACS RSIP (Group B Kit):

Northrop Grumman, Baltimore, MD

F19628-89-C-0138, FPIF

Award: N/A

Definitized: September 25, 1989

Initial Contract Price
Target Ceiling Qty

\$ \$

Current Contract Price
Target Ceiling Qty

\$ \$

Estimated Price At Completion
Contractor Program Manager

\$ \$

Explanation of Change:

None.

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E-3 AWACS RSIP, December 31, 1997

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

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

b. Procurement --
(U) AWACS RSIP PRODUCTION:
The Boeing Company, Seattle, WA
F19628-95-C-0041, FFP
Award: N/A
Definitized: September 30, 1999

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

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

Explanation of Change:

None.

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 (FY89-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-04)</u>	<u>Total</u>
RDT&E	424.4	-	-	-	424.4
Procurement	95.6	68.1	63.6	243.2	470.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	520.0	68.1	63.6	243.2	894.9

(U) RSIP Development (RDT&E) is a cooperative program with NATO. The total \$424.2M (TYS) is the U.S. share of the cooperative development program.

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E-3 AWACS RSIP, December 31, 1997

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

b. Annual Summary -- RSIP MOD

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 \$
1989				52.8	44.2
1990				73.8	63.7
1991				80.2	71.8
1992				127.1	117.1
1993				16.4	15.4
1994				40.1	38.4
1995				43.8	42.7
1996				31.3	31.1
1997					
1998					
1999					
2000					
Subtotal				465.5	424.4

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY97 Dollars Nonrec	Flyaway FY97 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	2	16.3	23.0	49.4	50.2
1997	2	0.8	16.5	44.0	45.4
1998	4		29.9	65.0	68.1
1999	5		40.8	59.7	63.6
2000	6		55.7	80.2	86.9
2001	7		50.3	65.8	72.6
2002	6		43.9	58.5	65.9
2003				9.8	11.3
2004				5.5	6.5
2005					
2006					
Subtotal	32	17.1	260.1	437.9	470.5

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	32	17.1	260.1	903.4	894.9

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E-3 AWACS RSIP, December 31, 1997

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): \$ 449

(U) Percent Total Program Expended: 50.2%

(U) Expenditures data are as of December 30, 1997, 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 August 1997. 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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18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1997 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	9.9
Unit Level Consumption	2.2	4.1
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.2	0.0
Contractor Support	0.7	1.0
Sustaining Support	4.2	3.7
Indirect Costs	6.0	6.1
Total	23.2	24.8

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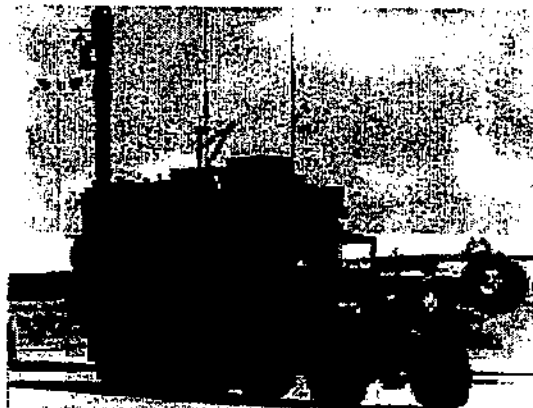
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: Joint STARS GSM

AS OF DATE: December 31, 1997

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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:

RDT&E:

PE 64770A 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.

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DEPARTMENT OF DEFENSE

98-C-0938

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6. Mission and Description:

The Joint Surveillance Target Attack Radar System (Joint STARS), is a surveillance, battle management and targeting radar system. It is a Joint Army and Air Force Program with the Air Force as the executive service. The Joint STARS radar is an airborne multimode radar system, incorporating an electronically scanned antenna and combining both Moving Target Indicator (MTI), Fixed Target Indicator (FTI) and Synthetic Aperture Radar (SAR) functions. The radar is carried aboard a modified E-8 Aircraft 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 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 August 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. On 2 December 95 the Chairman, Joint Chiefs of Staff (JCJS) 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. On March 25, 1997 the first CGS option was exercised for a total of 16 systems. The CGS successfully participated in Task Force XXI, Advanced Warfighting Exercise (AWE) at the National Training Center, Fort Irwin, California. The PM supported the Paris Air Show 14-22 June 1997 by providing and demonstrating stand-alone JSTARS workstations to numerous US and European dignitaries. The final MGSM was fielded in July 97 and the first CGS was fielded on 26 August 1997. IOT&E was changed to a mid-March commencement (vice November 97). A NATO Ground Station study plan was awarded to an international industry team headed by Motorola, Scottsdale, AZ and will conclude in October 1998.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
LRIP Decision	N/A	JUL 93	JUL 93
LRIP Contract Award	DEC 92	JUL 93	SEP 93

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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
NOTE			
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
NOTE			
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	AUG 98 (Ch-1)
Operational Test			
Start	N/A	NOV 97	MAR 98 (Ch-1)
Complete	N/A	DEC 97	MAY 98 (Ch-1)
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	SEP 99 (Ch-2)
Organic Support Capability (CGS)	N/A	SEP 97	SEP 97

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9b. Schedule (Cont'd):

b. Current Change Explanations --

The following milestones have changed from the previous SAR:

	Milestone	From	To	Reason
(Ch-1)	CGS IOT&E start	NOV 97	MAR 98	IOT&E start date was postponed due to a delay in demonstrating all required interfaces. This delay then impacted test completion and Milestone III DAB.
	CGS IOT&E completion	DEC 97	MAY 98	
	CGS DAB	MAY 98	AUG 98	
(Ch-2)	Tech/Oper Assess I	N/A	SEP 99	New requirement to evaluate the initial P31 enhancement.

10. Performance Characteristics:

a. Performance --

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

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Interface JSTARS	50	50 / 50	50	50
Radar & AN/UPD-7				
Radar (bits per second) (k)				
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
Interoperability	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)
LPU GSM				
Workstations	2	2 / 2	2	2
Track Targets	Display time of detection heading, speed & location	Display / Display time of / target detection / file heading, / descrip- tion speed & / heading, location/ 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 / Time of arrival / arrival	Time of arrival	Time of Arrival
BLOCK I (MEDIUM) GSM				

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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>
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)	N/A	60	/ 180	60	60
Mean Time to Repair (MTTR) DS/GS (min)	N/A				
Interoperability	N/A		Rec & / Rec & Trans / Trans to / to TACFIRE / TACFIRE (10) / (6) and and / ASAS ASAS / (2) (10) /	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

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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>
Simultaneous Multisensor Operations	Data from 2 or more sensors	Data / Data from 2 / from 2 or more / or more sensors / sensors	Data from 2 sensors	Data from more than 2 sensors
Two Independent Workstations	Display MTI, and FTI, and SAR data	Display / Display MTI, / MTI, FTI, and/ FTI, and SAR / SAR data / data	Display MTI, FTI & SAR data	Display MTI, FTI & SAR data
Remote Data Display	Data into existing data process facility	Data / Data into / into existing/ existing data / data process / process facility/ facility	Data into existing data process facility	Data into existing data process facility
Nuclear Survivability	Hardened against EMP	Hardened/ Hardened against / against EMP / EMP	Hardened against EMP	Hardened against EMP
Hard copy data capability	N/A	Color / Color printout/ printout of IMINT/ of IMINT graphics/ data & text /	Color printout of IMINT data	Color printout of IMINT data
BLOCK I (HEAVY) GSM Nuclear Survivability	Hardened against EMP and TREE thermal radia- tion and blast	N/A / N/A	N/A	□ N/A
Digital Radar Commander's Tactical Terminal (CTT)	N/A CTT data inter- face	8 / 8 N/A / N/A	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- / lent to / demon- / strate / target / movement / on GSM / monitor	5	5

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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>
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 & / Rec & trans to/ trans to TACFIRE / TACFIRE (10) / (6) and and / ASAS ASAS / (2) (10) / (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 & / Std HW & SW / SW	Std HW & HW	Std HW & SW
Imagery Storage (hrs)				
Digital Radar	N/A	8 / 8	8	8
Video (analog)	N/A	2 / 2	2	2
Simultaneous Multisensor Operations	N/A	Data / Data from 2 / from 2 or more / or more sensors / sensors	Data from 2 from 2 or more sensors	Data from 2 from 2 or more sensors
Two Independent Workstations	N/A	Display / Display MTI, / MTI, FTI, and/ FTI, and SAR / SAR data / data	Display MTI, FTI, and SAR data	Display MTI, FTI, and SAR data
Remote Data Display	N/A	Data / Data into / into existing/ existing data / data process / process facility/ facility	Data into existing data process facility	Data into existing data process facility
Nuclear Survivability	N/A	Hardened/ Hardened against / against EMP / EMP	Hardened against EMP	Hardened against EMP

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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>
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 data
Transportability	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)	N/A	10 / 15	15	15
Commander's Tactical Terminal (CTT)	N/A	CTT data/ CTT data inter- / inter- face / face	CTT data inter- face	CTT data inter- face
Remote Data Display (m)	N/A	Up to / Up to 1000M / 100M into an / into an existing/ existing data / data process-/ process- ing fac-/ ing ility / facility	Up to 300M into an existing data process facility	Up to 1000 into an existing data process- ing facility
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

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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>
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 secondary 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- / lent 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	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

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60 / 180	TBD	60
Interoperability	N/A	Rec & / Rec & transmit/ transmit messages/ messages to TAC- / to TAC- FIRE/ / FIRE/ AFATDS / AFATDS (to / (to facili- / facili- tate / tate target- / target- ing) and/ ing) and ASAS (to/ ASAS (to facili- / facili- tate / tate intelli-/ intelli- gence / gence report- / report- ing and / ing and battle- / battle- field / field mgmt) / 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 facilita- te targetin g) and ASAS (to facilita- te intellig ence reportin g and battlefi eld mgmt)
Standard IEW Modules	N/A	Std HW & / Std HW & SW / 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 / Data from 2 / from 2 or more / or more sensors / sensors	TBD	Data from 3 or more sensors
Two Independent Workstations	N/A	Display / Display MTI, / MTI, FTI, and/ FTI, and SAR / SAR data / data	Display MTI, FTI and SAR data	Display MTI, FTI, and SAR data

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
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 or CGS provided remote terminal	(Ch-1)
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 of IMINT, graphics & text	
Nuclear Survivability	N/A	Hardened/ Hardened against / against EMP / EMP	Hardened against EMP	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	10	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	Maintain and automat- ically dissem- inate current enemy situa- tion graphics	Maintain and automati- cally dissemin- ate current enemy 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 /	Provide imagery data through GSM comm links	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) Added update to reflect current FM approach in this area.

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	583.2
Procurement	680.6	651.9	661.3
Recurring Costs	(563.8)		(535.2)
Nonrecurring Costs	(55.6)		(16.5)
Total Flyaway	(619.4)		(551.7)
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	1244.5
Escalation	158.6	271.0	212.9
Development (RDT&E)	(-4.0)	(27.7)	(33.4)
Procurement	(162.6)	(243.3)	(179.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1291.6	1477.6	1457.4
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 CGSs). 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 economic

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

advantages and the documented low risk of the program.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (OCT 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 89 BY\$)	1206.6	1244.5	
(2) Quantity	125	161	
(3) Unit Cost	9.653	7.730	-19.92
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 89 BY\$)	651.9	661.3	
(2) Quantity	104	143	
(3) Unit Cost	6.268	4.624	-26.23

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	+1.6	+22.2	-	+23.8
Quantity	+15.1	+289.9	-	+305.0
Schedule	-	-17.3	-	-17.3
Engineering	+93.2	+72.5	-	+165.7
Estimating	+55.3	-434.6	-	-379.3
Other	-	-	-	-
Support	-	+93.9	-	+93.9
Subtotal	+165.2	+26.6	-	+191.8
Current Changes:				
Economic	-2.2	-16.1	-	-18.3
Quantity	-	-	-	-
Schedule	-	+2.1	-	+2.1
Engineering	+4.9	-	-	+4.9
Estimating	+0.3	-15.0	-	-14.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+3.0	-29.0	-	-26.0
Total Changes	+168.2	-2.4	-	+165.8
Current Estimate	616.6	840.8	-	1457.4

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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	+224.1	-	+236.2
Schedule	-	+2.7	-	+2.7
Engineering	+73.2	+52.6	-	+125.8
Estimating	+41.9	-336.7	-	-294.8
Other	-	-	-	-
Support	-	+48.4	-	+48.4
Subtotal	+127.2	-8.9	-	+118.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+3.3	-	-	+3.3
Estimating	+0.3	-10.4	-	-10.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+3.6	-10.4	-	-6.8
Total Changes	+130.8	-19.3	-	+111.5
Current Estimate	583.2	661.3	-	1244.5

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.2
Addition of sensor interface capability. (Engineering)	+3.3	+4.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
RDT&E Subtotal	+3.6	+3.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-16.0
Economic adjustment for negative program change. (Economic)	N/A	-0.1
Stretchout of annual procurement buy profile. (Schedule)	0.0	+2.1
Adjustment for Current and Prior Inflation. (Estimating)	+3.1	+3.9
Overestimate of CGS in previous SAR. (Estimating)	-13.5	-18.9
Procurement Subtotal	-10.4	-29.0

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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	
11.53	+0.03	-1.61	-0.09	+1.06	-2.45	--	+0.58	-2.48	9.05

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	+0.04	-0.77	-0.11	+0.51	-3.14	--	+0.66	-2.81	5.88

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	AUG 98
FUE/IOC	N/A	JUN 90	N/A	JUN 90
Total Cost	N/A	1291.6	N/A	1457.4
Total Quantity	N/A	112	N/A	161
Prog Acq Unit Cost	N/A	11.53	N/A	9.05

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

These contracts are for the LRIP procurement of 8 LGSM and 18 CGS units.

a. Procurement --

LGSM LRIP:
Motorola, Scottsdale, AZ
DAAB07-95-A-CC, FFP
Award: July 31, 1995
Definitized: July 31, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$42.9	N/A	8

Current Contract Price

Target	Ceiling	Qty
\$42.9	N/A	8

Estimated Price At Completion

Contractor	Program Manager
\$42.9	\$42.9

Explanation of Change:

None.

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15. Contract Information (Cont'd):

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

Contract Comments:

This is the last time this contract will appear in the SAR as the last delivery of the end item has been accepted.

CGS LRIP:		Initial Contract Price		
Motorola, Scottsdale, AZ		Target	Ceiling	Qty
DAABO7-96-C-S204, FFP		\$70.6	N/A	18
Award: December 14, 1995				
Definitized: December 14, 1995				

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$166.3	N/A	34	\$166.3	\$166.3

Explanation of Change:

The adjusted target price includes additional end item units, trainers (3) and current P3I efforts to upgrade the end item.

Cost and Schedule variance reporting 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)

<u>Appropriation</u>	<u>Prior Years (FY82-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-04)</u>	<u>Total</u>
RDT&E	544.8	6.7	5.5	59.6	616.6
Procurement	376.3	97.4	96.0	271.1	840.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	921.1	104.1	101.5	330.7	1457.4

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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				31.3	37.8
1996				12.4	15.3
1997				7.5	9.4
1998				5.3	6.7
1999				4.3	5.5
2000				3.1	4.0
2001				9.1	12.1
2002				13.3	18.0
2003				8.8	12.2
2004				9.4	13.3
Subtotal	18			583.2	616.6

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	53.0	64.0
1995	8	1.7	39.6	47.3	58.3
1996	16	5.3	52.2	69.5	86.7
1997	16	4.3	52.2	73.7	93.4
1998	14	1.9	71.2	75.8	97.4
1999	20		65.2	79.6	96.0

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18h. 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
Mission Pay & Allowances	269.0	0.0
Unit Level Consumption	103.0	0.0
Intermediate Maintenance	14.0	0.0
Depot Maintenance	1.0	0.0
Contractor Support	N/A	N/A
Sustaining Support	7.0	N/A
Indirect Costs	N/A	N/A
Support Costs	N/A	N/A
Other	N/A	N/A
Total	394.0	0.0

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A-2 AFATDS

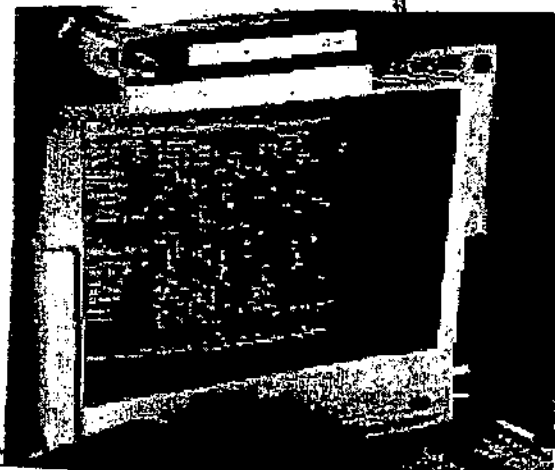
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: AFATDS

AS OF DATE: December 31, 1997

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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 Gregory Swanson

Assigned: August 30, 1997

DSN 987-3090, COMM 908-427-3090

Swanson@DOIMG.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 March 6, 1998.

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:

The AFATDS program encountered a very productive FY97 with concurrent development of multiple software baselines, and support to Task Force, Division XXI and other Army Warfighting Experiments (AWEs). AFATDS experienced a growth of Joint, mandated and critical new requirements which had a major impact on program cost and schedule. AFATDS continued the procurement and fielding of hardware to the Active Army.

AFATDS has grown into a bigger, more powerful, more effective system. It has evolved into a multi-purpose fire support command and control system. AFATDS now provides fire control utilizing Air Force and Naval assets as well as Army and Marine ground forces. The Air Force capability is provided by interface to the Contingency Theater Air Planning System (CTAPS). The Army/Air Force interface is also provided at the Battlefield Coordination Detachments (BCD) at Echelon Above Corps. The Navy requirement is met by interface to the Navy Joint Maritime Command Information System (JMCIS). The AFATDS/JMCIS interface provides seamless fire support interoperability, theater missile defense capability, and joint force support planning and execution.

In order to support the Army Force Structure, critical Army system requirements, such as Army Tactical Missile System Brilliant Anti-Tank (ATACMS BAT), have been accelerated, and new requirements, such as Enhanced Fiber Optic Guided Missile (EFOGM) have been added. Other accelerated or new areas of support include coordination with the Crusader program, participation in the Rapid Force Projection Initiative (RFPI) and the Theater Precision Strike Operation (TPSO) ACTD with the Joint Precision Strike Office. In addition, programmatic requirements mandated by DA and OSD to increase commonality and joint interoperability, such as Joint Technical Architecture-Army (JTA-A), DII COE, C2 Core Data Modeling and IDEF Processing were added to the program.

To support these new requirements, the software releases have been redefined and the program schedule adjusted. The releases were extended from a 12 month drop cycle to a 15 month drop cycle in order to provide adequate time for the testing and training community to support the new releases. A Program Deviation Report (PDR) identifying the need for an administrative change to the approved Acquisition Program Baseline (APB) was submitted to ASARDA in Sep 1997. The PDR identified changes to program schedule and cost due to the above acceleration/increases in system functionality, joint interoperability requirements, and JTA-A mandated requirements. A revised APB was submitted to SARDA, which reflects the program strategy, schedule and cost against the program

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7. Executive Summary (Cont'd):

requirements as now known, and to capture requirements expected to evolve from future AWES. This APB was signed 11 Mar 98. An Exception SAR addressing these changes was submitted in Sep 1997.

AFATDS 97 software development was completed in the Spring of 1997 with Formal Government Test completed in August 1997. The Limited User Test (LUT) was conducted by TEXCOM at Fort Sill, OK, between 23 Sep - 23 Oct 1997. As a joint venture between the Army and the Marine Corps, the LUT was executed to evaluate operational effectiveness and suitability to field AFATDS 97. To date, all the LUT problems identified by TEXCOM have been fixed and verified by the Government in support of Materiel Release.

AFATDS 98 was replanned in FY97 based on the revised release schedule and functional requirements. Based on the replan, AFATDS 98 is on schedule and progressing satisfactorily.

The AFATDS 99 software development effort was placed on the Hughes Development Corporation (HDC), now Raytheon, contract in April 1997 with the exercise of the \$21.6M option. Efforts, to include Integrated Product Team and Working Group meetings to ensure successful support to the First Digitized Division (FDD) were ongoing in 1997. A Government sponsored Knowledge Acquisition Team (KAT) meeting was held in Dec 1997 to prioritize existing and new functionality requirements in support of FDD. This redefinition of requirements will result in an ECP to the contract for AFATDS 99.

In the 1st Quarter FY98, preliminary planning began with the preparation of the "Statement of Work" (SOW) for the design, development, test and fielding of the AFATDS 02, 03 and 04 software releases, which will be referred to as "A0204". These releases include functionality previously referred to as "A00". Target date for contract award is December 1998.

In FY 97, efforts concentrated on fielding the Battlefield Coordination Detachment (BCD). The BCD is an Operational Facility (OPFAC) that provides interface capability at Echelon Above Corps and is comprised of CHS 2 hardware operating the following systems software: AFATDS, ASAS, MCS, AMDWS, AGCCS and CTAPS. The Korea Digitized BCD and USAREUR Digitized BCD in Germany were fielded in Feb 1997 and continue to be supported by FM FATDS. The remaining BCDs are scheduled for fielding in FY98.

AFATDS is participating in the Artillery Systems Cooperation Activities (ASCA) program which is a multinational effort to develop and field an automated interface for allied fire support, command and control systems. The interface has been incorporated into AFATDS to allow interoperability with France, Germany, and the United Kingdom systems. Efforts are ongoing to finalize the ASCA Memorandum of Understanding (MOU). A field test/demonstration of the interface was successfully conducted at Idar-Oberstein and Baumholder, Germany from 27 October through 13 November 1997.

In FY97, Army Policy changed to direct Post Development Software Support (PDSS) to be funded by the PM with procurement dollars until completion of the fielding of the system. This change in policy was reflected in the proposed APB, but is not included in the President's Budget funding. PDSS remains an unfunded requirement

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7. Executive Summary (Cont'd):

to the program. Current Estimate costs addressed in this document will not include PDSS until this issue is resolved.

8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- OEM	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	
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	
IOTE:				
Begin	AUG 95	AUG 95	JUL 95	
Complete	SEP 95	SEP 95	SEP 95	
Milestone III (ASARC)	DEC 95	DEC 95	DEC 95	
Initial Operational Capability (V1)	JAN 97	JAN 97	JAN 97	
Fielding Total Force - Start (V1)	JAN 97	JAN 97	JAN 97	
Limited User Test (LUT)	N/A	N/A	SEP 97	
Multi-Service OT	JAN 98	N/A	N/A	
Software Release AFATDS '97	AUG 97	FEB 98	FEB 98	
Software Release AFATDS '98	AUG 98	JUL 99	JUL 99	
Software Release AFATDS '99	AUG 99	SEP 00	SEP 00	
Software Release AFATDS '00	SEP 00	N/A	N/A	(Ch-1)
Software Release AFATDS '02	N/A	JAN 02	JAN 02	(Ch-1)
Software Release AFATDS '03	N/A	APR 03	APR 03	(Ch-1)
Software Release AFATDS '04	N/A	JUL 04	JUL 04	(Ch-1)
Complete Active Force	MAY 01	JUL 01	JUL 01	
Complete Total Force	JAN 07	APR 07	APR 07	

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(CH-1) AFATDS 00 has been deleted, and the functionality associated with that effort has been re-allocated into 3 separate drops; AFATDS '02, '03 and '04, referred to as A0204. With this change in strategy, the following milestones are changed: AFATDS 00 from Nov 01 to N/A, and AFATDS '02, '03 and '04 have been added as shown above. Release 01, which was not a Baseline Milestone, has been deleted since the Sep 97 SAR.

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- (Wartime) (Operating 24 hrs/day for 108 hours)				
Version 1	0.90	0.90 / 0.90	.95	.95
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
Objective	780	780 / 720	TBD	780
Sustainment of Oper- ation During Power Loss (min)	5	5 / 5	10	10
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
Objective	970	970 / 895	TBD	970
Develop Orders to Fire (per hour)				
Version 1	359	359 / 168	386	386
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
Objective	2	2 / 3	TBD	2
Coordinate Movement Request with Maneuver (min)				
Version 1	4.6	4.6 / 5	1	1

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10a. Performance Characteristics (Cont'd):

Objective	<u>Production Estimate (SAR)</u> 3	3	<u>Approved Program (APB) Obj/Threshold</u> / 4	<u>Demon- strated Perf</u> TBD	<u>Current Estimate</u> 3
Prepare Quick Fire					
Plan (min)					
Version 1	10	10	/ 15	5	5
Objective	10	10	/ 15	TBD	10
Process Field					
Artillery Sensor					
Tasking Order (min)					
Version 1	4	4	/ 6	1	1
Objective	1.3	1.3	/ 1.5	TBD	1.3
Process Fire Support					
Coordination Measure					
(FSCM) (min)					
Version 1	2	2	/ 3	1	1
Objective	2	2	/ 3	TBD	2

AFATDS Version 1, (AFATDS '96) has received Materiel Release and is being fielded with demonstrated performance parameters. Therefore, all Current Estimate for Version 1 have been changed to reflect the demonstrated value.

Objective parameters reflect the objective system to be fielded FY04. As such, demonstrated performance parameters are not yet available.

b. Current Change Explanations -- None

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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)	560.0	625.8	631.8
Procurement	535.9	635.9	565.0
Flyaway	(408.4)		(399.9)
Other Weapon System	(100.2)		(135.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(27.3)		(29.7)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	1095.9	1261.7	1196.8
Escalation	45.7	61.2	21.0
Development (RDT&E)	(-33.8)	(-20.3)	(-26.3)
Procurement	(79.5)	(81.5)	(47.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1141.6	1322.9	1217.8
b. Quantity --			
Development (RDT&E)	63	63	63
Procurement	5191	5474	5474
Total	5254	5537	5537

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 1789 Fire Support Control Terminals and 3748 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 --

AFATDS sales are under discussion with Thailand, Kuwait, Portugal, Turkey, Saudi Arabia and the United Arab Emirate.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (MAR 98 AFB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	1261.7	1196.8	
(2) Quantity	5537	5537	
(3) Unit Cost	0.228	0.216	-5.26
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	635.9	565.0	
(2) Quantity	5474	5474	
(3) Unit Cost	0.116	0.103	-11.21

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	\$26.2	615.4	-	1141.6
Previous Changes:				
Economic	-0.6	-1.1	-	-1.7
Quantity	-	-4.1	-	-4.1
Schedule	-7.5	-2.1	-	-9.6
Engineering	-	-	-	-
Estimating	+13.8	+18.7	-	+32.5
Other	-	-	-	-
Support	-	-2.7	-	-2.7
Subtotal	+5.7	+8.7	-	+14.4
Current Changes:				
Economic	-2.7	-14.8	-	-17.5
Quantity	-	+19.7	-	+19.7
Schedule	+34.8	-3.9	-	+30.9
Engineering	+40.3	-	-	+40.3
Estimating	+1.2	-45.5	-	-44.3
Other	-	-	-	-
Support	-	+32.7	-	+32.7
Subtotal	+73.6	-11.8	-	+61.8
Total Changes	+79.3	-3.1	-	+76.2
Current Estimate	605.5	612.3	-	1217.8

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

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	-	-3.0	-	-3.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+5.2	+17.3	-	+22.5
Other	-	-	-	-
Support	-	+9.8	-	+9.8
Subtotal	+5.2	+24.1	-	+29.3
Current Changes:				
Quantity	-	+16.2	-	+16.2
Schedule	+30.5	-	-	+30.5
Engineering	+34.9	-	-	+34.9
Estimating	+1.2	-39.0	-	-37.8
Other	-	-	-	-
Support	-	+27.8	-	+27.8
Subtotal	+66.6	+5.0	-	+71.6
Total Changes	+71.8	+29.1	-	+100.9
Current Estimate	631.8	565.0	-	1196.8

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.7
Additional program management and overhead cost due to extension in program schedule. (Schedule)	+30.5	+34.8
Additional program functionality derived from AWE, Joint and expanded fire support requirements. (Engineering)	+34.9	+40.3
Adjustment for Current and Prior Inflation. (Estimating)	+1.2	+1.2
RDT&E Subtotal	+66.6	+73.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-15.8
Economic adjustment for negative program change. (Economic)	N/A	+2.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+1.4
Quantity increase of 238 units from 5236 to 5474 due to replacement of CHSI units (151) and changes in employment concept (87). (Quantity)	+16.2	+19.7
Acceleration of annual procurement buy profile. (Schedule)	0.0	-3.9

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

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
Changes in flyaway cost due to deletion of technical insertion and transportation requirements, as well as decrease in average unit price of hardware. (Estimating)		-42.7	-49.9
Changes in support cost due to change in fielding methodology and unplanned Army Warfighter Experiment costs. (Support)		+27.8	+32.7
Allocation to Estimating variance resulting from quantity change. (Estimating)		+2.3	+3.0
Procurement Subtotal		+5.0	-11.8

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 Init Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.32	-0.01	-0.09	+0.01	--	-0.01	--	--	-0.10	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	--	0.22

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.12	--	+0.03	--	--	-0.03	--	--	--	0.12

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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	
0.12	---	-0.02	---	---	---	---	+0.01	-0.01	0.11

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	1217.8
Total Quantity	N/A	3321	5254	5537
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
DAAB07-90-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
\$73.0	\$0.0	1

Estimated Price At Completion	
Contractor	Program Manager
\$81.9	\$81.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-3.3	\$-3.1
Cumulative Variances To Date (12/12/97)	\$-2.4	\$-2.3
Net Change	\$0.9	\$0.8

Explanation of Change:

The AFATDS Version 2 contract consists of three products: Task Force XXI (TFXXI), AFATDS 97 and AFATDS 98. At this time, the contractor has completed and delivered TFXXI. AFATDS 97 was delivered, passed the Limited User Test, and is preparing for formal Material Release. AFATDS 98 was recently rebaselined to reflect current functionality requirements and schedule, and is progressing adequately at this time.

Increases in the Version 2 Target Price reflect increased requirements under the Firm Fixed Price portion of the contract, as well as additional

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15. Contract Information (Cont'd):

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 Force XXI and other performance requirements requested by the user. Recent additions include the CHS 2 Port, EFOGM and ATACMS BAT requirements.

<u>AFATDS '99:</u>			<u>Initial Contract Price</u>	
			<u>Target</u>	<u>Ceiling</u>
Hughes Defense Com., Ft Wayne, IN				<u>Qty</u>
DAABO7-C-90-E708, CPAF			\$21.6	\$0.0
Award: April 11, 1997				1
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>
\$21.6	\$0.0	1	\$21.6	\$21.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/12/97)	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

The AFATDS 99 software development effort was placed on contract in April 97 with the exercise of the \$21.6M option to the basic AFATDS contract. This effort is reported under a separate Cost Performance Report from the AFATDS 97 and AFATDS 98 to facilitate tracking of the various efforts. AFATDS 99 efforts have been limited to date, as the majority of HDC resources are as yet dedicated to AFATDS 97/98 support. Therefore, no variance has been incurred to date. In Dec 1997, HDC attended a Government sponsored Knowledge Acquisition Team meeting (KAT) to reprioritize existing and new functionality requirements in support of First Digitized Division. This redefinition of requirements for AFATDS 99 will result in an ECP to the contract. However, the PM anticipates significant efforts for system design to begin Apr 1998.

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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	424.0	37.4	35.1	109.0	605.5
Procurement	220.8	34.2	40.0	317.3	612.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	644.8	71.6	75.1	426.3	1217.8

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				51.2	51.0
1996				36.4	36.9
1997				36.4	37.3
1998				35.8	37.4
1999				33.1	35.1
2000				23.9	25.8
2001				15.4	16.9
2002				12.3	13.7
2003				9.6	10.9
2004				18.9	22.0
2005				16.5	19.7
Subtotal	63			631.8	605.5

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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	12.1
1994	866	9.6	32.3	51.7	51.4
1995	180	2.3	16.2	22.1	22.4
1996	226		20.5	31.1	31.9
1997	291		23.7	37.3	38.9
1998	226		19.6	32.3	34.2
1999	241		26.6	37.3	40.0
2000	219	0.6	23.2	37.2	40.6
2001	322	0.3	26.1	39.9	44.4
2002	383	0.6	25.1	39.9	44.7
2003	378	0.3	24.4	37.1	42.9
2004	304		25.8	39.0	46.1
2005	324		27.2	38.7	46.7
2006	256	0.4	25.6	33.8	41.7
2007				8.1	10.2
Subtotal	4623	32.1	335.4	525.6	574.0

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Army	4686	32.1	335.4	1157.4	1179.5
OSD	851	7.1	25.3	39.5	38.3
Grand Total	5537	39.2	360.7	1196.9	1217.8

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17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	63	63
Procurement	2821	2821

Percent Total Program Quantities Delivered: 52.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 644.9

Percent Total Program Expended: 53.0%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The O&S costs are to operate and maintain the AFATDS system, based on a peacetime operating tempo of 1800 hrs/yr. The costs are based on an operating life of 20 years, with a reprourement of the CHS hardware after 10 years. The CHS will be contractor maintained above the unit level. Costs are from the AFATDS Program Office Estimate, Jan 98. Military personnel requirements are based on the AFATDS Manpower Estimate Report (MER), May 95. Costs are shown per division.

The AFATDS will replace the TACFIRE/UTACFIRE 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	18.1	18.2
Unit Level Consumption	4.5	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
	N/A	N/A
Total	22.6	36.0

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N-3 AV-8B REMAN

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: AV-8B Remanufacture

AS OF DATE: December 31, 1997

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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:
PMA-257, AV-8B Joint Program Office COL Judson Mason
IPT Building Assigned: February 15, 1995
47123 Buse Road DSN 757-5460; COMM (301) 757-5460
Patuxent River, MD 20670-1547 MASONJP.nimitz@navair.navy.mil
4. (U) Program Elements/Procurement Line Items:
PROCUREMENT:
(U) APPN 1506 ICN 0124 (Navy)

Derived from: Multiple sources
Downgrade instructions: Multiple sources
Declassify on: X3

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No Security Objection
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(AS AMENDED)

98-C-0142
MAR 24 1998

Office of the Chief of
Naval Operations
Dept. of the Navy

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MAR 24 1998

11

DIRECTORATE FOR FREEDOM OF INFORMATION/
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

* Amendment on Pg 5.

98-C-0900

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AV-8B Remanufacture, December 31, 1997

5. (U) References:

SAR Baseline (Production Estimate):

(U) NAE Approved Acquisition Program Baseline dated June 30, 1994.

Approved Program:

(U) NAV Approved Acquisition Program Baseline (APB) dated March 24, 1997.

6. (U) Mission and Description:

(U) The AV-8B (Harrier II) is a second generation, Vertical/Short Takeoff and Landing (V/STOL) light-attack jet aircraft utilized by the Marine Corps. The primary mission of the AV-8B is to provide responsive close air support for the ground forces. This single-piloted, advanced V/STOL aircraft can operate from short fields, forward sites, roads and surface ships providing minimum response time to target.

The AV-8B Remanufacture program converts older AV-8B aircraft to the most recent production configuration. The process requires disassembly of the aircraft; modification of selected subsystems and components; and reassembly of selected original, modified, and new production subsystem and parts. Production processes and tooling are used to fabricate new subsystems, parts and components as well as to assemble the aircraft.

AV-8B Remanufacture is an Acquisition Category IC program managed by the A/V Weapon Systems Program Manager, PMA-257. Because the remanufactured aircraft reflect the present production aircraft configuration, they satisfy existing Operational Requirements (OR) 025-05-85 of September 19, 1984 (Night Attack) and OR 224-05-89 of August 8, 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 September 16, 1997, McDonnell Douglas Aerospace (MDA), a subsidiary of The Boeing Corporation, was awarded the AV-8B FY 1998 AV-8B Advanced Acquisition Contract (AAC). On January 23, 1998, this AAC was definitized for a quantity of twelve (12) aircraft with a target price of \$187.6M. This contract includes a reopener clause for multi-year procurement starting in FY 1998.

On March 24, 1997, ASN(RDA) authorized an Acquisition Program Baseline (APB) agreement revision to resolve schedule breaches to the OT-IIIIB (FOT&E) completion and IOC (completion of FOT&E report). OT-III flight testing was completed on May 30, 1997 and the results are documented in OPTEVFOR's report dated September 24, 1997. The Remanufactured AV-8B was determined to be operationally effective and operationally suitable and approval for fleet introduction was recommended.

During incorporation of Follow-on Test and Evaluation results into the Acquisition Program Baseline a breach of the performance threshold for Radar

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AV-8B Remanufacture, December 31, 1997

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

Air-to-Air Detection (Tail Aspect) was identified. The documented required performance parameter for the AV-8B APG-65 radar duplicates that of the APG-65 in the F/A-18, even though the AV-8B's necessarily smaller antenna dictates performance will be less than the F/A-18. The erroneous performance baselines were established prior to the program's Milestone IV review in March, 1994, and the causes are unknown. Given the primary Air-to-Ground/Close-Air-Support mission of the AV-8B, the impact of degraded performance in this particular Air-to-Air parameter is negligible. A revised APB, reflecting as satisfactory the FOT&E demonstrated AV-8B APG-65 performance, is in process.

MDA has been unable to achieve the plan to recover schedule delays resulting from the strike with the International Association of Machinists and Aircraft Workers (IAMAW) union in the summer of 1996. The first three (3) of the four (4) aircraft procured in FY 1995 and scheduled for delivery in FY 1997 were to deliver three(3), two (2), and (1) month late, respectively. The first FY 1995 aircraft (Reman #5) scheduled for Feb 97 delivered on 9 July 1997. Reman #6 scheduled for May 1997 delivered 10 Sep 97. Reman #7 scheduled for Jul 97 delivered 4 Nov 97. MDA expected to be back on schedule in Sep 97 with delivery of Reman #8, but delivered that aircraft in Dec 97. MDA, due to realignment and a shortfall of skilled personnel, now expects schedule recovery with Reman #16, due in Sep 1998. The impact of these delays on fleet readiness is considered minimal.

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AV-8B Remanufacture, December 31, 1997

8. (U) Threshold Breaches:

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

Item	Breach
Schedule	No
Performance	Yes
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

During incorporation of Follow-on Test and Evaluation results into the Acquisition Baseline a breach of the performance threshold for Radar Air-to-Air Detection (Tail Aspect) was identified. The baseline documentation is in error. A revised APB is in process.

9. (U) Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone IV/III Review	JAN 94	JAN 94	MAR 94
Contract Award	FEB 94	FEB 94	MAY 94
First A/C delivery	FEB 96	FEB 96	FEB 96
DT-III			
Start	FEB 96	FEB 96	FEB 96
Complete	AUG 96	AUG 96	AUG 96
OT-IIIIB FOT&E			
Start	FEB 96	FEB 96	FEB 96
Complete	SEP 96	MAY 97	MAY 97
IOC (Completion of FOT&E Report)	DEC 96	AUG 97	SEP 97 (Ch-1)
FOC (Delivery of the 20th REMAN acft)	MAR 99	MAR 99	JAN 99
Material Support Date 1/	MAR 99	MAR 99	APR 95
Navy Support Date 2/	MAR 99	MAR 99	MAR 99

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AV-8B Remanufacture, December 31, 1997

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

b. Current Change Explanations --

(U) (Ch-1) IOC (Completion of FOT&E Report) has been changed from Jun 1997 to Sep 1997 to reflect actual date test report was issued.

10. (U) Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate	
Dimensions						
Length	47.97	47.97	/ 47.97	47.97	47.97	
Height	11.65	11.65	/ 11.65	11.65	11.65	
Span	30.33	30.33	/ 30.33	30.33	30.33	
Weight Empty (lbs)	14,700	14,700	/ 14,730	14,730	14,730	(Ch-1)
Max VTOGW Wt (lbs)	19,200	19,200	/ 19,200	19,200	19,200	
(Vertical Take-off Gross Weight)						
Max STOGW Wt (lbs)	29,750	29,750	/ 29,750	32,000	32,000	(Ch-1)
Speed Max. (Mach)	.83	.83	/ .83	1.00	1.00	(Ch-1)
Mission Radius (nm)						
CAS	142	142	/ 95	250	250	(Ch-1)
Interdiction	486	486	/ 440	486	486	
Reliability (hrs)						
MFHBMCF(HW) - Oper	12.6	12.6	/ 12.6	32.6	32.6	(Ch-1)
Maintainability (hrs)						
MMH/FH(HW) Oper	3.2	3.2	/ 3.2	2.7	2.7	(Ch-1)
MTTR (Critical)	6.7	6.7	/ 6.7	4.4	4.4	(Ch-1)
Oper						
() Gun Accuracy (mils)	(b)(1)					(Ch-1)
() Sea Surf Search (nm)						
Air-to-Air Det Range						AS AMENDED
(5 sq.m. tgt) (nm)						
Nose, VS 1000 (ft)	8	8	/ 8	36	36	(Ch-1)
Tail, RWS 2000 (ft)	80	80	/ 65	12.9	12.9	(Ch-2)

b. Current Change Explanations --

(U) (Ch-1) Demonstrated performance has been added based on completed testing. The current estimate was also changed to reflect completed testing.

(Ch-2) During incorporation of FOT&E results into the APB a breach of performance threshold for Radar Air-to-Air Detection (Tail Aspect) was identified. The performance baseline was in error. A revised APB is in process.

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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)	0.0	0.0	0.0
Procurement	1843.0	2044.3	1888.4
Airframe	(1163.2)		(1093.4)
Engine	(310.6)		(264.9)
Avionics	(37.2)		(40.9)
Other GFE	(1.1)		(42.1)
Total Flyaway	(1512.1)		(1441.3)
Other Wpn Sys Cost	(0.0)		(0.0)
Peculiar Support	(248.3)		(365.0)
Initial Spares	(82.6)		(82.1)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 94 Base-Year \$	<u>1843.0</u>	<u>2044.3</u>	<u>1888.4</u>
Escalation	315.4	277.7	188.5
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(315.4)	(277.7)	(188.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	<u>2158.4</u>	<u>2322.0</u>	<u>2076.9</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>73</u>	<u>73</u>	<u>72</u>
Total	<u>73</u>	<u>73</u>	<u>72</u>
c. Foreign Military Sales --	None.		
d. Nuclear Costs --	None.		

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12. (U) Unit Cost Summary:

	UCR Baseline (Mar 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	2044.3	1888.4	
(2) Quantity	73	72	
(3) Unit Cost	28.004	26.228	-6.34
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	2044.3	1888.4	
(2) Quantity	73	72	
(3) Unit Cost	28.004	26.228	-6.34

13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Production Estimate	-	2158.4	-	2158.4
Previous Changes:				
Economic	-	-113.9	-	-113.9
Quantity	-	-20.9	-	-20.9
Schedule	-	+40.6	-	+40.6
Engineering	-	+69.3	-	+69.3
Estimating	-	+8.3	-	+8.3
Other	-	-	-	-
Support	-	+55.6	-	+55.6
Subtotal	-	+39.0	-	+39.0
Current Changes:				
Economic	-	-26.1	-	-26.1
Quantity	-	-	-	-
Schedule	-	-1.8	-	-1.8
Engineering	-	-	-	-
Estimating	-	-177.6	-	-177.6
Other	-	-	-	-
Support	-	+85.0	-	+85.0
Subtotal	-	-120.5	-	-120.5
Total Changes	-	-81.5	-	-81.5
Current Estimate	-	2076.9	-	2076.9

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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	-	+23.0	-	+23.0
Engineering	-	+60.3	-	+60.3
Estimating	-	+9.5	-	+9.5
Other	-	-	-	-
Support	-	+40.3	-	+40.3
Subtotal	-	+116.5	-	+116.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-147.0	-	-147.0
Other	-	-	-	-
Support	-	+75.9	-	+75.9
Subtotal	-	-71.1	-	-71.1
Total Changes	-	+45.4	-	+45.4
Current Estimate	-	1888.4	-	1888.4

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-37.2
Economic adjustment for negative program change. (Economic)	N/A	+11.1
Adjustment for Current and Prior Inflation. (Estimating)	+9.3	+10.1
Acceleration of one aircraft from FY 01 to FY 98. (Schedule)	0.0	-1.8
Refinement of program estimates. (Estimating)	-14.2	-18.1
Refinement of program estimate to reflect multiyear procurement. (AR) (Estimating)	-28.7	-35.5
Congressional Reductions to FY 98 for ECOs and multiyear procurement costs. (Estimating)	-17.5	-21.0
Recategorization of estimates from flyaway to support. (Estimating)	-50.5	-57.0
Reprice of Program to reflect contract negotiations. (Estimating)	-45.4	-56.1
Adjustment for Current and Prior Inflation. (Support)	+2.1	+2.2
Recategorization of estimates from flyaway to support. (Support)	+50.5	+57.0

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Revised estimate for initial spares requirement. (Support)	+2.3	+2.6
Increase estimate for ILS and other support equipment. (Support)	+21.0	+23.2
Procurement Subtotal	-71.1	-120.5

AR = Acquisition Reform related changes.

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	-1.94	+0.12	+0.54	+0.96	-2.35	--	+1.95	-0.72	28.85

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	-1.94	+0.12	+0.54	+0.96	-2.35	--	+1.95	-0.72	28.85

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	SEP 97
Total Cost	N/A	N/A	2158.4	2076.9
Total Quantity	N/A	N/A	73	72
Prog Acq Unit Cost	N/A	N/A	29.57	28.85

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

a. Procurement --

(U) <u>FY94/FY95 AIRFRAME:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
McDonnell Douglas Corp., St. Louis MO N00019-93-C-0214, FFP Award: May 6, 1994 Definitized: May 6, 1994	\$102.6	N/A	4

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$180.4	N/A	8	\$180.4	\$180.4

Explanation of Change:

(U) Target price and estimated price at completion has been changed by \$.1M for a total of \$180.4M as a result of various repair orders.

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

(U) Contract Comments:

This is the last reporting for contract N00019-93-C-0214 which is over 90% complete.

(U) <u>FY96 AIRFRAME:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
McDonnell Douglas Corp., St. Louis MO N00019-95-C-0094, FFP Award: April 22, 1996 Definitized: April 22, 1996	\$10.5	N/A	4

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$145.5	N/A	8	\$145.5	\$145.5

Explanation of Change:

(U) Target price and estimated price at completion has increased from \$143.3M to \$145.5M as a result of additional engineering support.

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

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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		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$10.0	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>
\$210.4	N/A	12	\$210.4	\$210.4

Explanation of Change:

(U) The target price and estimated price at completion has increased from \$198.5 to \$210.4 as a result of an engineering change for the Flap Controller Electronic Module Design and a price order for technical manuals.

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

(U) FY 98 AIRFRAME:

MCDONNELL DOUGLAS CORP, ST. LOUIS MO
N00019-97-C-0046, FFP
Award: September 16, 1997
Definitized: January 23, 1998

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$10.5	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>
\$187.6	N/A	12	\$187.6	\$187.6

Explanation of Change:

(U) On January 23, 1998 this contract was definitized with MDA for a quantity of 12 AV-8B aircraft which changed the initial price from \$10.5M to \$187.6M.

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

(U) Contract Comments:

On September 16, 1997, the FY 1998 AV-8B airframe production contract was awarded for advanced acquisition costs only. This is reflected in the initial contract price.

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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 (FY00-01)</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	889.1	319.1	364.1	504.6	2076.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	889.1	319.1	364.1	504.6	2076.9

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		120.2	139.8	144.3
1995	4	2.3	97.3	125.0	131.2
1996	8	12.9	169.1	238.2	254.8
1997	12	9.9	240.4	331.0	359.1
1998	12	6.4	227.5	289.6	319.1
1999	12		209.4	325.1	364.1
2000	12		207.1	267.4	304.7
2001	8		138.8	172.3	199.9
2002					
2003					
Subtotal	72	31.5	1409.8	1888.4	2076.9

	<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	72	31.5	1409.8	1888.4	2076.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	9	8

(U) Percent Total Program Quantities Delivered: 11.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 425.7

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

(U) Percent Total Program Expended: 20.5%

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 24.6
Number of aircraft/squadron 20
(14 aircraft per squadron with a six aircraft detachment)
Consumption rate gal/hr 693.8
POL cost, JP-5, per barrel, FY 94 31.1

Date of estimate: 15 Dec 1995

Source: AIR-4.2 FY92 Operating and Support Cost Update Report

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	7.8	N/A
Unit Level Consumption	16.2	0.0
Intermediate Maintenance	2.0	0.0
Depot Maintenance	3.7	0.0
Contractor Support	0.0	0.0
Sustaining Support	3.0	0.0
Indirect Costs	0.6	N/A
Total	33.3	0.0

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AF-20 NAS

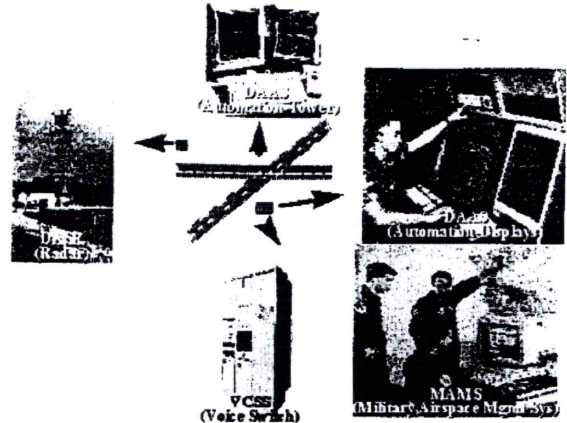
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SELECTED ACQUISITION REPORT (RCS: DD-A&T (Q&A) 823)
PROGRAM: NAS

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): National Airspace System (NAS)

2. (U) DoD Component: USAF

Joint Participants:

Army, Navy

3. (U) Responsible Office and Telephone Number:

ESC/GAA	GM-15 Thomas Robillard
75 Vandenberg Drive	Assigned: June 22, 1997
Hanscom AFB	DSN 478-4947; COMM (781) 377-4947
Bedford, MA 01731-2103	

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

RDT&E:

(U) PE 0204696N
(U) PE 0305137F
(U) PE 0604633A

PROCUREMENT:

(U) APPN 3080 ICN 24696N (Navy)
(U) APPN 3080 ICN 35137F (Air Force)
(U) APPN 2031 ICN 64633A (Army)

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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 February 27, 1997.

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:

DoD will acquire, to the maximum extent practical, systems on contract or systems to be on contract with the FAA to reduce development costs and prevent duplication. If the DoD does not modernize the DoD Air Traffic Control (ATC) system, the resulting reduced interoperability between current DoD and FAA facilities will negatively impact DoD flight operations.

1993 included 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.

1994 included Chief of Staff of the Air Force (CSAF) approval of updated National Airspace System (NAS) and MAMS Operational Requirements Documents (ORDs); DAC approval of MAMS Milestone II review; OSD approval of the NAS Test and Evaluation Master Plan (TEMP); and the FAA release of the Enhanced Terminal Voice Switch (ETVS) RFP. In August 1994, the DoD assumed from the FAA, the lead role for the Digital Airport Surveillance Radar (DASR) acquisition.

1995 included the NAS paper AFSARC Milestone II review; the Military Airspace Management System (MAMS) successful 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)

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7. Executive Summary (Cont'd):

Enhanced Terminal Voice Switch (ETVS) contract award to Denro, Inc.

1996 included the Federal Aviation Administration (FAA) contract award of the Standard Terminal Automation Replacement System (STARS) to Raytheon Corporation on September 16, 1996. The DASR contract was awarded to Raytheon Corporation on August 9, 1996.

Change 1 to the NAS APB received AFAE approval on February 27, 1997. This APB change was necessitated due to delays in the DASR contract award and delays in the acquisition of the FAA ETVS and STARS programs. SAF/AQ approved an amendment to the DoD National Airspace System (NAS) MS II Decision and Phase II Guidance on June 30, 1997. The new ADM authorized NAS a quantity increase from 53 to 65 operational sites.

A Program Deviation Report (PDR) was submitted to the AFAE on January 21, 1998 providing notification of an anticipated schedule slip to the Voice Communication Switching System (VCSS) Program Review Milestone date of September 1998. Delays resulting from FAA operational testing have impacted deliveries of functional voice switches to the DoD test sites at Dover AFB and Eglin AFB while corrective redesign is completed. The program office is working closely with FAA management teams, user and test communities as a new schedule is developed. Proposed Change 2 to the NAS APB will be presented to SAF/AQ for approval upon AFPEO/AT concurrence.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

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8c. Threshold Breaches (Cont'd):

c. Explanation of Breach:

A Program Deviation Report (PDR) was submitted to the AFAC on January 21, 1998 providing notification of an anticipated schedule slip to the Voice (VCSS) Program Review milestone date of September 1998. Delays resulting from the Federal Aviation Administration (FAA) operational testing have impacted deliveries of functional voice switches to the DoD test sites at Dover AFB and Eglin AFB while corrective redesign is completed. 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 will be submitted for SAF/AQ approval upon AFPEO/AT 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	JAN 00	JAN 00
IOC (First DoD Site Activation)	APR 00	APR 00	APR 00
RADAR (DASR)			
Contract Award	DEC 95	AUG 96	AUG 96
DT&E			
Start	AUG 96	JUN 97	JUN 97
Complete	JAN 98	JUN 99	JUN 99
LRIP Contract	MAR 98	N/A	N/A
LRIP First Delivery	JUN 99	N/A	N/A
IOT&E			
Start	JUN 97	JUN 99	JUN 99
Complete	MAR 98	DEC 99	DEC 99
Full Rate Production Contract Award	MAR 99	JAN 00	JAN 00
AUTOMATION (DAAS)			
Production Award Exercise	JUL 98	JAN 00	JAN 00
VOICE (VCSS)			
Program Review	MAY 97	MAR 98	SEP 98 (Ch-1)
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

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9a. Schedule (Cont'd):

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 2 to the NAS APB is being developed to incorporate required schedule adjustments caused by FAA operational testing delays. The full impact of these delays to the program schedule will be incorporated into our proposed Change 2 to the NAS APB and forwarded to SAF/AQ for approval upon AFPEO/AT approval.

b. Current Change Explanations --

(Ch-1) The Voice (VCSS) Program Review date has been changed from Mar 98 to Sep 98 to reflect delays resulting from FAA operational testing. An adjustment to this date may be reflected in our proposed Change 2 to the NAS APB which is in development and will be presented to SAF/AQ for approval upon AFPEO/AT concurrence.

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	IAW ICD	IAW ICD / IAW ICD	TBD	IAW ICD
Position Track				
Data				
Electronic Inter-	IAW ICD	IAW ICD / IAW ICD	TBD	IAW ICD
facility Transfer				
of Flight Plans				
Aircraft Tracked	900	900 / 250	TBD	900
Medium (LCF)				
Radar Subclutter	55	55 / 42	TBD	43
Visibility (dB)				
Voice Compatibility/	Digital	Digital / Inter-	TBD	Digital
Interoperability	Voice	Voice / face to		Voice
	Systems	Systems / existing		Systems
		/ FAA		
		/ Systems		
MAMS				

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10a. Performance Characteristics (Cont'd):

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

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10b. Performance Characteristics (Cont'd):

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)	96.6	105.4	100.7
Procurement	473.7	487.6	505.8
Flyaway	(302.8)		(315.1)
Other Wpn Systems Cost	(144.7)		(166.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.2)		(24.3)
Construction (MILCON)	3.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	573.3	593.0	606.5
Escalation	217.8	198.1	176.1
Development (RDT&E)	(16.4)	(21.8)	(14.6)
Procurement	(200.0)	(176.3)	(161.5)
Construction (MILCON)	(1.4)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	791.1	791.1	782.6
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	53	53	65
Total	53	53	65

The unit of measure of this program represents National Airspace System (NAS) operational sites.

SAF/AQ approved an amendment to the DoD National Airspace System (NAS) MS II decision and Phase II guidance on 30 Jun 97. The new ADM authorized NAS a quantity increase from 53 to 65 operational sites.

The LRIP quantity approved at MS II was 8 Digital Airport Surveillance Radars (DASR) and 0 DoD Advanced Automation Systems (DAAS) for the radar and automation portions of NAS. However, the current approved LRIP quantities are 20 DASR and 20 DAAS. The LRIP quantity for both DASR and DAAS represents less than 10% of the total maximum contractual DoD/DoT buy

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (FEB 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	593.0	606.5	
(2) Quantity	53	65	
(3) Unit Cost	11.189	9.331	-16.61
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	487.6	505.8	
(2) Quantity	53	65	
(3) Unit Cost	9.200	7.782	-15.41

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	-5.8	-37.3	-	-43.1
Quantity	-	+95.9	-	+95.9
Schedule	-	+27.9	-	+27.9
Engineering	-	+4.7	-	+4.7
Estimating	+9.0	-114.0	-4.4	-109.4
Other	-	-	-	-
Support	-	+18.8	-	+18.8
Subtotal	+3.2	-4.0	-4.4	-5.2
Current Changes:				
Economic	0.0	-19.6	-	-19.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.9	+10.3	-	+9.4
Other	-	-	-	-
Support	-	+6.9	-	+6.9
Subtotal	-0.9	-2.4	-	-3.3
Total Changes	+2.3	-6.4	-4.4	-8.5
Current Estimate	115.3	667.3	-	782.6

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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	96.6	473.7	3.0	573.3
Previous Changes:				
Quantity	-	+67.4	-	+67.4
Schedule	-	+12.4	-	+12.4
Engineering	-	+2.9	-	+2.9
Estimating	+4.3	-77.8	-3.0	-76.5
Other	-	-	-	-
Support	-	+14.6	-	+14.6
Subtotal	+4.3	+19.5	-3.0	+20.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.2	+7.4	-	+7.2
Other	-	-	-	-
Support	-	+5.2	-	+5.2
Subtotal	-0.2	+12.6	-	+12.4
Total Changes	+4.1	+32.1	-3.0	+33.2
Current Estimate	100.7	505.8	-	606.5

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year.

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Funding reductions resulting from the following reprogramming actions: FFRDC, non-FFRDC, SBIR and general reductions. (Estimating)	-0.3	-1.0
RDT&E Subtotal	-0.2	-0.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-19.6
Refinement of Navy estimate to incorporate additional site preparation costs. (Estimating)	+3.2	+4.4
Refinement of Army estimate to incorporate additional site preparation costs. (Estimating)	+0.7	+0.9

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Refinement of Air Force estimate to incorporate additional site preparation costs. (Estimating)	+3.3	+4.8
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Refinement of DoD initial spares requirements. (Support)	-1.0	-1.5
Refinement of DoD Other Wpn Systems Cost to reflect changes in Engineering, Installation & Integration (EI&I) requirements. (Support)	+6.0	+8.2
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Procurement Subtotal	+12.6	-2.4

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	
14.93	-0.96	-1.29	+0.43	+0.07	-1.54	--	+0.40	-2.89	12.04

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	-0.86	+0.43	+0.07	-1.60	--	+0.40	-2.44	10.27

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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	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	JAN 00
FUE/IOC	OCT 99	APR 00	N/A	APR 00
Total Cost	122.6	791.1	N/A	782.6
Total Quantity	N/A	53	N/A	65
Prog Acq Unit Cost	N/A	14.93	N/A	12.04

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

a. RDT&E --

DASR:
Raytheon Company, Marlborough, MA
F19628-96-D0038, FFP
Award: August 9, 1996
Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$186.0	\$0.0	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$186.0	\$0.0	0	\$186.0	\$186.0

Explanation of Change:

None.

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

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

a. 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	100.6	11.9	1.9	0.9	115.3
Procurement	1.7	24.7	91.5	549.4	667.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	102.3	36.6	93.4	550.3	782.6

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

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>
1990				2.9	3.0
Subtotal				2.9	3.0

Appropriation: 3600 Research, Development, Test + Eval, AF

<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
1991				9.3	9.9
1992				3.8	4.2
1993				6.0	6.7
1994				12.5	14.2
1995				25.4	29.5
1996				11.2	13.3
1997				9.8	11.8
1998				9.7	11.9
1999				1.5	1.9

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16b. 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 \$
2000				0.2	0.3
2001				0.2	0.2
2002				0.2	0.2
2003				0.2	0.2
Subtotal				93.9	108.3

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			1.7	1.8	2.2
1999	4		15.7	22.9	28.9
2000	1		18.6	29.3	37.7
2001	8		19.6	29.4	38.5
2002	4		33.4	46.6	62.2
2003	9		10.8	29.4	40.1
2004			9.9	11.5	16.0
Subtotal	26		109.7	170.9	225.6

Note: A NAS Quantity represents a site receiving a full compliment of NAS equipment. Recurring Flyaway Dollars shown without any respective quantity represents locations that will receive less than a full compliment of NAS equipment.

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			1.3	4.3	5.3
1999	1		1.2	9.2	11.6
2000	2		2.8	12.2	15.7
2001	3		3.9	13.4	17.6
2002	4		5.7	16.5	22.0
2003	2		5.7	7.3	10.0
2004	1		0.4	1.0	1.4
Subtotal	13		21.0	65.3	85.3

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

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			7.5	13.8	17.2
1999	3		29.4	40.3	51.0
2000	2		32.3	44.7	57.5
2001	6		32.9	45.5	59.6
2002	5		36.3	49.9	66.7
2003	5		27.9	38.9	53.0
2004	5		18.1	27.3	38.1
2005				4.6	6.6
2006				4.6	6.7
Subtotal	26		184.4	269.6	356.4

Note: Appropriation 3080 Other Procurement, Air Force, includes spares funding.

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	26		109.7	174.8	229.6
Army	13		21.0	68.2	88.3
USAF	26		184.4	363.5	464.7
Grand Total	65		315.1	606.5	782.6

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): \$ 95.8

Percent Total Program Expended: 12.2%

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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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A-18 Longbow Hellfire

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

PROGRAM: LONGBOW HELLFIRE

AS OF DATE: December 31, 1997

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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 SAVAGE-RT
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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5. (U) References:

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated November 27, 1995.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated December 4, 1997.

6. (U) Mission and Description:

(U) HELLFIRE is an air-to-ground, point target, precision strike missile system designed to defeat individual hardpoint targets. 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 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 engage targets both day and night in adverse weather and with battlefield obscurants present. Longbow also offers a fire and forget capability against a given target set 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 aircraft 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 Principle 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, 1997

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. The LRIP II contract was awarded to the Longbow Limited Liability Company 7 Feb 97. Savings from Cost Reduction Program hardware initiatives early cut-in for FY 97, were used to procure an additional 51 missiles in FY 97. The first Longbow HELLFIRE tactical missile was delivered 31 Jul 97. On 28 Oct 97 the Army Acquisition Executive granted approval for Longbow HELLFIRE to proceed into full rate production. The FY 98 full rate production contract option was exercised by letter contract 24 Nov 97. Currently the Army has 115 missiles in inventory.

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
--- Program Acquisition Unit Cost (PAUC)	No
--- Average Procurement Unit Cost (APUC)	No

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LONGBOW HELLFIRE, December 31, 1997

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 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 (LRIP - 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
Milestone III (Full Rate - ASARC)	N/A	OCT 97	OCT 97 (Ch-1)
Full-Rate Production Contract Award	DEC 97	DEC 97	NOV 97 (Ch-2)
Authorization FY 99 Multiyear Contract	JAN 98	JAN 98	JUL 98 (Ch-3)
First Unit Equipped (FUE)	JUL 98	JUL 98	JUL 98

(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. Current Change Explanations --

(U) (Ch-1) Milestone III (Full Rate - ASARC) was added and reflects actual date approval was received.

(Ch-2) Full-Rate Production Contract Award was changed from Dec 97 to Nov 97 to reflect actual date contract was awarded.

(Ch-3) Authorization FY 99 Multiyear Contract was changed from Jan 98 to Jul 98 to reflect the estimated date authorization would be received.

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Longbow Hellfire, December 31, 1997

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"/>			
Probability of	(b)(1)			
Single Shot Kill				

(U) Demonstrated data source is the 42 missile radar aided guided development test firing program.

b. Current Change Explanations -- None

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	458.2	455.3
Procurement	1941.0	1934.2	1944.8
Flyaway	(1932.9)		(1919.9)
Other Wpn Sys Cost	(2.8)		(4.1)
Peculiar Support	(5.3)		(20.8)
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	2392.4	2400.1
Escalation	283.6	213.5	161.9
Development (RDT&E)	(-24.4)	(-9.6)	(-12.1)
Procurement	(308.0)	(223.1)	(174.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2635.6	2605.9	2562.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	13311	12905	12905
Total	13311	12905	12905

Note: Excludes 70 RDT&E 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

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Longbow Hellfire, December 31, 1997

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

1005. From the Dec 95 SAR the LRIP II quantity was increased from 1005 to 1056.

c. (U) Foreign Military Sales --

A direct commercial sale (co-production) with the United Kingdom was implemented Apr 96 for a quantity of 987 missiles (Quantity is ~~Classified~~ UK Restricted) and a cost of \$195M.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (DEC 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	2392.4	2400.1	
(2) Quantity	12905	12905	
(3) Unit Cost	0.185	0.186	+0.54
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	1934.2	1944.8	
(2) Quantity	12905	12905	
(3) Unit Cost	0.150	0.151	+0.67

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Longbow Hellfire, December 31, 1997

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	+5.1	-86.0	-	-80.9
Quantity	-	-43.0	-	-43.0
Schedule	+0.2	+2.7	-	+2.9
Engineering	+56.8	-7.7	-	+49.1
Estimating	-	+45.3	-	+45.3
Other	-	-	-	-
Support	-	+4.0	-	+4.0
Subtotal	+62.1	-84.7	-	-22.6
Current Changes:				
Economic	-1.4	-49.0	-	-50.4
Quantity	-	-11.7	-	-11.7
Schedule	+2.3	+2.0	-	+4.3
Engineering	-	-0.9	-	-0.9
Estimating	-6.4	-0.4	-	-6.8
Other	-	-	-	-
Support	-	+14.5	-	+14.5
Subtotal	-5.5	-45.5	-	-51.0
Total Changes	+56.6	-130.2	-	-73.6
Current Estimate	443.2	2118.8	-	2562.0

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	411.0	1941.0	-	2352.0
Previous Changes:				
Quantity	-	-32.9	-	-32.9
Schedule	-1.1	-	-	-1.1
Engineering	+51.1	-7.1	-	+44.0
Estimating	-	+35.2	-	+35.2
Other	-	-	-	-
Support	-	+3.9	-	+3.9
Subtotal	+50.0	-0.9	-	+49.1
Current Changes:				
Quantity	-	-8.9	-	-8.9
Schedule	-	-	-	-
Engineering	-	-0.9	-	-0.9
Estimating	-5.7	+1.6	-	-4.1
Other	-	-	-	-
Support	-	+12.9	-	+12.9
Subtotal	-5.7	+4.7	-	-1.0
Total Changes	+44.3	+3.8	-	+48.1
Current Estimate	455.3	1944.8	-	2400.1

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LONGBOW HELLFIRE, December 31, 1997

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>RD&E</u>		
Revised escalation indices (Economic)	N/A	-1.4
Rescheduled Product Improvement Program to start in FY01 vs FY99. (Schedule)	0.0	+2.3
Over estimation of testing and in-house costs. (Estimating)	-5.7	-6.4
RD&E Subtotal	<u>-5.7</u>	<u>-5.5</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-50.3
Economic adjustment for negative program change. (Economic)	N/A	+1.3
Adjustment for current and prior inflation. (Estimating)	+8.8	+9.2
Total Quantity variance associated with decrease of 98 missiles.	-9.6	-11.0
Decrease of FY98 missiles from 1465 to 1100 and increase of quantity in FY99 thru FY03 of 267 missiles, resulting in a net decrease of 98 missiles. (Quantity)	-8.9	-11.7
Allocation to engineering variance due to quantity reduction. (Engineering)	-0.9	-0.9
Allocation to estimating variance due to quantity change. (Estimating)	+0.2	+0.3
Rephasing of procurement buy quantities in FY98 thru FY03. (Schedule)	0.0	+2.0
Change in estimating methodology to reflect changes in quantity from multi-year procurement. (Estimating)	-7.4	-9.9
Revised cost estimate for data and environmental covers due to change in methodology. (Support)	+12.9	+14.5
Procurement Subtotal	<u>+4.7</u>	<u>-45.5</u>

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Longbow Hellfire, December 31, 1997

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 Init Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.20	-0.01	--	-0.01	-0.01	+0.03	--	--	--	0.20

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

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.17	--	--	-0.01	-0.02	+0.03	--	--	--	0.17

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	0.16

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	2562
Total Quantity	N/A	10896	13311	12905
Prog Acq Unit Cost	N/A	0.2	0.2	0.2

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Longbow Hellfire, December 31, 1997

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

a. Procurement -- (U) Longbow Hellfire LRIP I: Longbow LLC, Orlando, FL DAAH01-91-C-0057, FFP Award: December 23, 1994 Definitized: December 23, 1997	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$183.1	N/A	352

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$185.2	N/A	352	\$185.2	\$185.2

Explanation of Change:

None.

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

(U) Longbow HF LRIP II/FRP: Longbow LLC, Orlando, FL DAAH01-97-C-0082, FFP Award: February 7, 1997 Definitized: February 7, 1997	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$233.7	N/A	1056

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$449.1	N/A	2156	\$449.1	\$449.1

Explanation of Change:

None.

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

(U) Contract Comments:

The FY 98 options for 1100 missiles was exercised by Letter Contract 24 Nov 97. Definitization of this option is planned for 31 Mar 98.

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Longbow Hellfire, December 31, 1997

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 (FY91-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-05)</u>	<u>Total</u>
RDT&E	386.2	-	-	57.0	443.2
Procurement	475.7	232.7	346.3	1064.1	2118.8
MILCON	-	-	-	-	-
OSM	-	-	-	-	-
Total	861.9	232.7	346.3	1121.1	2562.0

b. Annual Summary -- Longbow Hellfire

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>
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					
2000					
2001			10.6	10.6	11.6
2002			17.2	17.2	19.2
2003			10.1	10.1	11.5
2004			12.6	12.6	14.7
Subtotal			455.3	455.3	443.2

Appropriation: 2032 Missile Procurement, 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>
1995		25.1		40.6	41.2
1996	352	27.4	167.5	180.6	185.2
1997	1056	19.7	218.4	239.3	249.3
1998	1100	7.3	209.0	219.7	232.7
1999	2000		317.4	321.1	346.3
2000	2200		269.1	273.2	299.7
2001	2200		259.2	263.3	294.1
2002	2200		197.9	201.9	230.0
2003	1797	7.5	194.4	163.5	190.3

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Longbow HELLFIRE, December 31, 1997

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

Appropriation: 2032 Missile Procurement, Army

Fiscal Year	Qty	Flyaway FY96 Dollars Nonrec	Flyaway FY96 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2004				22.7	27.0
2005				18.9	23.0
Subtotal	12905	87.0	1832.9	1944.8	2118.8

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	12905	87.0	2288.2	2400.1	2562.0

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	127	127

(U) Percent Total Program Quantities Delivered: 1.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 496.6

(U) Percent Total Program Expended: 19.4%

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.

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

Total operations and maintenance cost is \$78.5M from the approved Army Cost Position dated Oct 97.

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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N-11 LPD 17

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: LPD 17 Class

AS OF DATE: December 31, 1997

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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 W.H. LUEBKE
SHIP PROGRAM OFFICE (PMS317) Assigned: August 29, 1997
NAVAL SEA SYSTEMS COMMAND DSN N/A; COMM (504) 437-3434
NEW ORLEANS, LA 70094-0000
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0603564N (Shared) Project S0408 (Shared)
(U) PE 0604311N Project S2283, 22283
(U) PE 0604567N Project S1803 (Shared), S2198 (Shared)
PROCUREMENT:
(U) APPN 1611 ICN 303600 (Navy)

AS AMENDED
FOR OPEN PUBLICATION

MAR 24 1998 9

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

No Security Objection
to Open Publication
(AS AMENDED)
98-C-0754
MAR 24 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

~~Derived from:~~
~~Downgrading instructions: OPNAVINST 5510.20 107~~
~~Declassify on: Y3, Y4~~

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5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated May 5, 1997

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated May 5, 1997.

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.

The current ship configuration including Rolling Airframe Missiles and NULKA decoys meet the Chief of Naval Operations capstone self defense anti-air warfare requirement. Evaluation of combat system alternatives and future threats continues.

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 led 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. The protest was resolved and performance under the contract resumed on April 1997. Detail Design is in progress.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

N/A

9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
	JAN 93	JAN 93	JAN 93
Milestone I			
DT&E (DT-I)			
Start	MAR 93	MAR 93	MAR 93
Complete	FEB 96	FEB 96	FEB 96
OT&E (OT-IA)			
Start	JAN 95	JAN 95	JAN 95
Complete	MAR 95	MAR 95	MAR 95
OT&E (OT-IB)			
Start	FEB 96	FEB 96	FEB 96
Complete	APR 96	APR 96	APR 96
Milestone II	JUN 96	JUN 96	JUN 96
Lead Ship Award	AUG 96	AUG 96	DEC 96
DT&E (DT-IIA)			
Start	SEP 96	SEP 96	JAN 97
Complete	AUG 98	AUG 98	DEC 98
DT&E (DT-IIB)			
Start	SEP 98	SEP 98	JAN 99
Complete	JUN 02	JUN 02	SEP 02
OT&E (OT-IC)			
Start	SEP 98	SEP 98	JAN 99
Complete	MAR 99	MAR 99	JUL 99
Lead Ship Delivery	JUN 02	JUN 02	SEP 02

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LPD 17 Class, December 31, 1997

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
DT&E (DT-IIC)			
Start	JUL 02	JUL 02	OCT 02
Complete	JAN 04	JAN 04	MAR 04
OT&E (IIA)			
Start	JUN 03	JUN 03	SEP 03
Complete	SEP 03	SEP 03	DEC 03
LEAD SHIP IOC	(b)(1)		
OT&E (OT-IIIA)			
Milestone III	AUG 07	AUG 07	AUG 07

b. Current Change Explanations --
(U) NONE

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>
Mobility	(b)(1)			

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LPD 17 Class, December 31, 1997

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

b. Current Change Explanations --

~~(S)~~ 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)	78.7	92.7	100.1
Procurement	8939.4	8925.9	8649.8
Sailaway	(8939.4)		(8649.8)
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 96 Base-Year \$	9018.1	9018.6	8749.9
Escalation	1743.7	1745.2	1221.0
Development (RDT&E)	(-0.9)	(1.5)	(0.7)
Procurement	(1744.6)	(1743.7)	(1220.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	10761.8	10763.8	9970.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	12	12	12
Total	12	12	12

(U) Milestone II approval was granted to produce the first three ships. An OIPT Program Review will be conducted prior to contract award of the FY 2000 contract.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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LPD 17 Class, December 31, 1997

12. (U) Unit Cost Summary:

	UCR Baseline (MAY 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	9018.6	8749.9	
(2) Quantity	12	12	
(3) Unit Cost	751.550	729.158	-2.98
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	8925.9	8649.8	
(2) Quantity	12	12	
(3) Unit Cost	743.825	720.817	-3.09

13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	77.8	10684.0	-	10761.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+10.1	-80.2	-	-70.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+10.1	-80.2	-	-70.1
Current Changes:				
Economic	-0.5	-443.4	-	-443.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+13.4	-290.3	-	-276.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+12.9	-733.7	-	-720.8
Total Changes	+23.0	-813.9	-	-790.9
Current Estimate	100.8	9870.1	-	9970.9

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LPD 17 Class, December 31, 1997

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	78.7	8939.4	-	9018.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+8.5	-50.3	-	-41.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+8.5	-50.3	-	-41.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+12.9	-239.3	-	-226.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+12.9	-239.3	-	-226.4
Total Changes	+21.4	-289.6	-	-268.2
Current Estimate	100.1	8649.8	-	8749.9

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-0.5
Revised estimate for Combat Systems capability (Estimating)	+12.9	+13.4
RDT&E Subtotal	+12.9	+12.9

(2) Procurement

Revised escalation indices. (Economic)	N/A	-457.0
Economic adjustment for negative program change. (Economic)	N/A	+13.6
Adjustment for Current and Prior Inflation. (Estimating)	+20.4	+21.2
Revised estimate for Combat Systems Capability (Estimating)	-259.7	-311.5
Procurement Subtotal	-239.3	-733.7

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LPD 17 Class, December 31, 1997

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	
896.82	-36.99	--	--	--	-28.92	--	--	-65.91	830.91

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	
890.33	-36.95	+0.01	--	--	-30.88	--	--	-67.82	822.51

(b)(1)

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

a. Procurement --

(U) LPD 17:

AVONDALE IND. INC., NEW ORLEANS LA

N00024-97-C-2202, CPAF

Award: December 17, 1996

Definitized: N/A

Initial Contract Price		
Target	Ceiling	Qty
\$641.4	N/A	1

Current Contract Price		
Target	Ceiling	Qty
\$641.4	N/A	1

Estimated Price At Completion	
Contractor	Program Manager
\$641.4	\$646.7

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LPD 17 Class, December 31, 1997

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$-3.4	\$0.1
Net Change	\$-3.4	\$0.1

Explanation of Change:

(U) This is the first CPR for the program and the reported negative cost variance will be further investigated and reported in a later submission. Preliminary indications are that a portion of the cost variance is due to inconsistencies resulting from differences between the LPD 17 Master Integrated Resources and Work Schedule (MIRWS) and the Avondale Alliance legacy systems from which the CPR was generated.

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	69.2	13.9	1.3	16.4	100.8
Procurement	1012.7	96.1	691.2	8070.1	9870.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1081.9	110.0	692.5	8086.5	9970.9

b. Annual Summary -- LPD 17 CLASS

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>
1990			0.6	0.6	0.5
1991			5.4	5.4	4.9
1992			1.3	1.3	1.2
1993			10.8	10.8	10.3
1994			28.7	28.7	28.0
1995			10.9	10.9	10.8
1996			9.1	9.1	9.2
1997			4.2	4.2	4.3
1998			13.3	13.3	13.9
1999			1.2	1.2	1.3
2000			2.4	2.4	2.6
2001			0.3	0.3	0.3
2002			1.0	1.0	1.1

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LPD 17 Class, December 31, 1997

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 \$
2003			9.4	9.4	10.7
2004			1.2	1.2	1.4
2005			0.3	0.3	0.3
Subtotal			100.1	100.1	100.8

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		974.2	974.2	1012.7
1997					
1998				89.5	96.1
1999	1		722.3	632.8	691.2
2000	2		1395.0	1395.0	1552.2
2001	2		1337.7	1337.7	1517.9
2002	2		1359.8	1359.8	1575.1
2003	2		1358.4	1338.4	1607.7
2004	2		1502.4	1502.4	1817.2
Subtotal	12		8649.8	8649.8	9870.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	12		8749.9	8749.9	9970.9

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	12	0

(U) Percent Total Program Quantities Delivered: 0.0%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 61

(U) Percent Total Program Expended: 0.6%

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LPD 17 Class, December 31, 1997

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-12 CSSCS

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

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AS OF DATE: December 31, 1997

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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 PETER S. JANKER

ATTN: SFAE-C3S-STR-CSS

Assigned: August 1, 1997

6020 MEADE ROAD

DSN 656-5312; COMM 703-806-5312

FT BELVOIR, VA 22060-5259

jankerp@stccs2.army.mil

4. Program Elements/Procurement Line Items:

RDTE:

PE 63805 Project D2GT, DO91

PROCUREMENT:

APPN 2035 ICN BS9706

APPN 2035 ICN W34600 (Army)

5. References:

SAR Baseline (Production 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:

SAE Approved Acquisition Program Baseline (APB) dated November 3, 1997.

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CSSCS, December 31, 1997

6. Mission and Description:

The Combat Service Support Control Systems (CSSCS) is an automated command and control (C2) system supporting the CSS component of the Army Battle Command System (ABCS), providing the Commander with critical logistical C2 capability for the Army's Force XXI. The CSSCS assists commanders and their staffs in the planning and execution of CSS and C2 operations by rapidly collecting, processing and distributing critical logistical, personnel, medical and transportation information. CSSCS also provides the capability to interface with all ABCS Battlefield Operating Systems (Fire Support, Air Defense, Maneuver Control and Intelligence-Electronic Warfare), and the CSS Standard Army Management Information Systems (STAMIS). The CSSCS provides CSS and C2 information to Commanders and their staffs, to include unit status, sustainment capability, supportability options, input to the "common picture", situational awareness, and support to joint and combined operations. The CSSCS is comprised of ABCS 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. Version 3 (Block I) provides the initial automated CSS command and control capability to Corps and below users and is the recognized CSS enabler for Force XXI digitization. Version 4 (Block II) will enhance these capabilities at Corps and add additional functionality such as personnel, medical and transportation. Version 5 (Block III) will provide the objective CSSCS, further enhancing the functionality and implementing joint, allied, and coalition capabilities.

7. Executive Summary:

In Jan 97, Task Force (TF) XXI training commenced with primary operators from the 4th Infantry Division (4ID), 1st Brigade and 4th Forward Support Battalion. In Feb 97, FM CSSCS representatives supported TF XXI during the Reception, Staging, Onward Movement and Integration (RSOI) Exercise at the National Training Center (NTC), Ft. Irwin, CA. In addition to the NTC, TFXI operations were established at Yermo, CA (Marine Corps Supply Depot). CSSCS was used to track Class VII supplies (unit equipment) and personnel arriving for the TFXI Advanced Warfighting Experiment (AWE). On 19 Mar 97, the CSSCS program was approved by the Army Systems Acquisition Review Council (ASARC) to proceed to Milestone III. The Acquisition Decision Memorandum (ADM) documenting the results of the ASARC decision was signed by the Army Acquisition Executive (AAE) on 14 Apr 97. Division XXI (DIV XXI) training began at Fort Hood in May. Additional training was conducted at Fort Carson, CO for both DIV XXI and the 3rd Brigade, 4ID rotation at the NTC in Jul 97. FM CSSCS staff members, conducted system demonstrations (including CSSCS) during the period from 3-4 Jun 97, as part of Congressional testimony to the House and Senate. DIV XXI training resumed in Jun 97, with a full complement of 20 soldiers from the 4ID, 13th Corps Support Command (COSCOM) and III Corps Staffs. FM CSSCS representatives also supported the DIV XXI Simulation Exercise (SIMEX) which began in early Jun 97. FM CSSCS representatives also participated in a demonstration of Medical Situation Awareness and Control (MSAC) at Fort Sam Houston, TX. MSAC is a medical software program which is targeted for potential reuse for Version 4 Medical functionality. Division Advanced Warfighter Experiment (DAWE) Confederation Test #2 began the week of 23 Jul 97 and concluded on 25 Jul 97. The FM CSSCS Materiel Fielding Team (MFT) held

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CSSCS, December 31, 1997

7. Executive Summary (Cont'd):

coordination meetings the week of 19-20 Aug 97 in preparation for Fort Hood, TX Installation Survey. The MFT also discussed the Fort Bragg, NC Pre-Site Survey initial coordination requirements. PM CSSCS representatives also began providing support to the DAWE Simulation Exercise (SIMEX) II at Fort. Hood, TX, which continued through 23 Sep 97. PM CSSCS staff members conducted an analysis of notional battalion level CSSCS architecture to develop a draft model for a new Army-wide fielding of CSSCS to non-Combat Service Support (CSS) battalions. During the week of 7 Oct 97, PM CSSCS representatives conducted a Pre-Site Survey at Fort Bragg, NC. Following the presentations, coordinating meetings were held with representatives from XVIII Airborne Corps' Business Readiness Center (BRC), G4, G6, Director of Information Management (DOIM), the COSCOM, and various subordinate gaining command representatives. During the week of 27 Oct 97, PM CSSCS representatives secured authorization, through the CECOM Logistics and Readiness Center (LRC), from Logistics Support Agency (LOGSA), Huntsville, AL to use on-line access to the Total Asset Visibility (TAV) System. TAV access provides desktop PC capability to view, identify and verify unit designations, locations and specific on-hand quantities of equipment. On 1 Dec 97 the AAE, Mr. Robert M. Walker, signed an ADM to increase the CSSCS Low Rate Initial Production (LRIP) quantity by 70 workstations to support additional demonstrations/testing at Fort Bragg, NC.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

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CSSCS, December 31, 1997

9. Schedule:

a. Milestones --

	Production 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	NOV 91	NOV 91	NOV 91
PDR Version 3	MAR 92	MAR 92	MAR 92
CDR Version 3	JUN 92	JUN 92	JUN 92
Begin Version 4 Prototyping	OCT 92	OCT 92	OCT 92
EUT&E Version 3			
Start	SEP 92	SEP 92	SEP 92
Complete	OCT 92	OCT 92	OCT 92
Tech Test Version 3			
Start	APR 93	APR 93	APR 93
Complete	JAN 94	JAN 94	JAN 94
Begin Version 4 Development	DEC 94	DEC 94	DEC 94
LUT Version 3			
Start	SEP 93	SEP 93	SEP 93
Complete	NOV 93	NOV 93	NOV 93
IOT&E Version 3			
Start	JUL 94	JUL 94	JUL 94
Complete	SEP 94	SEP 94	SEP 94
ASARC (LRIP)	APR 95	APR 95	APR 95
ASARC (MS III Full Production)	APR 97	APR 97	APR 97
OIPT Review	APR 97	APR 97	APR 97
Begin Version 3 Fielding	JUN 97	JUN 97	JUN 97
First Unit Equipped	OCT 97	OCT 97	DEC 97 (Ch-1)
IOC Version 3	JAN 98	JAN 98	MAR 98 (Ch-1)
SDR Version 4	DEC 95	DEC 95	DEC 95
PDR Version 4	JUN 96	JUN 96	JUN 96
CDR Version 4	JUN 96	JUN 96	JUN 96
IOT&E II Version 3			
Start	SEP 96	SEP 96	SEP 96
Complete	DEC 96	DEC 96	DEC 96
Begin Version 5 Development	OCT 98	OCT 98	OCT 98
Tech Test Version 4			
Start	APR 98	APR 98	APR 98
Complete	JUL 98	JUL 98	JUL 98
LUT Version 4			
Start	SEP 98	SEP 98	SEP 98
Complete	NOV 98	NOV 98	NOV 98
PEO IPR - Version 4	SEP 98	SEP 98	SEP 98
Begin Fielding Version 4	OCT 98	OCT 98	OCT 98
PDR Version 5	JAN 99	JAN 99	JAN 99
CDR Version 5	JAN 99	JAN 99	JAN 99
Tech Test Version 5			
Start	APR 99	APR 99	APR 99
Complete	JUL 99	JUL 99	JUL 99
FOT&E Version 5			

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9a. Schedule (Cont'd):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
Start	SEP 99	SEP 99	SEP 99
Complete	OCT 99	OCT 99	OCT 99
PEO IPR - Version 5	NOV 99	NOV 99	NOV 99
Begin Fielding Version 5	DEC 99	DEC 99	DEC 99

(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 --

(Ch-1) The following schedule milestones have changed to reflect the actual and projected fielding milestones:

Milestone	From	To
First Unit Equipped	OCT 97	DEC 97
IOC Version 3	JAN 98	MAR 98

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>
Operational Temp (degF)	0-+120	0-+120 / +40-+9	TBD	+40-+95
Relative Humidity (%)	10-80	10-80 / 10-80	TBD	10 - 80
Equipment Portability (no. person carry)	1	1 / 2	2	2
Mean Time Between Equipment Set-up/ Tear-down (hrs)	<=0.5	<=0.5 / <=0.5	<=0.5	<=.5
Mean Time Between Op Msn Failure (hrs)				
ACCS Hardware	220	220 / 220	TBD	220
ACCS CHS & CSSCS Software (HW&SW)	140	140 / 140	TBD	140

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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>
Automatic Msg Handling User				
Responsiveness				
Disp 24 Lines (sec)	0.7	0.7 / 5.0	.1	.1
Scroll (lines/sec)	28	28 / 20	21.6	21.6
Error Feedback (sec)	0.7	0.7 / 1.0	1.0	1.0
User Help Req (sec)	2.1	2.1 / 3.0	3.0	3.0
Auto-message handling				
Speed-in (sec)	7/500	7/500 / 10/500	6.5	6.5
Speed-out (sec)	7/1000	7/1000 / 10/100 / 0	46 sec	46 sec
Msg Trans and Receipt				
24 hr USMTF Trans	477	477 / 334	334	334
24 hr Recpt & Process				
(million char)	9.86	9.86 / 6.9	8.4	8.4
(STAMIS msgs)	6286	6286 / 4400	5350	5350
Capable of Update (every x hrs)	2	2 / 3	2.4	2.4
Process All Info Rec (within x hrs)	2	2 / 3	.9	.9
On-Line Query Resp Time (sec/min)	5/7	5/7 / 2/3	1.6	1.6
Local Data File Update Response Time (sec/min) (sec)	5/7	5/7 / 5/15	6.3	6.3
ACCS Hardware				
Automatic Msg Handling Process All Info Rec				
On-line Query Resp Time (sec/min)				

□* USMTF is the abbreviation for United States Message Text Format.

PLEASE NOTE--

We were unable to delete the excess Performance Characteristics at the end of the column.

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10b. Performance Characteristics (Cont'd):

b. Current Change Explanations -- None

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

a. Cost --	Production Estimate (SAR)	Approved Program (AFB)	Current Estimate
Development (RDT&E)	179.7	179.7	181.0
Procurement	129.6	129.6	133.4
Flyaway	(122.4)		(126.4)
Other Wpn System Costs	(2.3)		(2.1)
			(0.0)
Total Other Wpn Sys	(2.3)		(2.1)
Peculiar Support	(0.0)		
Initial Spares	(4.9)		(4.9)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 97 Base-Year \$	309.3	309.3	314.4
Escalation	15.9	15.9	10.2
Development (RDT&E)	(-2.5)	(-2.5)	(-3.6)
Procurement	(18.4)	(18.4)	(13.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	325.2	325.2	324.6

The unit of measure for CSSCS is the number of systems, High Capacity Computer Units (HCU).

b. Quantity --

Development (RDT&E)	115	115	115
Procurement	1651	1651	1651
Total	1766	1766	1766

LRIP authority has been approved, which authorizes purchase of up to 10% of the procurement quantity (165 systems), plus an additional 70 systems (total 235 systems).

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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CSSCS, December 31, 1997

12. Unit Cost Summary:

	UCR Baseline (NOV 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PANC)			
(1) Cost (FY 97 BY\$)	309.3	314.4	
(2) Quantity	1766	1766	
(3) Unit Cost	0.175	0.178	+1.71
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 97 BY\$)	129.6	133.4	
(2) Quantity	1651	1651	
(3) Unit Cost	0.078	0.081	+3.85

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	177.2	148.0	-	325.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.1	-	-	+0.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.1	-	-	+0.1
Current Changes:				
Economic	-1.2	-3.8	-	-5.0
Quantity	-	-	-	-
Schedule	-	-0.5	-	-0.5
Engineering	-	-	-	-
Estimating	+1.3	+6.7	-	+8.0
Other	-	-	-	-
Support	-	-3.2	-	-3.2
Subtotal	+0.1	-0.8	-	-0.7
Total Changes	+0.2	-0.8	-	-0.6
Current Estimate	177.4	147.2	-	324.6

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CSSCS, December 31, 1997

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

Summary (FY 1997 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	179.7	129.6	-	309.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.2	+0.1	-	+0.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.2	+0.1	-	+0.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.1	+3.9	-	+5.0
Other	-	-	-	-
Support	-	-0.2	-	-0.2
Subtotal	+1.1	+3.7	-	+4.8
Total Changes	+1.3	+3.8	-	+5.1
Current Estimate	181.0	133.4	-	314.4

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.2
Adjustment of program estimate based on actual labor costs. (Estimating)	+1.1	+1.3
RDT&E Subtotal	+1.1	+0.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.6
Economic adjustment for negative program change. (Economic)	N/A	+0.8
Acceleration of annual procurement buy profile. (Schedule)	0.0	-0.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Adjustment of program estimate based on actual fielding costs incurred. (Estimating)	+3.7	+6.5
Adjustment of program estimate based on actual data on support costs incurred. (Support)	-0.2	-3.2
Procurement Subtotal	+3.7	-0.8

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CS5C5, December 31, 1997

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 Init Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.26	-0.01	-0.08	+0.01	--	--	--	--	-0.08	0.18

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	
0.18	--	--	--	--	--	--	--	--	0.18

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Init Est	Changes								PUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.16	-0.01	-0.03	+0.01	--	-0.04	--	--	-0.07	0.09

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	
0.09	--	--	--	--	--	--	--	--	0.09

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	DEC 90	DEC 90
Milestone II	N/A	DEC 90	DEC 90	DEC 90
Milestone III	N/A	MAR 97	APR 97	MAR 97
FUE/IOC	N/A	JUN 97	N/A	DEC 97
Total Cost	N/A	290.7	325.2	324.6
Total Quantity	N/A	1115	1766	1766
Prog Acq Unit Cost	N/A	0.26	0.18	0.18

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CSSCS, December 31, 1997

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 (FY00-07)</u>	<u>Total</u>
RD&E	124.3	5.6	12.6	34.9	177.4
Procurement	17.6	5.9	9.5	114.2	147.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	141.9	11.5	22.1	149.1	324.6

b. Annual Summary -- CSSCS

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY Dollars Nonrec</u>	<u>Flyaway FY Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
1987				2.5	1.9
1988				4.0	3.2
1989				5.7	4.8
1990				5.1	4.4
1991				10.1	9.1
1992				23.5	21.6
1993				19.4	18.3
1994				21.5	20.6
1995				18.4	18.0
1996				11.8	11.8
1997				10.5	10.6
1998				5.5	5.6
1999				12.1	12.6
2000				6.0	6.4
2001				3.8	4.1
2002				3.6	3.9
2003				3.6	4.0
2004				3.6	4.1
2005				3.5	4.1
2006				3.4	4.1
2007				3.4	4.2
Subtotal	115			181.0	177.4

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CSSCS, December 31, 1997

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

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY Dollars Nonrec	Flyaway FY Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995	73		6.0	6.0	6.0
1996	38		4.5	5.0	5.0
1997	54		5.3	6.4	6.6
1998	40		5.3	5.7	5.9
1999	105		8.7	9.0	9.5
2000	270		19.0	19.6	21.0
2001	249		17.2	17.4	19.0
2002	160		14.3	14.7	16.4
2003	240		17.4	17.8	20.2
2004	168		12.5	12.6	14.6
2005	169		11.6	12.5	14.8
2006	56		2.9	4.0	4.8
2007	29		1.7	2.7	3.4
Subtotal	1651		126.4	133.4	147.2

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1766		126.4	314.4	324.6

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	115	115
Procurement	165	165

Percent Total Program Quantities Delivered: 15.9%

b. Total Expenditures To Date (In Millions of Dollars): \$ 130.4

Percent Total Program Expended: 40.2%

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

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CSSCS, December 31, 1997

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

provide all repairs above the unit level. Unit level maintenance consists of preventive maintenance, replacement of Line Replaceable Units (LRU), and replacement of expendable items (cables, batteries, fuses, and filters). Internal repair of 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 97-28. Source: Army Cost Position, March 1997.

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	1.2	N/A
Unit Level Consumption	0.5	0.0
Intermediate Maintenance	N/A	0.0
Depot Maintenance	3.0	0.0
Contractor Support	N/A	0.0
Sustaining Support	1.2	0.0
Indirect Costs	0.5	N/A
Total	6.4	0.0

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A-5 ATACMS-BAT

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

PROGRAM: ATACMS/BAT

AS OF DATE: December 31, 1997

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ATACMS/BAT

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 9, 1996
Tactical Missiles, ATTN: SFAE-MSL-AB DSN 746-1141; COMM 205-876-1141
RedstoneArsenal, 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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ATACMS/BAT, December 31, 1997

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) Approved Acquisition Program Baseline (APB) dated March 13, 1998.

Army TACMS Blk II/Blk IIA

SAR Baseline (Development Estimate):

(U) AAE Acquisition Decision Memorandum (ADM) dated May 15, 1995.

Approved Program:

(U) Approved Acquisition Program Baseline (APB) dated March 13, 1998.

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 cost growth during this reporting period. The cost growth is due to initiation of corrective actions as a result of problems identified during Contractor Development Testing (CDT), resolution of problems experienced during qualification of some BAT subsystems, and IR seeker

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ATACMS/BAT, December 31, 1997

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

qualification and manufacturing. 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 and anticipated contract cost growth.

Northrop Grumman announced in April 1997 that Huntsville, AL, had been chosen as the location for the BAT production facility.

The ATACMS/BAT program was restructured in October 1997 due to a Congressional decrement of all FY 98 procurement funding.

The BAT completed CDT in January 1998. CDT flights conducted during 1997 and 1998 were scored during the BAT Reliability Scoring Conference, February 20, 1998. The reliability assessment at completion of EMD is 0.67. CDT resulted in seven target hits.

The ATACMS Block II program is progressing on schedule. The first ATACMS Block II engineering development test (EDT-1) was conducted in October 1997. The missile flew a predicted flight profile and successfully dispensed 13 BAT simulants of various instrumented and non-instrumented configurations. The Pre-Production Test (PPT) series began in November 1997. During PPT-1, 12 BAT simulant submunitions and one tactical BAT were dispensed at supersonic velocity after flying 121 km. The tactical BAT submunition impacted a moving BMP in a vulnerable area. The combined development test/operational test is scheduled to begin in February 1999.

The BAT P3I successfully conducted Captive Flight Test (CFT-1) during February 1997. Due to the FY 97 Congressional decrement to the BAT P3I program, a work slowdown was necessary during the last half of the year. CFT-2 was successfully conducted during January-February 1998. BAT P3I Milestone II decision is scheduled for October 1998. The ATACMS Block IIA EMD is scheduled to begin in 1999.

The BAT design to unit production cost is \$51,444 (FY 91 base year dollars). 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	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

Army TACMS Blk II/Blk IIA

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

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ATACMS/BAT, December 31, 1997

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/FSD 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	DEC 97	JAN 98	(Ch-1)
Long Lead Program Review	DEC 93	N/A	N/A	
Long Lead Contract Award for LRIP	JAN 94	N/A	N/A	
BAT/ATACMS Blk II LRIP ASARC	N/A	AUG 98	AUG 98	(Ch-1)
BAT/ATACMS Blk II LRIP DAB	N/A	DEC 98	DEC 98	(Ch-1)
LRIP Program Review (DAB)	NOV 94	N/A	N/A	(Ch-1)
EMD/LRIP I Contract Award	NOV 94	DEC 98	DEC 98	(Ch-1)
LRIP First Unit Delivery	N/A	JUN 00	JUN 00	(Ch-1)
Long Lead Contract Award for Production	N/A	NOV 00	NOV 00	(Ch-1)
Milestone III	DEC 96	MAY 01	MAY 01	(Ch-1)
Production Contract Award	JAN 97	MAY 01	MAY 01	(Ch-1)
Submunition Readiness Date (IOC)	DEC 95	SEP 01	SEP 01	(Ch-1)
First Production Unit Delivery	JAN 98	SEP 02	SEP 02	(Ch-1)
BAT P3I				
P3I Phase I Study Award	N/A	OCT 93	OCT 93	
Milestone II	N/A	OCT 98	OCT 98	
P3I EMD Contract Award	N/A	NOV 98	NOV 98	
LRIP IPR	N/A	APR 01	APR 01	
Milestone III	N/A	JUN 02	JUN 02	

b. Current Change Explanations --

(U) (Ch-1) - The BAT program was restructured in Oct 97 due to a Congressional decrement resulting in the following milestone changes:

MILESTONE	FROM	TO
Contractor Development		
Test, Complete	Jun 97	Jan 98
LRIP Program Review (DAB)	Dec 97	N/A
BAT/ATACMS Blk II ASARC	N/A	Aug 98
BAT/ATACMS Blk II DAB	N/A	Dec 98

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

BAT/BAT P3I

EMD/LRIP I Contract Award	Jan 98	Dec 98
LRIP First Unit Delivery	Aug 99	Jun 00
Long Lead Contract Award		
for Production	N/A	Nov 00
Milestone III	Sep 00	May 01
Production Contract		
Award	Feb 01	May 01
Submunition Readiness		
Date (IOC)	Nov 99	Sep 01
First Production Unit		
Delivery	Jul 02	Sep 02

Army TACMS Blk II/Blk IIA

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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
Software Critical Design Review	MAY 97	JUN 97	APR 97
Pre-production (PPT)			
Start	MAY 97	NOV 97	NOV 97 (Ch-1)
Complete	NOV 97	MAR 98	APR 98 (Ch-1)
Production Qualification Tests (PQT)			
Start	DEC 97	JUN 98	APR 98
Complete	JUL 98	JAN 99	NOV 98
EMD OT Option Award	JAN 98	MAR 98	MAR 98 (Ch-2)
Combined DT/OT Test			
Start	JUL 98	APR 99	FEB 99 (Ch-2)
Complete	DEC 98	JUN 99	APR 99
PEO LRIP Decision	DEC 98	N/A	N/A (Ch-2)
Block II/BAT LRIP ASARC	N/A	AUG 98	AUG 98 (Ch-2)
Block II/BAT LRIP DAB	N/A	DEC 98	DEC 98 (Ch-2)
LRIP Contract Award	JAN 99	JAN 99	JAN 99
Operational Tests (OT)			
Start	DEC 99	JUL 00	JUL 00 (Ch-2)
Complete	MAR 00	DEC 00	DEC 00 (Ch-2)
Long Lead Contract Award for Production	N/A	NOV 00	NOV 00 (Ch-2)
LRIP First Delivery	JUN 00	DEC 00	DEC 00 (Ch-2)
MS III	SEP 00	MAY 01	MAY 01 (Ch-2)
IOC	SEP 00	SEP 01	SEP 01 (Ch-2)
Organic Support Capability	SEP 00	SEP 01	SEP 01 (Ch-2)
Service Depot Support	SEP 00	SEP 01	SEP 01 (Ch-2)

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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>	
	JAN 01	MAY 01	MAY 01	(Ch-2)
First Full Rate Production Contract Award				
BLOCK IIA ATACMS				
Milestone IV P3I Review	MAR 98	N/A	N/A	(Ch-3)
Milestone II P3I Review	N/A	MAR 99	MAR 99	(Ch-3)
EMD Contract Award	APR 98	APR 99	APR 99	
LRIP Contract Award	JAN 02	NOV 02	NOV 02	
MS III	FEB 02	DEC 03	DEC 03	
Organic Support Capability	DEC 03	OCT 04	OCT 04	
Service Depot Support	DEC 03	OCT 04	OCT 04	
IOC	MAY 03	MAR 04	MAR 04	

b. Current Change Explanations --

(U) (Ch-1) - ATACMS Block II Pre-Production (PPT) start slipped from Aug 97 to Nov 97 and completion slipped from Jan 98 to Apr 98 due to delays in receipt of BAT hardware.

(Ch-2) - ATACMS Block II milestones changed due to the BAT program being restructured in Oct 97:

<u>MILESTONE</u>	<u>FROM</u>	<u>TO</u>
EMD OT Option Award	Jan 98	Mar 98
Combined DT/OT Test		
Start	Jan 99	Feb 99
PEO LRIP Decision	Dec 98	N/A
Block II/BAT ASARC	N/A	Aug 98
Block II/BAT DAB	N/A	Dec 98
Operational Tests (OT)		
Start	Dec 99	Jul 00
Complete	Jun 00	Dec 00
Long Lead Contract Award		
for Production	N/A	Nov 00
LRIP First Delivery	Jun 00	Dec 00
MS III	Sep 00	May 01
IOC	Sep 00	Sep 01
Organic Support Capability	Sep 00	Sep 01
Service Depot Support	Sep 00	Sep 01
First Full Rate Prod		
Contract Award	Jan 01	May 01

(Ch-3) - Title changed from Milestone IV P3I Review to Milestone II P3I Review; data unchanged.

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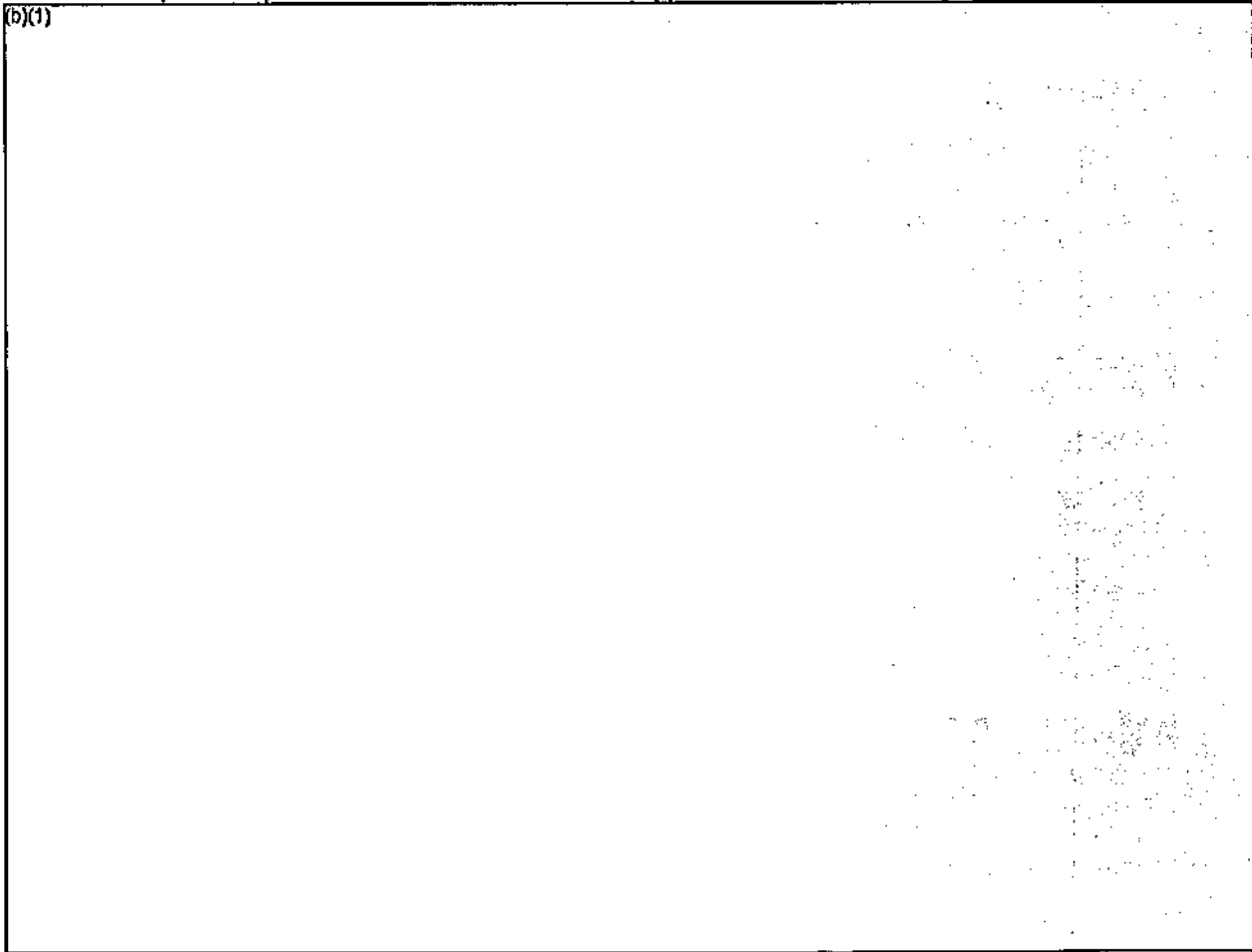
10. (U) Performance Characteristics:

BAT/BAT P3I

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>	
BAT					
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	TBD	20	
Lethality					
Rolled Homo- geneous Armor (mm RHA)	N/A	N/A / N/A	N/A	N/A	(Ch-1)

(b)(1)



Ch-1)

Ch-1)

Ch-1)

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ATACMS/BAT, December 31, 1997

10a. (U) Performance Characteristics (Cont'd):
BAT/BAT P3I

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Kills/Missile Load				
() ATACMS Block	N/A	(b)(1)		(Ch-2)
IIA (Armor)				
() ATACMS Block	N/A			(Ch-2)
IIA (TEL/MRL)				

(U) TBDs in Demonstrated Performance signify test data is not available.

b. Current Change Explanations --

44b (Ch-1) The performance characteristics have been changed to remove ambiguities about interpreting lethality data as follows:

PERFORMANCE CHARACTERISTICS

Rolled Homogeneous Armor (mm RHA)
Rolled Homogeneous Armor (RHA)
Penetration (Incl Residual) (mm)
Residual Penetration (mm)
Residual Penetration Behind Range
Targets (mm)

FROM	TO
(b)(1)	

(Ch-2) BAT P3I performance parameters for ATACMS Blk IIA (Armor) and ATACMS Blk IIA (TEL/MRL) were added to clarify kills/missile load.

Army TACMS Blk II/Blk IIA

a. Performance --

	Development <u>Estimate (SAR)</u>	Approved Program (APB) <u>Obj/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
<p> BLOCK II ATACMS (b)(1) </p>				

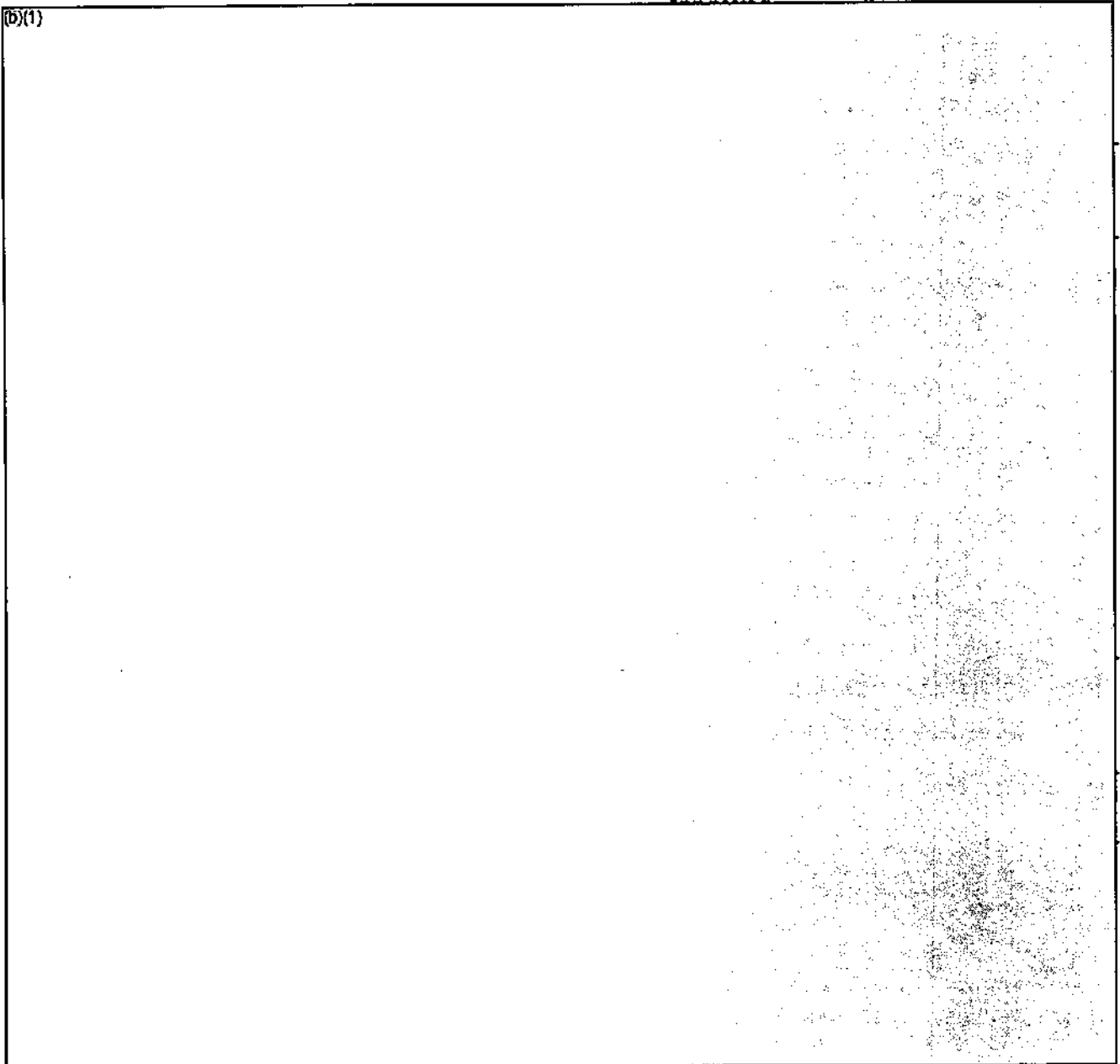
(Ch-1)

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ATACMS/BAT, December 31, 1997

10a. (U) Performance Characteristics (Cont'd):
Army TACMS Blk II/Blk IIA

(b)(1)



AS AMENDED
AS AMENDED

(U) TBDs in Demonstrated Performance signify test data is not available.

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10b. (U) Performance Characteristics (Cont'd):
Army TACMS Blk II/Blk IIA

b. Current Change Explanations --

(U) (Ch-1) - These milestones have been deleted since numeric requirements for accuracy have been clarified in the ATACMS Operational Requirements Document (ORD). The ORD requires that the ATACMS Blk II/IIA missile accuracy must be such that the inherent BAT effectiveness will not be degraded. The essential requirement is to achieve the kills/launcher load.

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	1266.2	1254.0
Procurement	1569.9	1426.1	1416.0
	(1553.6)		(1405.9)
Other Weapon Systems	(16.3)		(10.1)
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 \$	2272.0	2692.3	2670.0
Escalation	714.6	646.4	554.7
Development (RDT&E)	(29.5)	(118.9)	(106.4)
Procurement	(685.1)	(527.5)	(448.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2986.6	3338.7	3224.7
b. (U) Quantity --			
Development (RDT&E)	0	100	100
Procurement	30993	19700	19700
Total	30993	19800	19800

(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). However, the current LRIP quantity has changed from 2352 to 1470 which does not exceed the 10% guideline. This change is a result of the OUSD(A&T) decision, Nov 97, to align the BAT and ATACMS Block II for a combined LRIP decision in Dec 98.

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

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

Army TACMS Blk II/Blk IIA

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	385.4	405.3	389.4
Procurement	1210.3	1112.7	1139.1
Recurring Flyaway	(1092.3)		(1093.2)
Nonrecurring Flyaway	(89.6)		(10.8)
Total Flyaway	(1181.9)		(1104.0)
Other Weapon System	(22.0)		(29.5)
Peculiar Support	(3.6)		(2.6)
Initial Spares	(2.8)		(3.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 91 Base-Year \$	1595.7	1518.0	1528.5
Escalation	705.4	523.6	457.3
Development (RDT&E)	(103.1)	(85.5)	(72.8)
Procurement	(602.3)	(438.1)	(384.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2301.1	2041.6	1985.8
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1806	1806	1806
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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12. (U) Unit Cost Summary:

BAT/BAT P3I

	UCR Baseline (Mar 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 91 BY\$)	2692.3	2670.0	
(2) Quantity	19800	19800	
(3) Unit Cost	0.136	0.135	-0.74
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 91 BY\$)	1426.1	1416.0	
(2) Quantity	19700	19700	
(3) Unit Cost	0.072	0.072	0.00

Army TACMS Blk II/Blk IIA

	UCR Baseline (Mar 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 91 BY\$)	1518.0	1528.5	
(2) Quantity	1806	1806	
(3) Unit Cost	0.841	0.846	+0.59
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 91 BY\$)	1112.7	1139.1	
(2) Quantity	1806	1806	
(3) Unit Cost	0.616	0.631	+2.44

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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	-28.9	-198.0	-	-226.9
Quantity	-	-701.4	-	-701.4
Schedule	+30.7	+170.5	-	+201.2
Engineering	+280.4	+60.0	-	+340.4
Estimating	+309.5	+177.0	-	+486.5
Other	-	-	-	-
Support	-	-5.2	-	-5.2
Subtotal	+591.7	-497.1	-	+94.6
Current Changes:				
Economic	-8.5	-60.1	-	-68.6
Quantity	-	-11.3	-	-11.3
Schedule	+15.0	+23.5	-	+38.5
Engineering	-	-0.3	-	-0.3
Estimating	+30.6	+156.2	-	+186.8
Other	-	-	-	-
Support	-	-1.6	-	-1.6
Subtotal	+37.1	+106.4	-	+143.5
Total Changes	+628.8	-390.7	-	+238.1
Current Estimate	1360.4	1864.3	-	3224.7

(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	-	-418.3	-	-418.3
Schedule	+20.6	-0.3	-	+20.3
Engineering	+237.3	+39.2	-	+276.5
Estimating	+254.8	+123.5	-	+378.3
Other	-	-	-	-
Support	-	-5.1	-	-5.1
Subtotal	+512.7	-261.0	-	+251.7
Current Changes:				
Quantity	-	-6.6	-	-6.6
Schedule	+12.9	-0.8	-	+12.1
Engineering	-	-0.2	-	-0.2
Estimating	+26.3	+115.8	-	+142.1
Other	-	-	-	-
Support	-	-1.1	-	-1.1
Subtotal	+39.2	+107.1	-	+146.3
Total Changes	+551.9	-153.9	-	+398.0
Current Estimate	1254.0	1416.0	-	2670.0

(U) The \$80.6M variance is all quantity related. This is due to buying a smaller annual quantity and delaying procurement from FY 98 to FY 99 which results in higher annual unit cost.

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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>
(1) <u>RDTE&E</u>		
Correction to Dec 96 SAR. Congressional reduction to BAT P3I funding which caused a 7 month schedule delay.		
(Schedule)	+12.9	+15.0
(Estimating)	-12.9	-15.0
Revised escalation indices. (Economic)	N/A	-8.5
Adjustment for Current and Prior Inflation. (Estimating)	+2.5	+2.9
Restructure of BAT P3I program due to Congressional decrement. (Estimating)	-17.7	-21.6
Increase due to BAT contract cost growth. (Estimating)	+54.4	+64.3
RDTE&E Subtotal	+39.2	+37.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-62.4
Economic adjustment for negative program change. (Economic)	N/A	+2.3
Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+1.6
Total Quantity variance associated with decrease of 171 units.	-8.1	-13.3
Quantity decrease of 171 units from 19871 to 19700. (Quantity)	-6.6	-11.3
Allocation to Engineering variance resulting from Quantity Change. (Engineering)	-0.2	-0.3
Allocation to Estimating variance resulting from Quantity Change. (Estimating)	-0.6	-0.9
Allocation to Schedule variance resulting from Quantity Change. (Schedule)	-0.8	-0.8
Rephasing of procurement buy profile to include two additional years. (Schedule)	0.0	+24.3
Increased cost of the BAT/BAT P3I program due to Congressional decrement in FY 98. (Estimating)	+1.9	+6.9
Refinement of program estimate to reflect hardware updates. (Estimating)	+51.5	+68.0
Change in learning curve assumptions due to rephasing of annual buys. (Estimating)	+61.6	+80.6
Refinement of cost estimate for data, training, and transportation. (Support)	-1.1	-1.6
Procurement Subtotal	+107.1	+106.4

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13b. (U) Cost Variance Analysis (Cont'd):
BAT/BAT P3I

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

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	-23.5	-134.9	-	-158.4
Quantity	-	-	-	-
Schedule	+17.1	+6.3	-	+23.4
Engineering	-	-	-	-
Estimating	-4.3	-183.3	-	-187.6
Other	-	-	-	-
Support	-	+4.3	-	+4.3
Subtotal	-10.7	-307.6	-	-318.3
Current Changes:				
Economic	-8.3	-60.3	-	-68.6
Quantity	-	-	-	-
Schedule	-	+10.7	-	+10.7
Engineering	-	-	-	-
Estimating	-7.3	+63.7	-	+56.4
Other	-	-	-	-
Support	-	+4.5	-	+4.5
Subtotal	-15.6	+18.6	-	+3.0
Total Changes	-26.3	-289.0	-	-315.3
Current Estimate	462.2	1523.6	-	1985.8

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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	+10.3	-	-	+10.3
Engineering	-	-	-	-
Estimating	-0.8	-125.3	-	-126.1
Other	-	-	-	-
Support	-	+3.1	-	+3.1
Subtotal	+9.5	-122.2	-	-112.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-5.5	+47.4	-	+41.9
Other	-	-	-	-
Support	-	+3.6	-	+3.6
Subtotal	-5.5	+51.0	-	+45.5
Total Changes	+4.0	-71.2	-	-67.2
Current Estimate	389.4	1139.1	-	1528.5

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-8.9
Economic adjustment for negative program change. (Economic)	N/A	+0.6
Adjustment for Current and Prior Inflation. (Estimating)	+1.8	+2.1
Revised estimate to reflect update to Government System Project Management and System Test and Evaluation requirements. (Estimating)	-7.3	-9.4
RDT&E Subtotal	-5.5	-15.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-60.3
Stretchout of annual procurement buy profile. (Schedule)	0.0	+10.7
Revised estimate to reflect update of Government System Project Management and System Test and Evaluation (Estimating)	+31.9	+42.6
Learning curve efficiency as a result of acceleration of Block II buys. (Estimating)	-1.3	-1.7
Refinement of estimate for Block IIA Engineering Services. (Estimating)	+5.8	+7.8

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13b. (U) Cost Variance Analysis (Cont'd):
Army TACMS Blk II/Blk IIIA

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Refinement of estimate for Surveillance Flight Test Kits. (Estimating)	+11.0	+15.0
Refinement of estimate for Initial Spares. (Support)	+0.4	+0.5
Refinement of estimate for Peculiar Support (Missile Monitor Test Device (MMTD) Trainer and MMTD Modifications). (Support)	+0.2	+0.2
Refinement of estimate for data, training, support equipment, and transportation. (Support)	+3.0	+3.8
Procurement Subtotal	+51.0	+19.6

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	+0.01	+0.01	+0.02	+0.03	--	--	+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	--	+0.02	--	--	+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	MAY 01
FUE/IOC	N/A	DEC 95	N/A	SEP 01
Total Cost	N/A	2986.6	N/A	3224.7
Total Quantity	N/A	30993	N/A	19700
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	-0.13	+0.01	+0.02	--	-0.07	--	--	-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	-0.11	+0.01	+0.01	--	-0.07	--	--	-0.16	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	N/A	N/A
Milestone II	N/A	MAY 95	N/A	MAY 95
Milestone III	N/A	SEP 00	N/A	MAY 01
FUE/IOC	N/A	SEP 00	N/A	SEP 01
Total Cost	N/A	2301.1	N/A	1985.8
Total Quantity	N/A	1806	N/A	1806
Prog Acq Unit Cost	N/A	1.27	N/A	1.1

(U) The ATACMS Block II/IIA Program began SAR reporting in Dec 94.

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

a. RDT&E --			Initial Contract Price		
(U) BAT EMD:			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Northrop-Grumman Corp., Hawthorne CA					
DAAH01-91-C-A017, CPIF/AF			\$383.9	N/A	0
Award: June 5, 1991					
Definitized: June 5, 1991					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$547.0	N/A	0	\$608.2	\$615.2	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-24.9	\$-13.0	
Cumulative Variances To Date (11/30/97)			\$-46.7	\$-9.9	
Net Change			\$-21.8	\$3.1	

Explanation of Change:

(U) The unfavorable cost and schedule variances continued to be driven by the infrared (IR) seeker, inertial measurement unit (IMU), and deceleration stabilization subsystem (DSS). The IR seeker, built by Raytheon, is behind schedule due to insufficient yield. The IMU experienced technical difficulties that delayed hardware deliveries. The technical difficulties have been solved. The DSS experienced problems with the Gas Inflated Ram Air Stabilizer (GIRAS) design and failures with the gas generator and secondary parachute leading to additional engineering work and delay in hardware deliveries. The problems have been solved and all DSS required for EMD completion have been delivered.

(U) BAT P3I DEM/VAL:			Initial Contract Price		
Northrop-Grumman Corp., Hawthorne CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-93-C-A014, CPIF					
Award: October 18, 1993			\$81.8	N/A	0
Definitized: December 21, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$92.7	N/A	0	\$88.8	\$92.3	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-1.9	\$-0.4	
Cumulative Variances To Date (11/30/97)			\$-0.6	\$-1.8	
Net Change			\$1.3	\$-1.4	

Explanation of Change:

(U) The schedule variance is the result of funding limitations which resulted in a work slowdown during the last half of FY 97. During this time, there was no change in the milestone date for low rate initial production (LRIP). Therefore, once normal funding resumed at the beginning of FY 98, the

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

remaining effort was replanned and executed with the goal of completing the original plan and technical milestones. The impact of the slowdown on staffing levels has resulted in additional increases in the schedule variance. The favorable cost variance is the result of an approved Over Target Baseline (OTB) for Alliant Techsystems, Inc., a major subcontractor for the program. The subsequent rebaselining activity resulted in resetting the subcontractor's cumulative variances to zero, thus creating a favorable change in the cost variance for the overall program.

(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>			Initial Contract Price		
Vought Systems, Dallas, TX			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-95-C-0001, CPTF			\$155.2	N/A	0
Award: July 12, 1995					
Definitized: July 12, 1995					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$164.3	N/A	0	\$157.9	\$164.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.7	\$-6.8
Cumulative Variances To Date (11/30/97)	\$2.3	\$-7.1
Net Change	\$-1.4	\$-0.3

Explanation of Change:

(U) The schedule variance increase was driven by delays in the delivery of Improved Missile Guidance Set (IMGS) hardware and a delay in formal launcher missile integration testing until software is finalized. Some of this variance increase was offset by schedule recovery in the payload area, tooling and Special Inspection/Test Equipment (SIE/STE) upgrade and flight instrumentation telemetry system. The cost variance increase was driven by the additional effort required on the payload section including design changes to the center structure, additional straps and fastener testing, bulkhead datum changes and additional risk reduction and static tests. Increased costs for tooling and SIE/STE upgrade due to design changes and additional cost of work required for the flight instrumentation telemetry system prior to flight testing also contributed to the increased cost variance. Some of this variance was offset by a favorable cost variance for facilities cost of money and reduced costs for system engineering/project management due to lower rates for labor and overhead.

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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 (FY84-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-09)</u>	<u>Total</u>
RDT&E	1104.2	229.4	134.9	354.1	1822.6
Procurement	-	-	149.5	3238.4	3387.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1104.2	229.4	284.4	3592.5	5210.5

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 (FY00-09)</u>	<u>Total</u>
RDT&E	974.1	140.8	83.1	162.4	1360.4
Procurement	-	-	100.4	1763.9	1864.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	974.1	140.8	183.5	1926.3	3224.7

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 (FY00-09)</u>	<u>Total</u>
RDT&E	130.1	88.6	51.8	191.7	462.2
Procurement	-	-	49.1	1474.5	1523.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	130.1	88.6	100.9	1666.2	1985.8

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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				94.6	105.4
1996				120.6	136.9
1997				82.3	94.8
1998				120.5	140.8
1999				70.0	83.1
2000				76.7	92.6
2001				45.5	55.8
2002				7.6	9.5
2003				3.5	4.5
Subtotal	100			1254.0	1360.4

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					
1999	420	13.2	68.7	83.3	100.4
2000	1050	8.3	116.4	127.5	156.4
2001	1700	7.5	153.9	164.1	204.9
2002	1820		146.1	147.4	187.7
2003	2400		172.7	173.1	225.2
2004	3000		184.8	185.2	246.2
2005	3250		188.2	188.6	256.3
2006	3310		182.8	183.2	254.4
2007	2750		163.3	147.4	209.2
2008				12.0	17.4
2009				4.2	6.2
Subtotal	19700	29.0	1376.9	1416.0	1864.3

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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	19800	29.0	1376.9	2670.0	3224.7

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				47.1	53.5
1997				58.0	66.8
1998				75.8	88.6
1999				43.6	51.8
2000				56.2	67.8
2001				52.8	64.8
2002				35.5	44.3
2003				11.6	14.8
Subtotal				389.4	462.2

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	30	1.7	30.7	40.7	49.1
2000	80		52.4	54.4	66.7
2001	130		77.2	79.1	98.8
2002	115		81.8	83.4	106.2
2003	190	9.1	116.9	134.0	174.4
2004	303		178.7	183.3	243.8
2005	316		182.9	185.7	252.3
2006	325		184.4	187.3	260.1
2007	315		188.2	170.8	242.5
2008				17.7	25.7
2009				2.7	4.0
Subtotal	1806	10.8	1093.2	1139.1	1523.6

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1806	10.8	1093.2	1528.5	1985.8

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ATACMS/BAT, December 31, 1997

17. (U) Delivery/Expenditure Information:

BAT/BAT P3I

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): \$ 977.3

(U) Percent Total Program Expended: 30.3%

Army TACMS Blk II/Blk IIA

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): \$ 112.8

(U) Percent Total Program Expended: 5.7%

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. There is no antecedent system.

Average Annual Cost Per BAT System reflects average annual cost for total BAT quantity of 19700.

Cost estimate dated January 1998.

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
Intermediate Maintenance	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
Depot Maintenance	1.6	0.0
Contractor Support	0.0	0.0
Sustaining Support	1.1	0.0
Indirect Costs	0.0	0.0
Total	3.3	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).

Cost estimate dated January 1998.

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	1.8	0.0
Unit Level Consumption	0.4	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	2.7	0.0
Contractor Support	0.0	0.0
Sustaining Support	3.5	0.0
Indirect Costs	0.0	0.0
Total	8.4	0.0

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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, 1997

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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:

PROGRAM EXECUTIVE OFFICER	CAPT J.B. GODWIN, III, USN
TACTICAL AIRCRAFT PROGRAMS (PMA 265)	Assigned: April 18, 1997
47123 BUSE ROAD, UNIT#IPT	DSN 757-7677; COMM (301) 757-7677
PATUXENT RIVER, MD 20670-1547	godwinjb.ntprsr@navair.navy.mil

4. Program Elements/Procurement Line Items:

RD&E:

PE 0204136N

PROCUREMENT:

APPN 1506 ICN 014500 (Navy)

APPN 1506 ICN 060510 (Navy)

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

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No Security Objection
to Open Publication
(AS AMENDED)

98-0204136N
MAR 23 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

98-C-0882

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5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated October 24, 1997.

6. Mission and Description:

The F/A-18E/F will be the second major model upgrade since F/A-18 aircraft program inception. The F/A-18E (single seat) and the F/A-18F (two seat) will be a high performance twin engine, mid-wing, multi-mission tactical aircraft 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 484 pounds below (better than) SPEC weight.

The airframe development contract possesses a cost performance index (CPI) of 101% and a schedule performance index of 99%. The engine development contract possesses a CPI of 93% and an SPI of 99%.

The airframe engineering and manufacturing (EMD) contract is 94% complete and the engine EMD contract is 97% complete.

Following a successful Defense Acquisition Board (DAB), the Acquisition Decision Memorandum was signed on 26 March 1997 to grant permission to enter Low Rate Initial Production and approve both LRIP I full funding and LRIP II advanced acquisition funding.

Limited Production Qualification for the F414 engine was successfully completed in April 1997. The results verified that the engine configuration is suitable for limited production and service use in production aircraft.

The third operational test period (OT-III) was successfully completed in November 1997.

Recent flight test accomplishments include 100% completion of flutter testing and Phase I weapon delivery accuracy tests.

The flight test program, in general, is proceeding on schedule. There have

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7. Executive Summary (Cont'd):

been a number of deficiencies discovered and most have been corrected or have resolution plans in work. One specific problem, commonly referred to as "wing drop", was first discovered in 1996. At that time, the flight test envelope (where aircraft is cleared to fly) had not been sufficiently expanded to allow a thorough understanding of the extent of the problem. With the arrival of additional flight test aircraft at Patuxent River in March 1997, the flight test envelope was expanded to allow further investigation of the wing drop phenomenon. To date, several fixes that resolve wing drop have been demonstrated. The test team is currently in the final stages of systems engineering trade-off analysis that will determine the correction that is optimum.

Program projection indicates completion of EMD under the original cost estimate of \$4.88B (FY90\$). The current production cost estimate for an F/A-18E/F is 113% of an F/A-18C/D when normalized for production rates and inflation. This estimate is well below the 125% Congressional cost limit.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 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	
LRIP Decision Milestone	N/A	MAR 97	MAR 97	
Limited Production Qualification (Engine)	OCT 96	MAR 97	APR 97	(Ch-1)
LRIP Contract Award	JAN 97	JAN 97	MAY 97	(Ch-2)
Full Production Qualification (Engine)	OCT 97	AUG 98	AUG 98	(Ch-3)
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-IIE	OCT 98	OCT 98	NOV 98	
IOT&E				
OT-IIA	MAR 97	NOV 97	NOV 97	
OT-IIB	DEC 97	DEC 97	MAR 98	
OT-IIC	MAR 99	MAR 99	MAY 99	
FOT&E				
DT-III	FEB 00	FEB 00	FEB 00	
OT-III	FEB 00	FEB 00	JUN 00	
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	
LRIP Decision Milestone	N/A	MAR 97		

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1): Limited Production Qualification was delayed from MAR 97 to APR 97 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): Full funding for the LRIP I contract was delayed from MAR 97 to MAY 97 as a result of the FY97 National Defense Authorization Act which placed a "limitation on use of funds pending submission of report" on F/A-18E/F procurement costs.

(Ch-3): The current estimate for completion of Full Production Qualification was changed from MAR 98 to AUG 98 due to Engine Blade Containment test results and emergent environmental emission test requirements.

10. 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>	
KEY PERFORMANCE PARAMETERS (KPPs) (Specified in F/A-18E/F ORD and validated by JROC)					
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	N/A	/ N/A	TBD	N/A (Ch-1)
Fighter Escort Radius (F/A-18E) (internal fuel) (Nm)	N/A	425	/ 410	TBD	425 (Ch-1)
Interdiction Mission Radius (Nm)					
2 external tanks (retained)	400	400	/ 390	TBD	400
3 external tanks (retained)	450	450	/ 430	TBD	450
Combat Ceiling (max thrust) (ft)	>50000	>50000	/ 50000	TBD	>50000
Carrier Suitability (Tropical Day Conditions)					
Launch: Catapult WOD (C-13 Catapult:TCGW) (kts)	25	25	/ <30	TBD	<30
Recovery: WOD (MK-7 MOD 3) (kts)	10	10	/ <15	TBD	<15

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
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	
Additional Internal Fuel Capacity (lbs) (greater than C/D)	N/A	3000 / 3000	TBD	3600	(Ch-1)
SUITABILITY PARAMETERS (Specified in F/A-18E/F ORD)					
Mean Flight Hours Between Maintenance Actions	0.6	N/A / N/A	TBD	N/A	(Ch-1)
Mean Flight Hours Between Failures 1/	2.0	N/A / N/A	TBD	N/A	(Ch-1)
Mean Time Between Operational Mission Failure (MTBOMF) (Replaces MFHBF)	N/A	> 3.2 / > 2.6	TBD	>2.6	(Ch-1)
Maintenance Hours per flight hour (O&I-Level Unsched)	12.0	N/A / N/A	TBD	N/A	(Ch-1)
Direct Maintenance Manhours per Flight Hour (DMMH/FH) (Replaces MH/FH)	N/A	< 5.0 / < 9.0	TBD	1.26	(Ch-1)
OTHER PARAMETERS (desired to achieve maximum performance)					
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	37	(Ch-2)
Speed (Mach)	.98	.98 / .96	TBD	.96	
Fighter Escort Mission Configura- tion @10,000 ft with Intermediate Rated Thrust					

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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>
Empty Weight (lbs)	29950	29950 / 31950	TBD	30080 (Ch-3)

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

b. Current Change Explanations --

(Ch-1): Key Performance Parameters (KPPs) reflect changes/additions approved at the OSD Low Rate Initial Production (LRIP) Defense Acquisition Board decision in March 1997. These changes, which are specified in the F/A-18E/F Operational Requirements Document (ORD), were validated by the JROC.

(Ch-2): Software updates have resulted in improved Built In Test (BIT) reliability.

(Ch-3): Current estimate reflects status weight #67 as of 02 January 1998. Previous SARs reported specification (SPEC) weight.

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

a. Cost --	Development Estimate (SAR)	Approved Program (AFB)	Current Estimate
Development (RDT&E)	4883.3	4883.3	4871.2
Procurement	49076.3	29147.5	29421.7
Recurring Flyaway	(36450.2)		(21680.3)
Non-Recurring	(368.1)		(545.4)
Ancillary	(3858.5)		(3238.4)
Total Flyaway	(40676.8)		(25464.1)
Total Other Wpn Sys			(0.0)
Peculiar Support	(4301.9)		(3256.3)
Initial Spares	(4097.6)		(701.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 90 Base-Year \$	53959.6	34030.8	34292.9
Escalation	40623.4	13451.9	11771.2
Development (RDT&E)	(949.3)	(949.3)	(763.9)
Procurement	(39674.1)	(12502.6)	(11007.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	94583.0	47482.7	46064.1

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 ESMD estimate and is not to be included in the approved \$4.883B development cap.

Cost data in this SAR reflects the Defense Planning Guidance following the Quadrennial Defense Review (QDR) which reduced total F/A-18E/F procurement from 1,000 to 548.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	1000	548	548
Total	1000	548	548

Note: Excludes 0 RDT&E 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. This quantity was approved during the LRIP DAB in March 1997 and was below the 10% guideline for LRIP quantities. The Quadrennial Defense Review (QDR) subsequently reduced the total procurement to a range of 548 to 785 aircraft. Due to overall aircraft quantity reduction caused by the QDR, the LRIP quantities are above the current 10% guideline. The final quantity will be determined based on future decisions for the Joint Strike Fighter. Consequently, the LRIP quantities remain as approved during the March 1997 DAB.

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

c. Foreign Military Sales -- None.

d. Nuclear Costs --
N/A

12. Unit Cost Summary:

	UCR Baseline (OCT 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	34030.8	34292.9	
(2) Quantity	548	548	
(3) Unit Cost	62.100	62.578	+0.77
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	29147.5	29421.7	
(2) Quantity	548	548	
(3) Unit Cost	53.189	53.689	+0.94

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	5832.6	88750.4	-	94583.0
Previous Changes:				
Economic	-183.2	-12636.6	-	-12819.8
Quantity	-	-	-	-
Schedule	-143.4	+276.0	-	+132.6
Engineering	-	+432.4	-	+432.4
Estimating	+1.5	+902.6	-	+904.1
Other	-	-	-	-
Support	-	-3740.7	-	-3740.7
Subtotal	-325.1	-14766.3	-	-15091.4
Current Changes:				
Economic	-17.8	+5001.0	-	+4983.2
Quantity	-	-31895.2	-	-31895.2
Schedule	-	+894.6	-	+894.6
Engineering	-	-3050.6	-	-3050.6
Estimating	+145.4	-807.3	-	-661.9
Other	-	-	-	-
Support	-	-3697.6	-	-3697.6
Subtotal	+127.6	-33555.1	-	-33427.5
Total Changes	-197.5	-48321.4	-	-48518.9
Current Estimate	5635.1	40429.0	-	46064.1

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	+432.1	-	+278.5
Engineering	-	+262.4	-	+262.4
Estimating	+24.7	+414.9	-	+439.6
Other	-	-	-	-
Support	-	-2638.9	-	-2638.9
Subtotal	-128.9	-1529.5	-	-1658.4
Current Changes:				
Quantity	-	-14908.1	-	-14908.1
Schedule	-	+399.9	-	+399.9
Engineering	-	-1239.7	-	-1239.7
Estimating	+116.8	-573.8	-	-457.0
Other	-	-	-	-
Support	-	-1803.0	-	-1803.0
Subtotal	+116.8	-18124.7	-	-18007.9
Total Changes	-12.1	-19654.2	-	-19666.3
Current Estimate	4871.2	29422.1	-	34293.3

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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	-17.8
	Change resulting from RDT&E funding	+116.8	+145.4
	restoral (to maintain E&MD schedule) and		
	miscellaneous budget adjustments (SBIR,		
	NWCF rate adj., etc.) (Estimating)		
	RDT&E Subtotal	+116.8	+127.6
(2)	<u>Procurement</u>		
	Decrease due to reduction in total	-14908.1	-31895.2
	aircraft procurement from 1,000 to 548.		
	(Quantity)		
	Economic adjustment for negative program	N/A	+8855.1
	change. (Economic)		
	Economic change due to change of inflation	N/A	-3854.1
	indices. (Economic)		
	Increase due to change in maximum	+399.9	+894.6
	aircraft production rate from 60 to 48		
	per year. (Schedule)		
	Decrease due to adjustment of the	-1239.7	-3050.6
	F/A-18E/F FLIR requirement. (Engineering)		
	Cost model updated to incorporate CAIG	-573.8	-807.3
	assumptions and projected multiyear		
	procurement savings. (Estimating)		
	Decrease due to reduction in support	-1803.0	-3697.6
	requirements resulting from aircraft		
	quantity reduction. (Support)		
	Procurement Subtotal	-18124.7	-33555.1

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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
94.58	-14.30	+19.82	+1.87	-4.78	+0.44	--	-13.57	-10.52	84.06

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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	
88.75	-13.93	+15.00	+2.14	-4.78	+0.17	--	-13.57	-14.97	73.78

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	46064.1
Total Quantity	0	1000	N/A	548
Prog Acq Unit Cost	0	94.58	N/A	84.06

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

a. RDT&E --
 Airframe E&MD:
 MCDONNELL DOUGLAS, St. Louis, MO
 N00019-92-C-0059, CPAF/IP
 Award: July 20, 1992
 Definitized: December 7, 1992

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$3866.6	N/A	0	\$3877.0	\$4009.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$37.9	\$-31.5
Cumulative Variances To Date (12/31/97)	\$27.5	\$-22.3
Net Change	\$-10.4	\$9.2

Explanation of Change:

Since December 1996, overall cost performance has declined primarily as a result of corrections of deficiencies found during flight testing and a test failure of the vertical tail at Northrop Grumman. On a cumulative basis, this contract has a \$27.5M underrun. Schedule performance at the contract level has improved primarily due to fuel tank and cockpit display schedule recovery and completion of aircraft E-3 and F-2.

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15. Contract Information (Cont'd):

<u>YF414-GE-404 Engine:</u>			<u>Initial Contract Price</u>		
General Electric Company, Lynn, MA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-92-C-0149, CPAF/IF			\$773.8	N/A	21
Award: July 20, 1992					
Definitized: December 7, 1992					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$820.0	\$0.0	21	\$820.0	\$820.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-37.2	\$-7.6
Cumulative Variances To Date (12/31/97)	\$-49.1	\$-5.2
Net Change	\$-11.9	\$2.4

Explanation of Change:

The unfavorable cumulative cost variance increased by \$11.9M to \$-49.1M. The cost variance has increased primarily due to redesign efforts, supplier problems, and Development Test and Evaluation issues associated with reaching Full Production Qualification (FPQ). The schedule variance continued to improve to date by \$2.4M to \$ -5.2M. This schedule recovery is mainly attributed to completing tasks associated with testing.

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> (FY00-10)	<u>Total</u>
RDT&E	4966.2	260.1	216.6	192.2	5635.1
Procurement	2352.6	2192.7	3015.3	32868.4	40429.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	7318.8	2452.8	3231.9	33060.6	46064.1

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

b. Annual Summary -- F/A-18 E/F

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				320.8	350.1
1993				754.0	842.0
1994				1227.0	1396.2
1995				1074.0	1246.0
1996				678.7	801.1
1997				275.8	330.8
1998				213.7	260.1
1999				175.2	216.6
2000				115.6	145.2
2001				22.5	28.8
2002				7.1	9.2
2003				6.8	9.0
Subtotal				4871.2	5635.1

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.

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				194.8	233.6
1997	12	174.2	1189.2	1738.9	2119.0
1998	20	207.0	1455.0	1771.8	2192.7
1999	30	278.8	1731.6	2396.8	3015.3
2000	36	202.5	1645.4	2337.7	2991.7
2001	42	293.1	1746.1	2329.2	3034.6
2002	48	367.4	1812.8	2416.6	3210.3
2003	48	353.8	1739.0	2310.9	3134.6
2004	48	342.4	1678.8	2293.2	3179.0
2005	48	331.6	1646.1	2229.4	3158.5
2006	48	278.7	1605.3	2130.5	3084.8
2007	48	273.4	1567.6	2070.9	3064.5
2008	48	269.8	1533.2	2040.3	3085.6
2009	48	266.8	1508.6	1996.4	3085.6
2010	24	144.3	821.6	1164.3	1839.2

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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 \$
Subtotal	548	3783.8	21680.3	29421.7	40429.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	548	3783.8	21680.3	34292.9	46064.1

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: 0.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 5383

Percent Total Program Expended: 11.7%

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

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

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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N-14 NESP

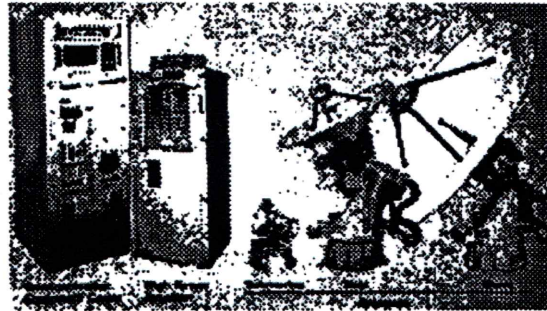
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: Navy EHF SATCOM Prog

AS OF DATE: December 31, 1997

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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 Gary Graupmann
Command - PMW 176 Assigned: January 9, 1998
4301 Pacific Highway DSN ; COMM (619) 524-7906
San Diego, CA 92110-3217 grpmmn@spawar.navy.mil

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

RDT&E:

(U) PE 0303109N Project X0728

PROCUREMENT:

(U) APPN 1611 ICN MULTIPLE (Navy)
(U) APPN 1810 ICN 33322000 (Navy) (Shared)
(U) APPN 1810 ICN 33902000 (Navy) (Shared)
(U) APPN 1810 ICN 33321000 (Navy) (Shared)

MILCON:

(U) PE 0303109N

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MAR 24 1998 9

No Security Objection
to Open Publication
(AS AMENDED)
98-5-0146
MAR 24 1998
Beck
Office of the Chief of
Naval Operations
Dept. of the Navy

~~Derived from:~~
~~Downgrade instructions: Milstar System Classification Guide, September 18, 1996~~
~~Declassify on: NS~~

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5. (U) References:

SAR Baseline (Production Estimate):

(U) NAE Approved Acquisition Program Baseline dated March 24, 1993.

Approved Program:

(U) NAE Approved Acquisition Program Baseline (APB) dated March 24, 1993.

6. (U) Mission and Description:

(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) 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 shore, sub and ship terminals met their respective AJ and LPI requirements. Completion of this test represented 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) The Interim Polar EHF package, which is hosted on a ~~classified~~ payload, was successfully launched on 7 November 1997. This package 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. IOC is scheduled for April 1998 following operational testing with a submarine in February/March.

(U) Ground compatibility testing between the NESP terminal and the Interim Polar EHF package flight model was successfully completed in early December 1997.

(U) The MDR Applique contract was awarded on 20 January 1998. The Applique will fit into a spare drawer in the current LDR terminal and will provide increased data rates to the fleet.

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

(U) The Follow-On Terminal (FOT) RFP was released in July 97 and is expected to be awarded in February of 1998. The FOT design is expected to be a multiband terminal and will incorporate acquisition reform initiatives through the use of COTS/GOTS equipment.

(U) The Advanced EHF program is currently being defined through the ORD (Dec 98) and DAB (Feb 99) process.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>	
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	JUL 97	(Ch-1)
MDR Applique Award	OCT 97	OCT 97	JAN 98	(Ch-2)
MDR Operational Test	OCT 98	OCT 98	OCT 98	
Milestone IV	FEB 99	FEB 99	FEB 99	

b. Current Change Explanations --

(U) (Ch-1) The PM's current estimate for Follow-On Terminal RFP release has changed from April 1997 to July 1997. The revision was made to allow reevaluation of source selection strategies to maximize competition within current funding constraints.

(U) (Ch-2) The MDR Applique contract was awarded on 20 January 1998, still below the threshold date of April 1998. This revision was required because of government and contractor personnel working on multiple contract efforts which required the assignment of new technical and contract support staff.

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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>
Survivability				
(S) Transient Overpressure (psi)	(b)(1)			
(S) Neutron Fluence (neutrons/cm ²)				
(S) Gamma Dose Rate (rads) (si)/(sec)				
(S) Total Gamma Dose (rads) (si)				
(S) Gamma Dose Initial (rads) (si)				
Thermal Fluences				
(S) 1 MT yield (cal/cm ²)				
EMP (peak at antenna)				
(S) Eo Field (volts/meter)				
(S) Ho Field (amps/meter)				
Resistance to Jamming				
(S) Shore (EIRP) (dBW)				
(S) Shore (G/T) (dBi)				
(S) Ship (EIRP) (dBW)				
(S) Ship (G/T) (dBi)				
(S) Sub (EIRP) (Wet Radome) (dBW)				
(S) Sub (G/T) (Wet Radome) (dBi)				
Low Probability of Intercept (CEVR) (75bps/minimum power)				
(S) Ship (nmi)				
(S) Sub (nmi)				
(S) Submarine				
(S) Surface				
(S) Shore				
Reliability (All Terminals) (hrs)				
Maintainability (MTTR) (hrs)				
Minimum Essential Communications				
(S) Ship (1 st Spot) (bps) (sv)				

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Ship (1^0 Spot) (bps) (TTY)	(b)(1)			
(S) Receive Only (bps) data				
(S) Sub (1^0 Spot) (bps) (sv)				
(S) Sub 3.6^0 Agile (bps) (TTY)				
(S) Shore (EC) (bps) (sv)				
(S) Send Only (bps) data				
(S) Send Only (bps) (TTY)				
(S) FLTBCST (bps) (TTY) Medium Data Rate Effective Isotropic Radiated Power (EIRP)				
(S) Shore (10 Ft. Ant.) (dBw)				
(S) Shore (6 Ft. Ant.) (dBw)				
(S) Ship (4 Ft. Ant.) (dBw)				
(S) Ship (3 Ft. Ant.) (dBw)				
(S) Sub (9.5 in. Ant.) (dBw) (Wet Radome)				
G/T				
(S) Shore (10 Ft. Ant.) (dBk)				
(S) Shore (6 Ft. Ant.) (dBk)				
(S) Ship (4 Ft. Ant.) (dBk)				
(S) Ship (3 Ft. Ant.) (dBk)				
(S) Sub (9.5 in. Ant.) (dBk) (Wet Radome)				
Maximum Aggregate Data Rate				
(S) Shore (10 Ft. Ant.) (kBPS)				
(S) Shore (6 Ft. Ant.) (kBPS)				
(S) Ship (4 Ft. Ant.) (kBPS)				

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Ship (3 Ft. Ant.) (kBPS)	(b)(1)			
(S) Sub (9.5 in. Ant.) (kBPS)				

b. Current Change Explanations --

(U) 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.

(S) (b)(1)	(b)(1)
(S) (b)(1)	(b)(1)
(S) (b)(1)	(b)(1)
(S) (b)(1)	(b)(1)
(S) (b)(1)	(b)(1)

(U) Entries shown for Performance Characteristics under "Demonstrated Performance" have been tested at values equal to or better than the Approved Program Objective/Threshold.

(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

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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)	457.4	457.4	494.4
Procurement	1395.2	1395.2	1427.1
Terminals	(991.7)		(1073.1)
Other Weapon Sys	(127.9)		(105.4)
Peculiar Support	(40.7)		(49.3)
Initial Spares	(234.9)		(199.3)
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	1929.2
Escalation	497.1	497.1	331.6
Development (RDT&E)	(6.0)	(6.0)	(19.2)
Procurement	(486.3)	(486.3)	(311.5)
Construction (MILCON)	(4.8)	(4.8)	(0.9)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2373.7	2373.7	2260.8
b. (U) Quantity --			
Development (RDT&E)	7	7	7
Procurement	386	386	401
Total	393	393	408

(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:

	UCR Baseline (MAR 93 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	1876.6	1929.2	
(2) Quantity	393	408	
(3) Unit Cost	4.775	4.728	-0.98
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	1395.2	1427.1	
(2) Quantity	386	401	
(3) Unit Cost	3.615	3.559	-1.55

(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	-6.3	-145.4	-0.6	-152.3
Quantity	-	-1.1	-	-1.1
Schedule	+7.6	+40.2	-	+47.8
Engineering	+35.5	+33.7	-	+69.2
Estimating	+0.1	+17.0	+0.8	+17.9
Other	-	-	-	-
Support	-	-95.4	-20.4	-115.8
Subtotal	+36.9	-151.0	-20.2	-134.3
Current Changes:				
Economic	-	-32.6	-	-32.6
Quantity	-	+23.1	-	+23.1
Schedule	+16.3	-0.9	-	+15.4
Engineering	-	-	-	-
Estimating	-3.0	+9.8	-	+6.8
Other	-	-	-	-
Support	-	+8.7	-	+8.7
Subtotal	+13.3	+8.1	-	+21.4
Total Changes	+50.2	-142.9	-20.2	-112.9
Current Estimate	513.6	1738.6	8.6	2260.8

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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	-	-1.8	-	-1.8
Schedule	+4.1	+25.1	-	+29.2
Engineering	+24.3	+23.8	-	+48.1
Estimating	+0.6	+9.5	+0.5	+10.6
Other	-	-	-	-
Support	-	-56.4	-16.8	-73.2
Subtotal	+29.0	+0.2	-16.3	+12.9
Current Changes:				
Quantity	-	+20.5	-	+20.5
Schedule	+8.0	-1.5	-	+6.5
Engineering	-	-	-	-
Estimating	-	+5.8	-	+5.8
Other	-	-	-	-
Support	-	+6.9	-	+6.9
Subtotal	+8.0	+31.7	-	+39.7
Total Changes	+37.0	+31.9	-16.3	+52.6
Current Estimate	494.4	1427.1	7.7	1929.2

(U) Revised terminal and Medium Data Rate (MDR) requirements to meet restructured fleet communications needs resulted in 9 additional LDR/MDR Follow-On terminals and 5 fewer MDR upgrade retrofits.

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) RDT&E

Delayed development to outyears for Advanced EHF modifications to the existing NESF terminals. (Schedule)	+8.0	+16.3
Revised Escalation indices. (Estimating)	0.0	-3.2
Adjustment for current and prior inflation changes. (Estimating)	0.0	+0.2

RDT&E Subtotal	+8.0	+13.3
----------------	------	-------

(2) Procurement

Revised escalation indices for OPN and SCN Procurement. (Economic)	N/A	-32.6
Revised terminal and MDR requirements to meet restructured fleet communications needs resulted in 9 additional LDR/MDR Follow-On terminals. (Quantity)	+20.5	+23.1

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Revised procurement profiles for terminals, MDR upgrades and Navy EHF Communications Controllers (NECCs). (Schedule)	-1.5	-0.9
Support changes due to quantity and schedule changes. (Support)	+6.9	+8.7
Revised estimates for Terminals, MDR upgrades and Full Milstar LDR Operational Capabilities. (FMLOC) (Estimating)	+5.8	+7.1
Adjustment for current and prior inflation changes. (Estimating)	0.0	+2.7
Procurement Subtotal	+31.7	+8.1

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	
6.04	-0.45	-0.17	+0.15	+0.17	+0.06	--	-0.26	-0.50	5.54

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	-0.44	-0.12	+0.10	+0.06	+0.07	--	-0.22	-0.53	4.34

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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	2260.8
Total Quantity	N/A	N/A	393	408
Prog Acq Unit Cost	N/A	N/A	6.04	5.54

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		Qty
Target	Ceiling	
\$83.7	N/A	24

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$409.7	N/A	256	\$409.7	\$409.7

Explanation of Change:

(U) The current contract Price and Estimated Price At Completion increased \$16.5M in 1997 as a result of two modifications to the Production Contract, chiefly a modification which exercised an option to procure an additional twelve terminals under the current contract.

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

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

a. 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	380.2	15.5	16.1	101.8	513.6
Procurement	900.7	48.1	96.8	693.0	1738.6
MILCON	8.6	-	-	-	8.6
O&M	-	-	-	-	-
Total	1289.5	63.6	112.9	794.8	2260.8

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				11.4	13.4
1997				11.3	13.6
1998				12.7	15.5
1999				13.0	16.1
2000				6.8	8.6
2001				5.9	7.5
2002				5.2	6.8
2003				6.0	7.9
2004				6.0	8.1
2005				5.9	8.2
2006				38.7	54.7
Subtotal	7			494.4	513.6

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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	12.0	13.9
1994	7		26.7	11.5	13.7
1995				6.6	8.0
1996	3		9.1	14.8	18.2
1997	12		21.4	18.3	22.8
1998				6.6	8.4
1999	8		13.2	11.2	14.4
2000	6		10.6	9.3	12.2
2001	8		13.1	15.7	21.1
2002	3		5.5	8.6	11.8
2003				4.0	5.6
2004				4.2	6.0
Subtotal	61		130.0	130.0	164.0

(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	137.2	154.0
1993	54	1.0	110.5	110.9	126.0
1994	58	0.4	138.6	93.2	107.4
1995			1.1	48.1	56.5
1996	7		18.5	46.1	54.8
1997		7.8	4.9	61.2	74.0
1998		7.2	13.1	32.4	39.7
1999	4	1.8	35.7	66.1	82.4
2000	21	1.0	81.4	98.8	125.3
2001	14		46.3	64.8	83.6
2002	11		33.6	62.0	81.5
2003	37		87.3	82.0	110.0
2004	12		46.5	55.8	76.5
2005	11		40.7	65.7	92.0

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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 \$
2006				25.6	36.7
2007				21.0	30.7
Subtotal	340	45.5	897.6	1297.1	1574.6

(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	408	45.5	1027.6	1929.2	2260.8

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	7	7
Procurement	244	244

(U) Percent Total Program Quantities Delivered: 61.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1130.3

(U) Percent Total Program Expended: 50.0%

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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 249 Ship, 82 Submarine, 55 Shore, 9 Training, and 6 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.

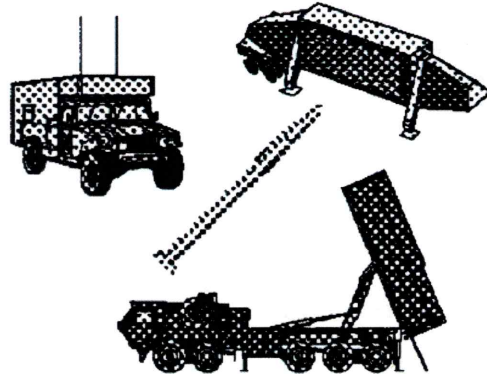
b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg. Annual Cost Per Terminal	N/A
Mission Pay & Allowances	N/A	N/A
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	N/A	N/A
Indirect Costs	N/A	N/A
Total	98.0	0.0

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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	COL Louis P. Deeter
P.O. Box 1500	Assigned: May 17, 1996
Huntsville, AL 35807-3801	DSN 645-2169; COMM (205) 955-2169
	deeterl@thaad-md.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, A2210, A3562
(U)	PE 0603861C	Project A2260, M2260
(U)	PE 0603862C	Project A2154
(U)	PE 0603872C	
(U)	PE 0604861C	Project M2260

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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) DAE Approved Acquisition Program Baseline (APB) dated March 10, 1998.

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, radars, 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 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.

A \$2.1B reduction in funding over the Future Years Defense Plan in the FY 1997

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

President's Budget resulted in a major restructure of the program. This restructure redefined the Objective System design and delayed the First Unit Equipped (FUE) from FY 2002 to FY 2006.

THAAD has conducted seven flight tests to date. Flight Tests 01-03 were non-intercept missions. Beginning with Flight Test 03, THAAD began the process of integrating the segments into the flights, so that Flight Test 07 tested the integrated system. While an intercept has not been achieved, valuable data have been collected and incorporated into the program from each flight.

The lack of an intercept on Flight Test 07 resulted in another restructure of the program. Based on the recommendations of Independent Review Teams, the number of Program Definition & Risk Reduction (PDRR) flights increased from eleven to thirteen, and five flight tests were planned to achieve the three intercepts required to satisfy the Exit Criteria. This restructure was endorsed by the Quadrennial Defense Review and has been funded in the FY 1999 President's Budget. As part of the restructure, and to reduce program risk while meeting the FUE of FY 2006, the PDRR contract has been modified to add Engineering Manufacturing & Development (EMD) risk mitigation efforts including design/rehost Battle Management/Command, Control, Communications, Computers and Intelligence (BM/C4I) computer upgrade, radar design for the Pseudomorphic High Electron Mobility Transistor transmit/receive module, and design/rehost for the new radar signal processor/data processor suite.

Based on a review of the threat, and consideration of Cost As An Independent Variable (CAIV), the Army has revised the Operational Requirements Document (ORD) to reflect updated threshold and objective requirements. In accordance with Joint Requirements Oversight Council (JROC) guidance to minimize the number of Key Performance Parameters (KPPs), they have been reduced from the original twelve to six. The revised KPPs included in the ORD will provide appropriate parameters to track the THAAD program. The JROC validated the THAAD KPPs in the new ORD on January 15, 1998. The THAAD Acquisition Program Baseline was approved on March 10, 1998.

The next THAAD flight test (Flight Test 08) is currently scheduled for 3rd Quarter FY 1998. Considerable effort has been expended on review of anomalies arising from component and system checkout in preparation for Flight Test 08. These anomalies continue to be resolved to the satisfaction of the contractor and THAAD Project Office as part of efforts to ensure success of Flight Test 08.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	
System Delivery Complete (Less Missiles and Radars)	JUL 96	N/A	N/A	(Ch-1)
Delivery of Optional 40 UOES Missiles Complete	TBD	N/A	N/A	(Ch-1)
Milestone II DAB Review	JUL 96	JUL 99	JUL 99	(Ch-2)
THAAD EMD Contract Award	AUG 96	JUL 99	JUL 99	(Ch-2)
GBR EMD Contract Award	AUG 96	N/A	N/A	
LRIP Review	FEB 99	JAN 04	JAN 04	(Ch-2)
Milestone III DAB Review	JUL 01	JAN 07	JAN 07	(Ch-2)
Full Rate Production Contract Award	N/A	FEB 07	FEB 07	(Ch-2)
FUE	JUL 01	SEP 06	SEP 06	
IOC	TBD	TBD	TBD	

(U) FUE - one firing battery

IOC - will be identified at MSII

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

b. Current Change Explanations --

(U) Note: The approved program milestones were changed in accordance with the APB signed March 10, 1998.

(Ch-1) As a result of approval of the APB, System Delivery Complete (Less Missiles and Radars) was changed from Mar 99 to N/A; and Delivery of Optional 40 UOES Missiles Complete was changed from TBD to N/A.

(Ch-2) As a result of delays to FT-08 and ripple effect for remaining flights, milestones were adjusted as follows: Milestone II DAB Review from Jan 99 to Jul 99; THAAD EMD Contract Award from Feb 99 to Jul 99; LRIP Review from Nov 03 to Jan 04; Milestone III DAB Review from Oct 06 to Jan 07; and Full Rate Production Contract Award from Nov 06 to Feb 07.

10. (U) Performance Characteristics:

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Protection Effectiveness (Kill Probability of success %) (Non-air-breathing Threat)	(b)(1)			
(S) Defended Radius (km)				
(S) Single Shot Engagement Kill Probability (%)				
Simultaneous Engagements				
(S) Chemical, Biological and/or Conventionally Armed				
(S) Nuclear Armed				
(S) Track Handling Capacity				
(S) Threat Range (km)				
(S) Threat Reentry Velocity (km/sec)				
(S) ATBM Lethality				
(S) High Altitude Air-breathing Threat (Hard Kill)				
System Response Time (min)	3	N/A	/ N/A	TBD
Transportability	C130	N/A	/ N/A	TBD

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

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Operational Availability (Ao) Manpower Nuclear Survivability	(b)(1)			
(S) Degree of Protection (Leakage)				
(S) Defended Area-Battery (Equivalent Area)				
(S) Target Set				
(S) Lethality				
Interoperability	N/A	Integ- / TADIL J ration / as the into a / Proto- Joint / col for Compos- / Joint ite / TBMD Track- / Mes- ing / sages Network /	TBD	Tadil J ***

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

(U) * These performance characteristics are not among the six KPPs validated by the JROC on January 15, 1998 and thus were not included in the revised APB approved on March 10, 1998. Although they are still ORD requirements for the system, they are no longer required for program tracking purposes.

** These performance characteristics were renamed and are provided in the JROC validated six KPPs of the new ORD.

*** These six KPPs were validated by the JROC on January 15, 1998 and included in the revised APB approved on March 10, 1998. These KPPs supercede Approved Performance Characteristics from previous APBs.

b. Current Change Explanations -- None

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

	Planning Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	3165.2	5499.6	5499.6
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	5499.6	5499.6
Escalation	1158.5	1851.2	1851.2
Development (RDT&E)	(1158.5)	(1851.2)	(1851.2)
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 \$	4323.7	7350.8	7350.8

b. (U) Quantity --

Development (RDT&E)	0	40	40
Procurement	0	N/A	0
Total	0	40	40

(U) The Approved Program and Current Estimate developmental quantities reflect the PDORR option to purchase 40 missiles for the User Operational Evaluation System. The configuration of these prototype missiles is different than that of the production missiles. An additional 65 missiles (not fully configured), will be bought in RDT&E to support the test program (ground and flight).

c. (U) Foreign Military Sales --

The potential exists for Foreign Military Sales of the THAAD System, where

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

European, Mideast, or Southeast Asian countries would use THAAD as an upper tier capability essentially providing defense of entire countries. There has been considerable interest from various countries. These interests will be developed at the appropriate time.

d. Nuclear Costs -- None.

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	4323.7	-	-	4323.7
Previous Changes:				
Economic	-318.3	-	-	-318.3
Quantity	-	-	-	-
Schedule	+1278.6	-	-	+1278.6
Engineering	+1241.6	-	-	+1241.6
Estimating	+1241.7	-	-	+1241.7
Other	-	-	-	-
Support	-4.4	-	-	-4.4
Subtotal	+3439.2	-	-	+3439.2
Current Changes:				
Economic	-131.3	-	-	-131.3
Quantity	-	-	-	-
Schedule	-142.1	-	-	-142.1
Engineering	-	-	-	-
Estimating	-138.7	-	-	-138.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-412.1	-	-	-412.1
Total Changes	+3027.1	-	-	+3027.1
Current Estimate	7350.8	-	-	7350.8

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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	+808.9	-	-	+808.9
Engineering	+850.8	-	-	+850.8
Estimating	+874.2	-	-	+874.2
Other	-	-	-	-
Support	-3.9	-	-	-3.9
Subtotal	+2530.0	-	-	+2530.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-101.9	-	-	-101.9
Engineering	-	-	-	-
Estimating	-93.7	-	-	-93.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-195.6	-	-	-195.6
Total Changes	+2334.4	-	-	+2334.4
Current Estimate	5499.6	-	-	5499.6

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-148.0
Economic adjustment for negative program change. (Economic)	N/A	+16.7
Congressional reduction for delay in start of Engineering Manufacturing & Development (Adjustment to Jun 97 SAR schedule variance). (Schedule)	-101.9	-142.1
Adjustment for Current and Prior Inflation. (Estimating)	+14.6	+18.7
Refinement of estimate to reflect potential effects of Cost Reduction Plans. (Estimating)	-108.3	-157.4
RDT&E Subtotal	-195.6	-412.1

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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	JUL 99
Milestone III	JUL 01	N/A	N/A	JAN 07
FUE/IOC	JUL 01	N/A	N/A	SEP 06
Total Cost	4323.7	N/A	N/A	7350.8
Total Quantity	N/A	N/A	N/A	0
Prog Acq Unit Cost	N/A	N/A	N/A	0

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

a. RDT&E --

(U) THAAD PDRR:

Lockheed Martin Msl&Space, Sunnyvale CA

DASG60-92-C-0101, CPFF

Award: September 4, 1992

Definitized: September 4, 1992

Initial Contract Price
Target Ceiling Qty

\$688.9 N/A 0

Current Contract Price
Target Ceiling Qty
\$953.7 N/A 0

Estimated Price At Completion
Contractor Program Manager
\$1685.3 \$1693.4

Previous Cumulative Variances	Cost Variance \$2.0	Schedule Variance \$-2.1
Cumulative Variances To Date (12/28/97)	\$-11.0	\$-10.6
Net Change	\$-13.0	\$-8.5

Explanation of Change:

(U) The final increment of an over-target-baseline (OTB) was implemented in the Lockheed/Martin month-end July 1997 Cost Performance Report. Variances incurred since the implementation of the OTB are associated primarily with Flight Test 08 related activities such as: increased missile system engineering integration, assembly, test & checkout; unplanned seeker returns; and software fixes identified as a result of increased component/system testing. The estimated price at completion reflects

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

implementation of the final increment of the OTB. There is no significant impact to the contract because of the variances.

(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	\$144.2	N/A	25		
DASG60-92-C-0217, CPFF					
Award: October 14, 1992					
Definitized: October 14, 1992					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$238.7	N/A	25	\$226.6	\$226.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-5.7	\$-5.0
Cumulative Variances To Date (01/25/98)	\$-6.9	\$-0.1
Net Change	\$-1.2	\$4.9

Explanation of Change:

(U) The net change in cost and schedule variance is considered negligible. There are no significant impacts to the contract because of the variances.

Note:

(U) GBR PDRR

Contract Number DASG60-92-C-0184

Contract Name GBR PDRR

Contractor Raytheon

This contract is over 90% complete with all hardware delivered and operational. In accordance with SAR guidance it is no longer being reported.

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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 (FY92-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-07)</u>	<u>Total</u>
RDT&E	2986.4	390.8	821.7	3151.9	7350.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2986.4	390.8	821.7	3151.9	7350.8

b. Annual Summary -- THAAD System

Appropriation: 0400 RDT&E, Defense Agencies

<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>
1992				101.0	119.6
1993				325.0	393.6
1994				567.6	701.1
1995				515.6	649.3
1996				395.1	506.5
1997				473.2	616.3
1998				295.7	390.8
1999				612.1	821.7
2000				464.1	633.3
2001				417.7	579.9
2002				426.5	602.7
2003				348.4	502.0
2004				282.3	415.8
2005				173.2	260.7
2006				89.1	137.0
2007				13.0	20.5
Subtotal				5499.6	7350.8

	<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				5499.6	7350.8

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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: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2707.3

(U) Percent Total Program Expended: 36.8%

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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N-13 MIDS-LVT

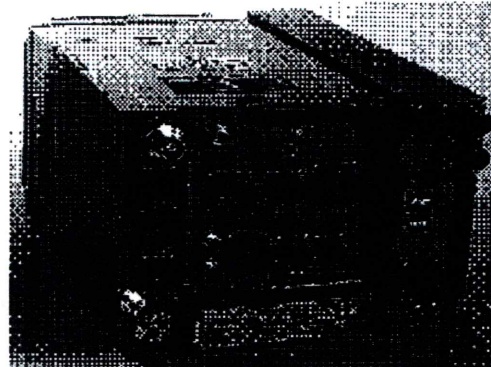
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: MIDS-LVT

AS OF DATE: December 31, 1997

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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

Joint Participants:
Army/Air Force

3. (U) Responsible Office and Telephone Number:

PEO for Space, Comms & Sensors	CAPT David P. Fitch
MIDS Program (JPMW 101)	Assigned: September 20, 1993
2451 Crystal Drive	DSN 332-7618; COMM (703) 602-7618
Arlington, VA 22202-4804	fitchd@spawar.navy.mil

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

RDT&E:

(U)	PE 0205604N (Shared)	Project P2126
(U)	PE 0207130F (Shared)	F-16 Project
(U)	PE 0207133F (Shared)	F-15 Project
(U)	PE 0207134F (Shared)	ESC Project
(U)	PE 0603713A (Shared)	Project , D370
(U)	PE 0604503N (Shared)	Project X1411
(U)	PE 0604771D (Shared)	Project P773

PROCUREMENT:

(U)	APPN 1506 ICN 3105250000 (Navy) (Shared)
(U)	APPN 1810 ICN 3326140000 (Navy) (Shared)

No Security Objection
to Open Publication
(AS AMENDED)
98-C-076
MAR 26 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

~~Derived from: MIDS Security Classification Guide, dated 10 JUN 94~~
~~Downgrade Instructions: OADR~~
~~Declassify on: OADR (*)~~

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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 Joint Service (Army, Air Force and Navy) 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. and Allied fighter aircraft, bombers, helicopters, ships, submarines, and ground sites. MIDS is designed as a Pre-Planned Product Improvement (P3I) to the JTIDS Time Division Multiple Access (TDMA) Class 2 terminal. The goal of the MIDS program is to produce a terminal that is smaller, lighter, highly reliable, interoperable with JTIDS Class 2, compatible with all the Participants' designated platforms, affordable, and reconfigurable to individual user needs and budgets. To this end, three principal configurations of the MIDS terminal are being developed using an open, modular architecture. MIDS-LVT includes voice, TACAN, and variable power transmission with maximum power of 200 watts, as defined in U.S. Navy MIDS ORD 337(1)-06-95. MIDS-LVT (2) is an Army variant of MIDS tailored to be a functional replacement for the more expensive JTIDS Class 2M, as defined in the Army ORD 08023 dated 15 July 1996. MIDS-LVT (3) is a reduced function terminal for the Air Force (no voice, no TACAN, and a maximum power of 50 watts), as defined in Air Force ORD CAF 315-92-I-A. The architecture will allow the cost effective tailoring of other production variants to specific user needs.

The MIDS-LVT terminal does not replace an existing DoD system.

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 and closure of action items is being coordinated within and among the respective integrated product teams.

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

Fabrication, integration and testing of form, fit and function brassboard modules and terminals has been completed. Eleven MIDS Interface Simulators (MIS) (Version 1 hardware and software) have been delivered and are in operation supporting MIDS platform and laboratory integration and testing. Finally, two MIDS EMD terminals were delivered during the first week of February 1998 achieving another major program milestone.

On 15 Aug 95, 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 22 Feb 96 after coordination with Congressional staffs. The FDL contract was awarded to a joint venture comprised of GEC-Marconi Hazeltine and Rockwell Collins on 30 September 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). In December 1997, following a decision by the USAF to install the FDL in the F-15E, the FDL contract was modified to procure an additional six qualification terminals in a common configuration (interfaces tailored for the F-15E, as well as the originally planned interface for the F-15C/D).

In accordance with the revised Acquisition Strategy Report approved by USD(A&T) in December 1996, a solicitation was conducted to select companies to participate in a U.S. led production readiness effort. This effort will expand the number of contractors/teams that possess the requisite knowledge and experience in Link 16 and MIDS design and manufacturing to compete for MIDS production contracts in 1999. The solicitation was completed on 8 Oct 97; a total of four companies or teams are participating in production readiness within terms established by other transactions agreements.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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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:

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.

A Program Deviation Report (PDR) was submitted to ASN (RD&A) on March 1, 1997.

A revised MIDS Acquisition Program Baseline (APB) is in the signature cycle. The revised APB addresses the reduction in terminal unit costs as a result of the changes in terminal architecture, adoption of industrial grade parts, other acquisition reform initiatives, and the economy of higher production quantities that have occurred since Milestone II. It also addresses increases in RDT&E associated with support to new U.S. platforms and accelerated entry into competitive production. The revised APB includes the costs for which the MIDS program office and PEO-SCS have direct responsibility for execution; these are terminal development, terminal production and support, and the integration and test of MIDS in U.S. Navy platforms. Costs of platform installation and kits, and USAF and Army platform integration and testing of MIDS, are to be included in the respective budgets and baseline agreements of the various platforms which are implementing MIDS.

9. (U) Schedule:

a. Milestones --

	Development Estimate (\$AR)	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	FEB 98	(Ch-1)
First EMD Flight	JUN 98	JUN 98	JUL 98	(Ch-1)
TECHEVAL				
Start	JUN 00	JUN 00	MAY 99	(Ch-1)
Complete	JUN 00	JUN 00	JUN 99	(Ch-1)
OPEVAL				
Start	DEC 00	DEC 00	JUL 99	(Ch-1)
Complete	DEC 00	DEC 00	AUG 99	(Ch-1)
Low-Rate Initial Production First Delivery	OCT 00	OCT 00	SEP 00	(Ch-1)
Initial Operational Capability	DEC 00	DEC 00	DEC 00	(Ch-1)

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone III (DAB)	JUN 01	JUN 01	DEC 98 (Ch-1)
Full Rate Production Contract Award	JUN 01	JUN 01	DEC 99 (Ch-1)
Organic Support Capability Date	JUN 03	JUN 03	JUL 03
Service Depot Support Date	N/A	JAN 04	JAN 04

(U) Acronyms:

IRT - Integration Readiness Testing

Note: Current Estimate reflects testing of MIDS-LVT in the shipboard configuration. Terminals delivered in February 1998 were in an IRT 2 configuration.

b. Current Change Explanations --

(U) CH-1 A revised APB has been submitted to ASN (RD&A) that reflects the current changes in the restructured and accelerated MIDS program, including U.S. Air Force, Army and Navy platforms. The following Milestones have changed:

Milestone	From	To
First EMD Terminal Delivery (IRT1)	Dec 97	Feb 98
First EMD Flight	Nov 98	Jul 98
TECHEVAL		
Start	Jul 99	May 99
Complete	Sep 99	Jun 99
OPEVAL		
Start	Dec 99	Jul 99
Complete	Feb 00	Aug 99
Low Rate Initial Production First Delivery	Jul 00	Sep 00
Initial Operational Capability	Apr 00	Dec 00
Milestone III (DAB)	May 00	Dec 98
Full Rate Production Contract Award	Jun 00	Dec 99

10. (U) Performance Characteristics:

a. Performance --

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

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

(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):

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	481.1	481.1	593.5
Procurement	443.8	443.8	615.9
Prime Mission Eqmt (PME)	(313.7)		(501.9)
Production Support	(10.5)		(20.6)
Total Flyaway	(324.2)		(522.5)
Other Wpn Sys	(55.7)		(13.8)
Peculiar Support	(6.6)		(5.1)
Initial Spares	(57.3)		(74.5)
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	1209.4
Escalation	194.6	194.6	225.9
Development (RDT&E)	(51.9)	(51.9)	(69.2)
Procurement	(142.7)	(142.7)	(156.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1119.5	1119.5	1435.3
b. (U) Quantity --			
Development (RDT&E)	42	42	63
Procurement	630	630	2358
Total	672	672	2421

(U) Note: MIDS procurement quantities have increased primarily due to inclusion of MIDS terminals for submarines, F-15s, F-16s, and Army platforms. Overall procurement costs have declined because the unit cost of the MIDS terminal has been reduced as a result of changes in terminal architecture, adoption of industrial grade parts, CAIV (Cost as an Independent Variable) decisions, and increased quantities (economy of scale). Procurement costs now reflect the costs for which the MIDS program office and PEO-SCS have direct responsibility for execution; these are terminal development, terminal production and support, and the integration and test of MIDS in U.S. Navy platforms. Costs of platform installation and platform kits, and USAF and Army platform integration and testing of MIDS, are to be included in the respective budgets and baseline agreements of the various platforms which are implementing MIDS.

The approved MIDS Acquisition Strategy Report identifies testing to be accomplished for MS III. Low Rate Initial Production (LRIP) quantities will be procured for platforms which have not completed operational testing; Full Rate Production may be authorized for quantities of terminals which have successfully completed operational testing. Planned LRIP quantities for FY99 and FY00 are, respectively, 94 and 105.

c. (U) Foreign Military Sales --
Funding from MIDS-LVT European Participants (R&D only; procurement TBD) and

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

not Foreign Military Sales. Funding in accordance with MIDS Program Memorandum of Understanding and supplements.

	<u>1994-96</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>TOTAL</u>
France	71.1	31.2	14.0	5.3	121.6
Italy	45.7	7.5	17.8	9.3	80.3
Germany	18.5	5.9	4.9	2.9	32.2
Spain	16.1	6.7	5.8	3.6	32.2
NETMA	6.5	4.2	6.2	3.5	20.4

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (MAR 94 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BY\$)	924.9	1209.4	
(2) Quantity	672	2421	
(3) Unit Cost	1.376	0.500	-63.66
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BY\$)	443.8	615.9	
(2) Quantity	630	2358	
(3) Unit Cost	0.704	0.261	-62.93

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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	-5.0	-40.5	-	-45.5
Quantity	-	+462.7	-	+462.7
Schedule	-	-13.6	-	-13.6
Engineering	-	+107.2	-	+107.2
Estimating	+103.2	-31.4	-	+71.8
Other	-	-	-	-
Support	-	+62.3	-	+62.3
Subtotal	+98.2	+546.7	-	+644.9
Current Changes:				
Economic	-7.2	-4.6	-	-11.8
Quantity	-1.3	+201.2	-	+199.9
Schedule	-	+4.8	-	+4.8
Engineering	-6.7	-176.4	-	-183.1
Estimating	+46.7	-289.2	-	-242.5
Other	-	-	-	-
Support	-	-96.4	-	-96.4
Subtotal	+31.5	-360.6	-	-329.1
Total Changes	+129.7	+186.1	-	+315.8
Current Estimate	662.7	772.6	-	1435.3

(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	-	+307.7	-	+307.7
Schedule	-	-	-	-
Engineering	-	+78.4	-	+78.4
Estimating	+78.5	-39.6	-	+38.9
Other	-	-	-	-
Support	-	+41.8	-	+41.8
Subtotal	+78.5	+388.3	-	+466.8
Current Changes:				
Quantity	-0.9	+199.1	-	+198.2
Schedule	-	-	-	-
Engineering	-5.5	-127.9	-	-133.4
Estimating	+40.3	-219.4	-	-179.1
Other	-	-	-	-
Support	-	-68.0	-	-68.0
Subtotal	+33.9	-216.2	-	-182.3
Total Changes	+112.4	+172.1	-	+284.5
Current Estimate	593.5	615.9	-	1209.4

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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>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-7.5
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Quantity variance associated with decrease of 3 MIDS EMD terminals in the Navy program. (Quantity)	-0.9	-1.3
Decrease in MIDS-LVT terminal development costs due to CAIV initiatives to challenge unnecessary or over-specified requirements. (RDT&E, DA) (AR) (Engineering)	-5.5	-6.7
Adjustment for Current and Prior Inflation. (RDT&E, DA) (Estimating)	+1.3	+1.5
Adjustment for Current and Prior Inflation. (RDT&E, N) (Estimating)	+0.8	+0.9
Increase in RDT&E Navy due to additional platforms and Navy Link 16 development (RDT&E, N) (Estimating)	+22.8	+26.8
Initial reporting of Army requirements for MIDS terminals. (RDT&E, A) (Estimating)	+2.2	+2.5
Initial reporting of Air Force requirements for 24 MIDS terminals. (RDT&E, AF) (Estimating)	+13.2	+15.0
RDT&E Subtotal	+33.9	+31.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-49.0
Economic adjustment for negative program change. (Economic)	N/A	+44.4
Quantity variance associated with decrease of 462 F/A-18 MIDS terminals. (APN) (Quantity)	-131.5	-219.6
Quantity variance associated with increase of 40 MIDS terminals. (SCN) (Quantity)	+34.0	+49.8
Quantity Variance associated with increase in 67 shipboard terminals (OPN) (Quantity)	+49.5	+64.8
Revised estimate to reflect addition of 999 Air Force MIDS terminals (AP, AF) (Quantity)	+214.6	+264.6
Revised estimate to reflect addition of 149 Army MIDS terminals (OP, A) (Quantity)	+32.5	+41.6
Acceleration of annual procurement buy profile. (APN) (Schedule)	0.0	+4.4

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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>
Stretchout of annual procurement buy profile. (SCN) (Schedule)	0.0	-3.6
Acceleration of annual Procurement buy profile. (OPN) (Schedule)	0.0	+4.0
Use of open architecture and SEM-E technology to tailor MIDS terminal configurations and adoption of industrial parts. (APN) (AR) (Engineering)	-60.1	-78.9
Use of open architecture and SEM-E technology to tailor MIDS terminal configurations and adoption of industrial parts. (SCN) (AR) (Engineering)	-30.5	-43.8
Use of open architecture and SEM-E technology to tailor MIDS terminal configurations and adoption of industrial parts. (OPN) (AR) (Engineering)	-37.3	-53.7
Reduction of MIL-STDS and MIL-SPECS. (APN) (AR) (Estimating)	-42.0	-56.5
Estimated reduction resulting from collateral production efforts. (APN) (Estimating)	-52.8	-70.4
Acquisition reform initiative implementing competitive production readiness with government/industry cost sharing. (APN) (AR) (Estimating)	-17.2	-22.1
Reduction of MIL-STDS and MIL-SPECS. (SCN) (AR) (Estimating)	-15.7	-22.1
Estimated reduction resulting from collateral production efforts. (SCN) (Estimating)	-14.2	-20.1
Acquisition reform initiative implementing competitive production readiness with government/industry cost sharing. (SCN) (AR) (Estimating)	-5.9	-8.6
Reduction of MIL-STDS and MIL-SPECS. (OPN) (AR) (Estimating)	-27.0	-34.5
Estimated reduction resulting from collateral production efforts. (OPN) (Estimating)	-34.5	-42.4
Acquisition reform initiative implementing competitive production readiness with government/industry cost sharing. (OPN) (AR) (Estimating)	-10.1	-12.5
Addition of Initial Spares to support MIDS-LVT(2) terminals added to the program for Army platforms (OP,A) (Support)	+2.4	+3.2
Decrease in Initial Spares due to decrease in total terminal buy for F/A-18 aircraft. (APN) (Support)	-3.8	-8.6

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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>
Addition of Initial Spares to support MIDS terminals added to the program for Air Force aircraft (AP,AF) (Support)	+15.0	+18.9
Decrease in Initial Spares to reflect decreased spares requirement. (OPN) (Support)	-3.3	-4.3
Addition of Other Weapons Systems costs for Air Force MIDS terminal. (AP,AF) (Support)	+11.2	+13.9
Decrease in Other Weapon System costs to remove installation costs budgeted by F/A-18 program. (APN) (Support)	-67.1	-90.6
Decrease in Other Weapon System costs to remove installation costs budgeted by ship and submarine programs. (OPN) (Support)	-24.8	-31.9
Change in Other Weapon Systems. (SCN) (Support)	+0.1	+0.1
Increase in Peculiar Support equipment for training. (APN) (Support)	+1.3	+1.7
Additional Peculiar Support to meet training requirements. (OPN) (Support)	+1.0	+1.2
Procurement Subtotal	<u>-216.2</u>	<u>-360.6</u>

AR = Acquisition Reform related changes.

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	-0.02	-0.95	--	-0.03	-0.07	--	-0.01	-1.08	0.59

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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	
0.93	-0.02	-0.40	--	-0.03	-0.14	--	-0.01	-0.60	0.33

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	DEC 98
FUE/IOC	N/A	DEC 00	N/A	DEC 00
Total Cost	N/A	1119.5	N/A	1435.3
Total Quantity	N/A	672	N/A	2421
Prog Acq Unit Cost	N/A	1.67	N/A	0.59

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

a. RDT&E --

(U) MIDS-LVT EMD:

MIDSCO, Inc., Wayne, NJ

N00039-94-C-0008, CRIF/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
\$352.8	N/A	88

Estimated Price At Completion

Contractor	Program Manager
\$423.8	\$431.7

Cost Variance Schedule Variance

Previous Cumulative Variances
Cumulative Variances To Date (12/31/97)
Net Change

\$-16.4	\$-21.4
\$-31.7	\$-11.9
\$-15.3	\$9.5

Explanation of Change:

(U) The contract value reflects the international effort, including U.S., France, Italy, Germany, and Spain. The EMD contract is 71 percent complete based upon budget at completion. The Contract Budget Baseline (CBB) has increased by \$24.4 million from the previous SAR due to the inclusion of Pre-Operational Support costs.

The Schedule Performance Index (SPI) increased .05 from the previously

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

reported .91 to .96, which reflects a re-planning of the performance baseline in accordance with an anticipated nine-month extension of the EMD contract to 30 December 1999. This extension is associated with the numerous changes and increases in program scope, and will provide continuity of technical support to platforms which are integrating MIDS. The IPO, DCMC and the prime contractor MIDSCO conducted a joint review and risk assessment of the re-planning effort and concluded that the validity of the Performance Measurement Baseline was maintained.

The Cost Performance Index (CPI) has decreased by .04 from the previously reported .93 to .89. This is consistent with our Variance at Completion (VAC) projections.

(U) <u>F/A-18 INTEGRATION:</u>			Initial Contract Price		
Boeing, St. Louis, MO			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-91-G-0091, CPFF			\$22.5	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>
\$26.3	N/A	0	\$26.3	\$26.3

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (01/08/98)	\$1.1	\$-0.9
Net Change	\$1.2	\$-1.4
	\$0.1	\$-0.5

Explanation of Change:

(U) The cumulative cost variance remained steady at a positive 1.07 over last year. The schedule variance has increased slightly to .91-.93, however at this time schedule variance due to delays in Amplifier Control Intercommunication (ACI) testing caused by Digital Communication System (DCS) changes should have no impact on the overall program.

The F/A-18 integration contract (CPFF) was awarded to McDonnell Douglas Aerospace (MDA), now Boeing, 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 Blanking Unit (IBU) increased the target cost to \$26.3 million.

Extensive software development, integration and test is being performed through a basic ordering agreement between NAWC-WD, China Lake, and Boeing. The software effort is extensive, with an estimate of nearly 100,000 lines

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

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 on schedule for the revised F/A-18 software build and test plan.

	Initial Contract Price		
	Target	Ceiling	Qty
b. Procurement -- (U) <u>Data Link Solutions:</u> Data Link Solutions, Wayne, NJ N00039-96-C-0038, FFP Award: September 30, 1996 Definitized: September 30, 1996	\$125.0	\$125.0	506

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$137.0	\$137.0	512	\$137.0	\$137.0

Explanation of Change:

(U) The Fighter Data Link (FDL) contract was competitively awarded to Data Link Solutions, a joint venture of GEC-Marconi-Hazeltine and Rockwell-Collins, on 30 September 1996. The contract qualifies and produces a reduced function Link-16 terminal for the F-15C/D aircraft platforms, reusing the JTIDS interface software previously developed for the F-15C/D aircraft. This contract supports Air Combat Command's urgent need date for reduced function F-15 Link-16 terminals. The competitively awarded contract contains not-to-exceed (NTE) priced options for the initial qualification program, pilot and rate production lots (up to 500 terminals), warranty through April 2002, and Contractor Logistics Support (CLS) for 5 years after the warranty expires.

The initial qualification phase consists of \$3.0M in government costs with the contractor providing all additional required funding (estimated at over \$6.0M). This phase provides both the engineering required to certify and qualify the terminal for the F-15C/D aircraft, and 6 terminals for government testing.

Definitized price of each production lot and associated warranty and CLS option will be negotiated prior to award. Production lot option quantities are: 50; 200; 200; and 50. An economic escalation factor in the contract may affect the listed costs.

An engineering change proposal was awarded for \$439K in September 97 to modify hardware for FAA required Electro-Magnetic Compatibility Certification compliance. Another contract modification was made on 15 December 97 to include the F-15E as a platform for the FDL terminal and make the terminal a common configuration item for both the C/D and E models

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

of the F-15, to minimize production and logistics support costs.

The contract modification was funded at an NTE of \$7.6M in RDT&E funds from the F-15E and included nonrecurring engineering and 6 additional terminals in a common configuration for use in F-15E OFP development and final government testing.

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 (FY90-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-10)</u>	<u>Total</u>
RDT&E	342.0	97.7	79.1	143.9	662.7
Procurement	3.4	31.8	116.4	621.0	772.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	345.4	129.5	195.5	764.9	1435.3

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				22.0	23.3
1995				45.8	49.6
1996				38.8	42.7
1997				33.0	36.9
1998				44.2	50.2
1999				24.0	27.7
2000				10.5	12.3
2001				10.5	12.5
2002				10.5	12.7
2003				10.5	13.0
Subtotal	26			303.4	335.3

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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 \$
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				28.2	31.0
1997				25.2	28.2
1998				34.2	38.8
1999				41.8	48.2
2000				28.1	32.9
2001				19.2	22.9
2002				14.4	17.5
2003				15.4	19.0
Subtotal	13			274.7	309.9

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 \$
1997				0.4	0.5
1998				0.9	1.0
1999				0.9	1.0
Subtotal				2.2	2.5

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 \$
1997				3.6	4.0
1998				6.8	7.7
1999				1.9	2.2
2000				0.9	1.1
Subtotal	24			13.2	15.0

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

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	14.2	19.0	40.2	47.2
2000	105	9.5	29.3	46.7	55.8
2001	124		25.3	31.9	38.8
2002	103		20.1	25.4	31.5
2003	112		20.9	25.8	32.6
2004	147		25.4	31.2	40.3
2005	115		19.5	24.4	32.3
2006	48		9.4	11.6	15.7
2007	48		9.9	12.3	17.0
2008	48		9.6	12.1	17.0
2009	48		9.3	11.8	17.0
2010	24		7.1	7.8	11.5
Subtotal	980	23.7	204.8	281.2	356.7

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	5		1.4	1.4	1.7
2000	5		1.2	1.2	1.5
2001	6		1.2	1.2	1.5
2002	7		1.3	1.3	1.7
2003	6		1.0	1.0	1.4
2004	4		0.7	0.7	0.9
2005	5		0.9	0.9	1.2
2006	5		0.9	0.9	1.3
2007	6		1.1	1.1	1.6
2008	7		1.4	1.5	2.2
Subtotal	56		11.1	11.2	15.0

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	20		5.9	7.7	9.0
2000	24		5.9	7.8	9.2
2001	25		4.9	6.6	7.9
2002	29		5.2	6.9	8.4
2003	25		4.4	5.8	7.3
2004	27		4.8	6.3	8.1

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

Appropriation: 1810 Other Procurement, Navy

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2005	24		4.7	6.7	8.8
Subtotal	174		35.8	47.8	58.7

Appropriation: 2035 Other Procurement, Army

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999	36	1.5	10.6	12.9	15.1
2000		1.0		1.0	1.2
2001					
2002		0.4		0.4	0.5
2003					
2004	15		2.3	2.5	3.2
2005	24		3.6	3.9	5.1
2006	16		2.6	2.8	3.8
2007	22		3.8	4.1	5.6
2008	24		4.1	4.5	6.3
2009	12		2.6	2.8	4.0
Subtotal	149	2.9	29.6	34.9	44.8

Appropriation: 3010 Aircraft Procurement, Air Force

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1996	6		3.0	3.0	3.4
1997					
1998	46	14.4	12.5	27.6	31.8
1999	136	7.1	26.7	37.0	43.4
2000	88	4.7	16.9	23.5	28.1
2001	103		20.2	23.1	28.1
2002	142		25.7	29.8	36.9
2003	153		26.1	30.4	38.4
2004	156		26.1	30.0	38.8
2005	110		18.2	21.3	28.1
2006	59		13.0	15.1	20.4
Subtotal	999	26.2	188.4	240.8	297.4

(U) Note: The Air Force procurement quantities include FDL terminals for the F-15 aircraft and MIDS-LVT terminals for the F-16. These terminals will be procured via different contracts..

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	26			303.4	335.3
Navy	1223	23.7	251.7	614.9	740.3
Army	149	2.9	29.6	37.1	47.3
USAF	1023	26.2	188.4	254.0	312.4
Grand Total	2421	52.8	469.7	1209.4	1435.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	7	2
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 212.5

(U) Percent Total Program Expended: 14.8%

(U) Note: Resolution of issues with the power amplifier and data processor modules caused a delay in integration of the initial EMD terminals. As of February 1998, two MIDS EMD have been delivered.

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.

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

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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MIDS-LVT, December 31, 1997

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	26			303.4	335.3
Navy	1223	23.7	251.7	614.9	740.3
Army	149	2.9	29.6	37.1	47.3
USAF	1023	26.2	188.4	254.0	312.4
Grand Total	2421	52.8	469.7	1209.4	1435.3

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	7	2
Procurement	0	0

(U) Percent Total Program Quantities Delivered: 0.1%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 212.5

(U) Percent Total Program Expended: 14.8%

(U) Note: Resolution of issues with the power amplifier and data processor modules caused a delay in integration of the initial EMD terminals. As of February 1998, two MIDS EMD have been delivered.

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.

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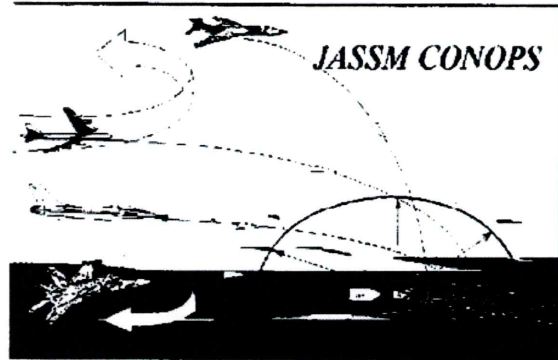
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PROGRAM: JASSM

AS OF DATE: December 31, 1997

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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	SES Terry R. Little
JASSM System Program Office	Assigned: January 2, 1996
102 West D Ave, Suite 168	DSN 872-4785 x3046
Eglin AFB, FL 32542-6807	COMM 904-882-4785 x3046
	little@eglin.af.mil

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

RDT&E:
(U) PE 0207325F
(U) PE 0604312N
(U) PE 0604611F

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~~Downgrade Instructions: E.O. 12958 Section 1.5 (c)~~
~~Declassify on: Not Subject to Automatic Downgrade~~

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CONGRESSIONAL

98-C-0720

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JASSM, December 31, 1997

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 moderately hardened 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) has been an extremely well executed program and continues to reap benefits as a result of acquisition reform, Cost as an Independent Variable (CAIV) initiatives, and competition between two prime contractors. JASSM returned \$152.8M in its Fiscal Year (FY) 1999-2005 budget to the Department of Defense as a result of CAIV initiatives, and made the Average Unit Procurement Price (AUPP) of less than \$400K (Operational Requirements Document (ORD) objective) a reality.

The JASSM Joint Program Office (JPO) restructured the program since the last report to compensate for Congressional budget cuts to the Air Force budget, namely, \$32.3M in the Fiscal Year 1998 (FY98) Appropriations Bill. The Navy received a \$4.1M cut in FY98 as well. The Appropriations language directed a split of the remaining Air Force budget between JASSM (\$128M) and a holding program element (\$43.021M), with the funds releasable to the winner of the JASSM/Standoff Land Attack Missile - Expanded Response Plus (SLAM-ER+) Analysis of Alternatives (AoA).

The Authorizations Conference Report language directed the Secretary of Defense to review the JASSM and SLAM-ER programs and potential acquisition alternatives and report to the Congressional Defense Committees. The Under Secretary of Defense (Acquisition and Technology) (USD(A&T)) signed out a response on January 16, 1998 deferring substantive comment until the AoA is complete. Upon completion, the Secretary of Defense is to comment on the following options:

- 1) Develop JASSM to meet the operational needs of the Navy and the Air Force, with SLAM-ER not procured beyond an interim capability.

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JASSM, December 31, 1997

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

- 2) Continue the JASSM program as a joint program for both the Navy and the Air Force, while the Navy continues a separate development of SLAM-ER as currently planned.
- 3) Develop separate programs: SLAM-ER for the Navy and JASSM for the Air Force.
- 4) Develop SLAM-ER as the single program for both the Air Force and the Navy.

The FY98 Congressional budget cut forced an extensive restructure of the program, requiring early down-select to one contractor (planned for April 1998) for the remainder of Program Development and Risk Reduction (PDRR), extension of the PDRR phase, delay of Engineering and Manufacturing Development (EMD) contract award, a schedule slip to several milestone dates (Milestone II, LRIP Decision, Milestone III), as well as a slip to the Required Assets Available (RAA) date for the B-52. The restructure was briefed to the Overarching Integrated Process Team (OIPT) in November 1997, and the USD(A&T) approved the fact-of-life program restructure in December 1997.

Of the \$5.5M FY98 Navy appropriation for JASSM, \$3.0M has been identified by the Navy as the amount required for FY98 carrier operability efforts (one of the three Key Performance Parameters (KPPs) of the program), but only \$1.4M has been released to the JPO. Currently, insufficient funds exist to meet the Milestone II carrier operability exit criteria. A potential breach of the Acquisition Program Baseline (APB) requirements may occur.

Current Navy funding for FY99-05 will support minimal carrier operability efforts and no aircraft integration, although the F/A-18E/F is a threshold aircraft. The Navy was directed by the November 1997 OIPT to address this issue with the Joint Requirements Oversight Council (JROC).

The Air Force has serious concerns regarding a new SLAM-ER+(Air Force (AF)) on the B-1. It appears eight SLAM-ER+(AF)s could fit in a B-1 bomb bay, but only after significant modifications to the weapon and resolution of aircraft power limitations. Three modifications have been known for some time: shorten missile length to 168 inches, modify fins for folded carriage, and modify the fuel system for inverted carriage. A fourth modification involves the necessity of an adapter plate between each rotary launcher station and SLAM-ER+(AF) to provide appropriate clearance of the bay. Limited information on the aircraft electrical power requirements for SLAM-ER+(AF) has recently been provided and is currently being analyzed. However, if SLAM-ER+(AF) has the same power requirement as SLAM-ER+(Navy), only one weapon can be powered up in each of the three bays. A fifteen minute power-up between launches would severely limit operations. In contrast, the B-1 can power all 24 JASSMs simultaneously and could launch them all in just over one minute if desired.

The JPO continues to hold semi-annual meetings with the United Kingdom (UK) to discuss potential commonality or other cooperative opportunities with the UK Conventional Air-to-Surface Standoff Missile (CASOM) program. At this

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

particular time, we are investigating common testing.

The program has progressed at rapid speed. Both contractors have flown captive-carry missions with missile hardware in less than nineteen months. Both contractors and the Government are benefitting from their design trades while still developing a system that exceeds ORD requirements. Particularly noteworthy are demonstration of manufacturing processes and testing achievements helping to validate acceptable risk entering EMD. To date, the following have been successfully accomplished: proximity wind tunnel testing, Radar Cross Section (RCS) testing (produced excellent results with repeatable processes), instrumented measurement vehicle testing on the B-52, F-16 and B-1B, separation testing on the F-16 and sled tests, F-16 Operational Flight Program (OFP) testing (successfully completed), and full loadouts for all threshold and objective aircraft demonstrated through fit checks. The Interface Control Documents (ICDs) for all aircraft have been signed, approved and released.

Though performance is important, the key to JASSM's viability as an acquisition reform flagship program is the commitment to unit price far below the \$700K threshold requirement. Evidence of this program's achievements include commitment letters from both contractors promising unit prices less than \$450K.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

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JASSM, December 31, 1997

9. (U) Schedule:

a. Milestones --

	<u>Planning</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
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	SEP 98 (Ch-1)
EMD Contract Award	JUN 98	JUN 98	NOV 98 (Ch-1)
LRIP Decision/Contract Award	JAN 00	JAN 00	JUN 00 (Ch-1)
Lot II Contract Award	APR 01	APR 01	APR 01
Milestone III	APR 01	APR 01	JAN 02 (Ch-1)
RAA/B-52	JUN 01	JUN 01	DEC 01 (Ch-1)
RAA/F-16	JAN 03	JAN 03	DEC 03

(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. Current Change Explanations --

(U) (Ch-1) Due to the FY98 Appropriations Act reductions and subsequent program restructure, the PM's Current Estimate has slipped for Milestone II from Jul 98 to Sep 98, for EMD Contract Award from Jul 98 to Nov 98, for LRIP Decision/Contract Award from Jan 00 to Jun 00, for Milestone III from Apr 01 to Jan 02, and for RAA/B-52 from Jun 01 to Dec 01.

NOTES:

1. As part of the Call for Improvements (CFI) proposal process, both JASSM contractors exercise freedom in bidding their EMD program schedule as long as it supports achievement of milestones no later than the PM's current estimates. In subsequent reports, the PM's current estimates will adjust to reflect the winning contractor's proposed schedule.

2. Approved APB thresholds for LRIP Decision/Contract Award, Milestone III, RAA/B-52, and RAA/F-16 are one year, not six months. All Current Estimates are within approved thresholds -- there are NO schedule breaches.

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10. (U) Performance Characteristics:

a. Performance --

	Planning Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Missile Operational Range	(b)(1)			
(S) Missile Mission Effectiveness				
Carrier Operability	Yes	Yes / Yes	TBD	Yes

(U) NOTE: There is a potential breach to the Carrier Operability performance requirement. The Navy is currently working to release the additional \$1.6M needed to complete FY98 carrier operability tasks. If the carrier operability exit criteria cannot be met for the Milestone II decision, the Program Manager will declare a performance breach to the APB.

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)	732.4	732.4	560.0
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 S	732.4	732.4	560.0
Escalation	78.9	78.9	42.2
Development (RDT&E)	(78.9)	(78.9)	(42.2)
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 S	811.3	811.3	602.2

(U) NOTE: The Current Estimate for RDT&E reflects funding as approved in the FY99 President's Budget, as required for SAR reporting. However, due to the FY98 Appropriations Act reductions and subsequent program restructure/EMD schedule extension, and revised cost estimates for operational test support and F-16 integration, additional funds will be needed in FY00-05 to complete the JASSM development program. The JPO is pursuing Zero Base Transfers (ZBTs) of excess Procurement funds resulting from CAIV initiative cost savings to fund the RDT&E shortfall. The Current Estimate also excludes the \$43.021M appropriated in the JSLAM PE (0604611F) that is on withhold pending completion of the AoA.

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

b. (U) Quantity --	Planning <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
Development (RDT&E)	44	44	52
Procurement	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Total	44	44	52

(U) NOTE: The Development quantity represents the Government-required 52 fully-configured RDT&E units for EMD (12 Initial Operational Test and Evaluation (IOT&E) units and 40 pre-production units (PPOUs)). This is an increase of 3 IOT&E units from the initial planning estimate of 9, and the addition of 5 PPOUs for recently identified government special test activities.

c. (U) Foreign Military Sales --
None.

d. (U) Nuclear Costs --
None.

12. (U) Unit Cost Summary:

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

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13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	811.3	-	-	811.3
Previous Changes:				
Economic	-3.3	-	-	-3.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-91.3	-	-	-91.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-94.6	-	-	-94.6
Current Changes:				
Economic	-5.6	-	-	-5.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-56.3	-	-	-56.3
Estimating	-52.6	-	-	-52.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-114.5	-	-	-114.5
Total Changes	-209.1	-	-	-209.1
Current Estimate	602.2	-	-	602.2

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

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	732.4	-	-	732.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-75.6	-	-	-75.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-75.6	-	-	-75.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-47.4	-	-	-47.4
Estimating	-49.4	-	-	-49.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-96.8	-	-	-96.8
Total Changes	-172.4	-	-	-172.4
Current Estimate	560.0	-	-	560.0

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JASSM, December 31, 1997

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	-10.0
Economic adjustment for negative program change. (Economic)	N/A	+1.4
Navy deletion of funding for F/A-18E/F Integration (Engineering)	-47.4	-56.3
Adjustment for Current and Prior Inflation (Estimating)	+3.4	+3.6
Budget reduction for Nonpay Inflation (Estimating)	-6.1	-6.9
Air Force FY97 Omnibus Reprogramming (Estimating)	-0.3	-0.3
Congressionally-directed reductions, pro-rata share (Small Business Innovative Research, etc.) (Estimating)	-4.3	-4.5
Congressional budget cut and associated program restructure (Estimating)	-42.1	-44.5
RDT&E Subtotal	<u>-96.8</u>	<u>-114.5</u>

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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	SEP 98
Milestone III	APR 01	N/A	N/A	JAN 02
FUE/IOC	JUN 01	N/A	N/A	N/A
Total Cost	\$11.3	N/A	N/A	\$02.2
Total Quantity	44	N/A	N/A	52
Prog Acq Unit Cost	18.44	N/A	N/A	11.58

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JASSM, December 31, 1997

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

a. RDT&E --
 (U) JASSM PDRK:
 Lockheed Martin, Orlando, FL
 F08626-96-C-0002, CPFF
 Award: June 17, 1996
 Definitized: June 17, 1996

Current Contract Price			Initial Contract Price	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
\$	N/A	0	\$110.1	N/A

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

	<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.

(U) JASSM PDRK:
 McDonnell Douglas Corp., St. Louis MO
 F08626-96-C-0281, CPFF
 Award: June 17, 1996
 Definitized: June 17, 1996

Current Contract Price			Initial Contract Price	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
\$	N/A	0	\$126.3	N/A

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

	<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.

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JASSM, December 31, 1997

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

This contractor's legal name for the PDRR effort is now McDonnell Douglas Corporation, a Wholly-Owned Subsidiary of the Boeing Company. Future contracts will be signed by the Boeing Company.

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	188.3	127.3	135.0	151.6	602.2
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	188.3	127.3	135.0	151.6	602.2

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				3.6	3.8
1999				1.9	2.1
2000				1.9	2.1
2001				1.9	2.1
2002				1.8	2.0
2003				1.7	2.0
Subtotal				12.8	14.1

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				26.7	27.6
1997				152.8	160.7
1998				115.7	123.5
1999				122.6	132.9
2000				94.7	104.4
2001				30.4	34.1
2002				4.3	4.9
Subtotal	52			547.2	588.1

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JASSM, December 31, 1997

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy				12.8	14.1
USAF	52			547.2	588.1
Grand Total	52			560.0	602.2

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): \$ 199.4

(U) Percent Total Program Expended: 33.1%

(U) Expenditures reflect Program Office information as of 30 January 1998.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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A-11 CRUSADER

*** UNCLASSIFIED ***

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

AS OF DATE: December 31, 1997

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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 973/724-4588

4. Program Elements/Procurement Line Items:

RDT&E:
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

5. References:

SAR Baseline (Planning Estimate):

DAE Approved Acquisition Program Baseline dated January 4, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline (APB) dated October 23, 1997.

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Q8-C-0930

Crusader, December 31, 1997

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. The ADM directed the Army plan for a Milestone II DAB or equivalent review, incorporating as many acquisition reform measures as practical.

The Government entered into an Unfinalized Contract Action to initiate the PDRR efforts of requirements analysis and concepting early in Fiscal Year 1995. The effort was subsequently definitized for the design, fabrication, testing and delivery of two prototype Crusader systems in 1999 and 2000 and completion of PDRR in 2001. 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), Magnovox (Fort Wayne, Indiana), and Electronic Data Systems (Herndon, Virginia) as major subcontractors. The Army Tank-automotive and Armaments Command (Picatinny Arsenal, New Jersey) is working directly with the prime contractor via a Memorandum of Agreement. The contract is based upon streamlined acquisition initiatives, and integrated product development with "Team Crusader" consisting of each of the contractor team players, the Tank-automotive and Armaments Command, and the Army's Project Management Office (Picatinny Arsenal, New Jersey).

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

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Crusader, December 31, 1997

7. Executive Summary (Cont'd):

system selected by United Defense was the congressionally directed Crusader backup armament system developed by the Army Tank-automotive and Armaments Command (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 addressing necessary requirements, maturation, and development efforts for a solid propellant-based Crusader. The Army Tank-automotive and Armaments Command provides the armament development effort to the United Defense, the prime development contractor, through a Memorandum of Agreement between the two parties.

Crusader continued to embrace the Cost as an Independent Variable (CAIV) concept. Attention has been focused on working with the prime contractor to improve cost management processes and cost estimating models and methodologies. The contract has been modified to include a cost reduction "glide path", the creation of a formal process to proactively identify cost reduction initiatives, the creation of an Ownership Cost Working Group, and the revision of the cost management award fee criteria to a results-oriented approach. These techniques have helped to drive down the unit rollaway cost estimate to a level that is below the current cost reduction glide path. However, significant cost management challenges remain; and therefore, the CAIV process will continue to play a vital role in the system development.

An Integrated Baseline Review was successfully completed in October and November 1997. The IBR was jointly conducted with key government and contractor personnel to ensure the integrity of the contract Performance Measurement Baseline. The PMB was comprehensively reviewed to ensure that the contract planning was realistic and executable within acceptable technical, schedule and cost risks. Necessary checks were also made to ensure that the Earned Value Management processes and procedures were sound. The "IBR process" will continue as an integral element of integrated product development to ensure continued PMB integrity. The PMB and the Earned Value Management System are utilized by both the contractor and government as the fundamental tools to ensure the program's cost, schedule and technical parameters are maintained.

Crusader development continued to make significant progress in 1997:

- The system concept continued to mature resulting in a cost effective design. The requirements were comprehensively validated while the trade and analysis process will continue to guide development. Crusader requirements were further validated by an independent panel comprised of experts from both industry and DoD.

- The Crusader System Integration Facility (SIF) was constructed at the United Defense facility in Minneapolis, Minnesota to support the simulation-based development philosophy. The SIF provides integration, assembly, test, and verification of components and subsystems, both hardware and software, prior to integration into the prototype vehicles.

- Design, fabrication and test of Crusader subsystems were successfully completed. The prototype cannon and gun mount successfully demonstrated it's near objective rate-of-fire; and, the powerpack demonstrated full power performance.

A System Level Review was successfully conducted in December 1997 to review prior

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Crusader, December 31, 1997

7. Executive Summary (Cont'd):

year accomplishment. Attention has now shifted to completion of the activities associated with the joint Program Executive Officer/US Army Field Artillery School Commandant In-Process Review scheduled for March 1998. The IPR is an internal Army review to validate preliminary design efforts and provide authority to proceed with detailed design and prototype fabrication.

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 November 2000.

Crusader is on track to meet the FUE milestone in FY 2005 with a cost effective solution that satisfies an urgent warfighting need.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	
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	DEC 94	DEC 94	
First Prototype Delivered	OCT 99	N/A	N/A	(Ch-1)
Early User Test				
Start	OCT 99	NOV 00	NOV 00	(Ch-1)
Complete	JAN 00	JAN 01	JAN 01	(Ch-1)
Milestone II	APR 00	OCT 00	OCT 00	(Ch-1)
EMD Continuation Decision	N/A	MAR 01	MAR 01	(Ch-1)
Phase III Contract Award	APR 00	MAR 01	MAR 01	
Critical Design Review (CDR)	JUN 00	N/A	N/A	(Ch-1)
First Pre-Production Delivery	APR 02	N/A	N/A	(Ch-1)
Pre-Production Qualification Test				
Start	APR 02	JAN 02	JAN 02	(Ch-1)
Complete	JUL 03	JUL 03	JUL 03	(Ch-1)
LRIP IPR	AUG 03	AUG 03	AUG 03	(Ch-1)
LRIP Contract Award	OCT 03	OCT 03	OCT 03	(Ch-1)
LRIP First Delivery	OCT 04	N/A	N/A	(Ch-1)
IOT&E				
Start	JAN 05	MAR 05	MAR 05	(Ch-1)
Complete	APR 05	JUL 05	JUL 05	(Ch-1)
First Unit Equipped (FUE)	JUL 05	SEP 05	SEP 05	(Ch-1)
Organic Support Capability	SEP 05	N/A	N/A	(Ch-1)
Milestone III DAB Review	OCT 05	NOV 05	NOV 05	(Ch-1)
Full Rate Production Contract Award	OCT 05	NOV 05	NOV 05	(Ch-1)
Service Depot Support Date	DEC 06	N/A	N/A	(Ch-1)
First Full Rate Production Delivery	FEB 07	N/A	N/A	(Ch-1)

b. Current Change Explanations --

(Ch-1) As a result of the approved restructured program, the following milestones have changed from the 1996 SAR:

Milestone	1996 SAR Current Estimate	1997 SAR Current Estimate
First Prototype Delivered	Dec 00	N/A
Early User Test		
Start	Dec 00	Nov 00
Complete	Feb 01	Jan 01
Milestone II (changed from DAE IPR)	Mar 01	Oct 00
EMD Continuation Decision	N/A	Mar 01
Critical Design Review (CDR)	May 01	N/A
First Pre-Production Delivery	Mar 03	N/A
Pre-Qualification Test		
Start	Mar 03	Jan 02
Complete	Jun 04	Jul 03
LRIP IPR	Jul 04	Aug 03
LRIP Contract Award	Sep 04	Oct 03
LRIP First Delivery	Sep 05	N/A
IOT&E		

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9b. Schedule (Cont'd):

Start	Dec 05	Mar 05
Complete	Mar 06	Jul 05
First Unit Equipped (FUE)	Jun 06	Sep 05
Organic Support Capability	Aug 06	N/A
Milestone III DAB Review	Sep 06	Nov 05
Full Rate Production Contract Award	Sep 06	Nov 05
Service Depot Support Date	Nov 07	N/A
First Full Rate Production Delivery	Jan 08	N/A

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>	
AFAS					
Maximum rate of fire (rds/min)	12 for 3-5 mins	12 for / 10 for 3-5 / 3-5 mins / mins	TBD	10 for 3-5 mins	
Maximum range assisted (km)	50	50 / 40	TBD	40	
Cross Country Mobility (with rolling resis- tance of 90 kg per metric ton) (km/hr)	48	48 / 39	TBD	41	(Ch-1)
Highway Mobility (on level hard surface) (km/hr)	78	78 / 67	TBD	67	(Ch-2)
Mean Time Between System Abort (MTBSA) (hrs)	68	68 / 62	TBD	68	
FARV					
Rearm AFAS	60 complete rds in less than 12 mins	60 / 60 complete/ complete rds in / rds in less / 12 mins than 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	41	(Ch-1)
Highway Mobility (on hard surface road) (km/hr)	78	78 / 67	TBD	67	(Ch-2)
Mean Time Between System Abort (MTBSA)	116	116 / 104	TBD	116	

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10b. Performance Characteristics (Cont'd):

b. Current Change Explanations --

(Ch-1) The PM's estimate for Cross Country speed for the SPH and the RSV was updated from 48 KPH to 41 KPH to reflect the results from the current power pack analyses. The key element preventing the Crusader from achieving the objective value of the cross country mobility speed is limited space available within the engine compartment for cooling system components, such as heat exchangers. The propulsion system's integrated design does provide adequate cooling to meet required operating performance levels at the specified temperature range.

(Ch-2) The PM's estimate for Highway Mobility for the SPH and the RSV was changed from 78 KPH to 67 KPH to match the current system performance with that of the maneuver force which is defined as the M1A2 Abrams Main Battle Tank. The current power pack analyses indicates that the Crusader power pack can achieve 67 KPH at the necessary temperature range.

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

a. Cost --	Planning Estimate (\$AR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	2357.0	2471.0	2669.8
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	2471.0	2669.8
Escalation	423.0	449.3	289.1
Development (RDT&E)	(423.0)	(449.3)	(289.1)
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	2920.3	2958.9
b. Quantity --			
Development (RDT&E)	0	9	9
Procurement	N/A	N/A	N/A
Total	N/A	9	9

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	2780.0	-	-	2780.0
Previous Changes:				
Economic	-136.3	-	-	-136.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.7	-	-	-10.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-147.0	-	-	-147.0
Current Changes:				
Economic	-58.7	-	-	-58.7
Quantity	+140.0	-	-	+140.0
Schedule	+183.1	-	-	+183.1
Engineering	-	-	-	-
Estimating	+61.5	-	-	+61.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+325.9	-	-	+325.9
Total Changes	+178.9	-	-	+178.9
Current Estimate	2958.9	-	-	2958.9

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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:				
Quantity	+118.6	-	-	+118.6
Schedule	+156.2	-	-	+156.2
Engineering	-	-	-	-
Estimating	+52.9	-	-	+52.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+327.7	-	-	+327.7
Total Changes	+312.8	-	-	+312.8
Current Estimate	2669.8	-	-	2669.8

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-58.7
Funding for IOT&E test units changed from Procurement to RDTE. (Quantity)	+118.6	+140.0
Stretchout of development efforts resulting from FY97 Appropriations Act, fiscal profiling, and delayed propellant decision. (Schedule)	+156.2	+183.1
Adjustment for Current and Prior Inflation. (Estimating)	+6.9	+7.3
Adjustment to reflect definitized development contract. (Estimating)	+46.0	+54.2
RDT&E Subtotal	+327.7	+325.9

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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	NOV 94	N/A	N/A	NOV 94
Milestone II	APR 00	N/A	N/A	OCT 00
Milestone III	OCT 05	N/A	N/A	NOV 05
FUE/IOC	JUL 05	N/A	N/A	SEP 05
Total Cost	2780	N/A	N/A	2958.9
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			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1086.2	N/A	0	\$1149.8	\$1134.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-13.3	\$-32.7
Cumulative Variances To Date (12/26/97)	\$-22.3	\$-18.5
Net Change	\$-9.0	\$14.2

Explanation of Change:

Current Contract Price was revised to \$1,086.2 million to reflect the full target cost and full target fee of Crusader's PDRR contract efforts through 2001 as a result of the modification to the contract on 25 June 1997. This latest contract modification extended the contract's period of performance by eight months to 28 February 2001 to accommodate the fiscal shortfall in fiscal year 1997 precipitated by the \$25 million congressional decrement to the President's Budget. The contract's Performance Measurement Baseline was updated to reflect the eight month extension with an IBR subsequently performed (see section 7). Please note that the contract price does not

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15. Contract Information (Cont'd):

include any past or future award fee considerations.

The schedule variance decreased this year as a result the rebaselining to reflect the programs restructured schedule. The factors driving the current cumulative schedule variance are in vehicle electronics and automotives. The prime contractor experienced difficulty in staffing the needed quantity of software engineers, and has recently subcontracted for additional software engineering resources to mitigate further schedule perturbations. Extended design efforts of the automotive components have also significantly contributed to the schedule variance. Automotive "work-around" efforts are being implemented to minimize future schedule risk.

The change to the cumulative cost variance is primarily attributable to an overrun in automotives due predominately to more efforts than planned on design, manufacturing, and test. Degradation of overhead rates on the transmission efforts also contributed to overrun.

The cost overrun associated with the RLPG and actual and forecasted overruns in the automotive area significantly account for the Contractor's and Project Manager's Estimated Price at Completion being higher than the Current Contract Price. A diminished customer base at contractor facilities have also driven up overhead costs contributing to future cost increases.

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 (FY00-07)</u>	<u>Total</u>
RDT&E	482.7	304.0	313.3	1858.9	2958.9
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	482.7	304.0	313.3	1858.9	2958.9

b. Annual Summary -- Crusader

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				64.0	65.0
1996				175.4	181.6
1997				221.0	232.3
1998				285.1	304.0
1999				289.3	313.3

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

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 \$
2000				326.6	359.5
2001				405.9	454.6
2002				376.8	429.4
2003				227.4	264.4
2004				258.1	306.6
2005				28.3	34.4
2006				7.7	9.5
2007				0.4	0.5
Subtotal	9			2669.8	2958.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	9			2669.8	2958.9

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): \$ 722.2

Percent Total Program Expended: 24.4%

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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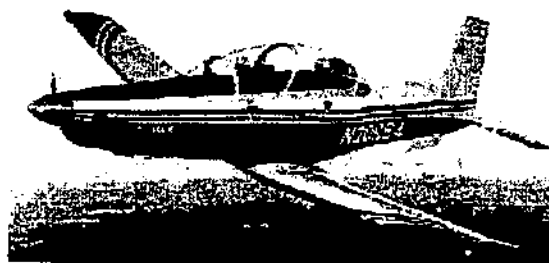
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SELECTED ACQUISITION REPORT (RCS: DD-AET(O&A)833)
PROGRAM: JPATS

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AS OF DATE: December 31, 1997

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1. Designation and Nomenclature (Popular Name): Joint Primary Aircraft Training System/JPATS

2. DoD Component: USAF

Joint Participants:
USAF/USN

SAF/PAS

98--0270

3. Responsible Office and Telephone Number:

Aeronautical System Center/YT
Wright-Patterson AFB
Dayton, OH 45433-7014

COL ROBERT C. HOOD
Assigned: May 15, 1996
DSN 785-2896; COMM (937) 255-2896
hood.robert@yt.wpafb.af.mil

CONGRESSIONAL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603208N (Shared) Project H1150
PE 0604233F (Shared) Project 654102
PE 64233F (Shared) Project 644102

PROCUREMENT:

APPN 3010 ICN 0804740F (Air Force)
APPN 1506 ICN 0804745N (Navy)

MILCON:

PE 0804741F
PE 0805796N

O&M:

PE 0804741F

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98-C-0702

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5. References:

SAR Baseline (Development Estimate):

Program Management Directive 1104(15)

(sunk)/PE64233F/PE84740F/84741F Dated April 24, 1996

Operational Requirements Document dated August 15, 1993. Change 2 dated June 6, 1994.

DAE Approved Acquisition Program Baseline dated August 4, 1995

Approved Program:

dae Approved Acquisition Program Baseline (APB) dated December 31, 1997.

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.

In Jan 94 the Updated Operational Requirements Document (ORD) II dated August 15, 1993, was released.

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7. Executive Summary (Cont'd):

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 July 24, 1994, and was successfully completed on September 30, 1994. On January 24, 1995, 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 June 22, 1995, 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 August 9, 1995, 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.

In Feb 96 the GAO released their decision on the Cessna protest, all allegations were denied and the contract was awarded. The first production lot option (Lot II for 3 aircraft) was exercised on February 14, 1996.

The flight test program began in Jun 96. The flight test focus during 1996 was laying the groundwork for initial FAA certification tests.

In May 96, SAF/AQ approved the GBTS two-step strategy. 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). RAC and the Government signed a Contract Change Proposal (CCP) for the GBTS in Sep 96 initiating the two-step strategy.

A successful Air Vehicle Preliminary Design Review (Jun 96) and Critical Design Review (Nov 96) were conducted.

The Lot III production option (6 aircraft) was awarded in Sep 96.

ORD II Rev 1 (May 96) increased aircraft procurement quantities from 711 to 740 with no service specific quantity breakout.

Program Activity Since Last Report

RAC released their RFP to the two competing GBTS subcontractors, Hughes Training and FlightSafety Services Corporation (FSSC) in Feb 97. RAC selected FSSC as their GBTS subcontractor. Development effort started on July 25, 1997,

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7. Executive Summary (Cont'd):

authorized using an Undefined Contract Action (UCA). The UCA was successfully definitized and the contract change distributed on September 26, 1997.

Flight test continues. The first of three operational assessments was completed in Apr 97.

Canopy design and birdstrike testing was successfully completed in Mar 97.

The Lot IV production option (15 aircraft) was awarded in Apr 97.

Assembly of aircraft T-1 (PT-4) is behind schedule. The delay is caused by slips in the delivery of tools and related Computer Aided Manufacturing Software. A shortage of experienced workers in these areas is an acknowledged industry-wide problem. Rollout of aircraft T-1 (PT-4) is now estimated for May 98 (7 weeks behind the revised baseline schedule of Mar 98 rollout). Government completed an independent assessment of the T-1 schedule and concluded that inherent risk in production and flight test could delay DD250 of T-1 until Mar 99. Program impacts delaying DD250 of T-1 is minimal provided FAA certification is complete by January 15, 1999 (end of three year window to obtain FAA certification). The program office will emphasize early completion of activities needed to obtain FAA certification by Jan 99.

Bombardier of Canada reached an agreement with RAC on December 12, 1997, to purchase 24 T-6A aircraft for NATO Flight Training Canada (NFTC). The aircraft nomenclature will be the CT-6A Harvard II. Program office continues to aggressively pursue opportunities to discuss aircraft capabilities to potential foreign buyers.

The program office received approval for a new APB on December 31, 1997. The new APB is based on a revised program schedule to account for the protest delay prior to contract award, program office estimate revisions, and more descriptive performance parameter wording contained in ORD II (Rev 1). The new APB has been incorporated in this report.

NOTE: The new procurement quantities identified in ORD II, Rev 1 are NOT reflected in the current SAR. The revised ORD calls for the purchase of 740 aircraft without specifying service quantities. This SAR documents the last official position (USAF - 372 aircraft, USN - 339 aircraft). Upon resolution of service quantities, the PMS estimate will be updated to match ORD II (Rev 1).

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8. Threshold Breaches:

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDP&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 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
DD 250 of T-1 (Test Aircraft)	MAY 98	NOV 98	JAN 99 (Ch-1)
Milestone III	SEP 99	DEC 99	JAN 00 (Ch-2)
Initial Operational Capability (AF)	FEB 01	AUG 01	AUG 01
Initial Operational Capability (Navy)	JUL 03	JUL 03	JUL 03

b. Current Change Explanations --

(CH-1): DD250 of the T-1 aircraft slipped from Nov 98 to Jan 99 due to a delay in manufactured parts. The government conducted an independent assessment of the T-1 schedule and concluded that inherent risk in production and flight test could delay DD250 of T-1 until Mar 99. Program impacts delaying DD250 of T-1 is minimal provided FAA certification is complete by January 15, 1999 (end of three year window to obtain FAA certification). The program office will emphasize early completion of activities needed to obtain FAA certification by Jan 99.

(CH-2): Milestone III slipped from Dec 99 to Jan 00 due to R&D funding cuts (FY99PR) which delays the development of the Training Information Management System (TIMS).

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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>
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)				
Ejection Seat with	0/0	0/0 / 0/60	TBD	0/60
Survival Kit				
(Altitude/Airspeed				
in Knots)				
Able To Perform an	Unpre-	Unpre- / Runway	TBD	Runway
Engine Out Landing	pared	pared /		
	surface	surface /		
Anthropometric	31.0 to	31.0 to / 32.8 to	TBD	32.8 to
Accommodation	40.0	40.0 / 40.0		40
(Sitting Height in				
inches)				
Cockpit Configuration	able to	Inter- / Yes	TBD	Yes
	be	change- /		
	operatio	able /		
	nally	Instruc-/		
	flown	tor/ /		
	from	Student /		
	either			
	cockpit			

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Cockpit Seating Configuration	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	Stepped Tandem
Exterior Noise	FAR Part 36, Most Restric- tive App- licable Standard	FAR Part/ 36, Most/ Restric-/ tive / App- / licable / Standard/ 4000 / 5000	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)
Visual System For IFT/OFT	Yes	Yes / Yes	TBD	Yes

Note: Performance Element "Cockpit Seating Configuration" was retitled from "Stepped Tandem". Also, Performance Element "Visual System for IFT/OFT" was retitled from "Visual System for GBTS", with the APB Threshold revised from "Yes" to "Provide a visual field of view commensurate with the JPPT syllabus training requirements".

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10a. Performance Characteristics (Cont'd):

was retitled from "Visual System for GBTS", with the APB Threshold revised from "Yes" to "Provide a visual field of view commensurate with the JPPT syllabus training requirements".

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)	314.7	263.4	263.5
Procurement	2501.0	2802.1	2931.9
Navy	(825.5)		(1152.7)
Air Force	(974.6)		(1189.9)
Total Flyaway	(1800.1)		(2342.6)
Navy GBTS	(163.8)		(121.4)
Air Force GBTS	(178.2)		(125.1)
Navy Mission Support	(11.5)		(12.5)
Air Force Mission Suppo	(35.3)		(47.4)
Air Force Other Support	(35.5)		(53.7)
Navy Other Support	(7.7)		(11.9)
Total Other Wpn Sys	(432.0)		(372.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(268.9)		(217.3)
Construction (MILCON)	63.2	37.1	34.0
Acquisition O&M	0.0	0.0	0.0
Total FY 95 Base-Year S	2878.9	3102.6	3229.4
Escalation	1171.7	894.4	772.6
Development (RDT&E)	(48.6)	(19.8)	(16.6)
Procurement	(1102.4)	(865.9)	(749.1)
Construction (MILCON)	(20.7)	(8.7)	(6.9)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year S	4050.6	3997.0	4002.0
b. Quantity --			
Development (RDT&E)	1	1	1
Procurement	711	711	711
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 the production to lead to full-rate production upon successful completion of operational testing. The program office will execute subsequent production contracts for the remaining aircraft with a maximum anticipated production rate of seven per month.

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

c. Foreign Military Sales --
The Bombardier of Canada procurement is a direct sale from RAC with deliveries scheduled to begin in Dec 99.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (DEC 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BYS)	3102.6	3229.4	
(2) Quantity	712	712	
(3) Unit Cost	4.358	4.536	+4.08
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BYS)	2802.1	2931.9	
(2) Quantity	711	711	
(3) Unit Cost	3.941	4.124	+4.64

The difference between the UCR Baseline and the SAR Current Estimate results from the SAR incorporating the Navy buy profile reflected in the FY99 President's Budget, and a change in the Air Force buy profile.

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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	-0.6	-320.6	-1.8	-323.0
Quantity	-	-	-	-
Schedule	-	-11.9	-	-11.9
Engineering	-	-	-	-
Estimating	-14.8	+87.5	-36.3	+36.4
Other	-	-	-	-
Support	-	-97.4	-	-97.4
Subtotal	-15.4	-342.4	-38.1	-395.9
Current Changes:				
Economic	-3.0	-123.5	-1.5	-128.0
Quantity	-	-	-	-
Schedule	-	-21.7	-2.9	-24.6
Engineering	-	-	-	-
Estimating	-64.8	+626.9	-0.5	+561.6
Other	-	-	-	-
Support	-	-61.7	-	-61.7
Subtotal	-67.8	+420.0	-4.9	+347.3
Total Changes	-83.2	+77.6	-43.0	-48.6
Current Estimate	280.1	3681.0	40.9	4002.0

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	+6.1	+73.0	-26.0	+53.1
Other	-	-	-	-
Support	-	-72.8	-	-72.8
Subtotal	+6.1	+0.2	-26.0	-19.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-2.7	-2.7
Engineering	-	-	-	-
Estimating	-57.3	+469.5	-0.5	+411.7
Other	-	-	-	-
Support	-	-38.8	-	-38.8
Subtotal	-57.3	+430.7	-3.2	+370.2
Total Changes	-51.2	+430.9	-29.2	+350.5
Current Estimate	263.5	2931.9	34.0	3229.4

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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	-4.3
	Air Force economic adjustment for negative program change. (Economic)	N/A	+1.3
	Navy adjustment for Current and Prior Inflation. (Estimating)	-0.9	-0.9
	Navy refinement of RDT&E Estimate (Estimating)	+0.8	+0.8
	Air Force adjustment for Current and Prior Inflation. (Estimating)	+0.8	+0.9
	Air Force implementation of PAP 56. Moved Mission Support out of EMD. (Estimating)	-13.1	-17.2
	Air Force refined current estimate to realign to program requirements. (Estimating)	-18.0	-19.4
	Air Force definitization of GBTS contract. (Estimating)	-26.9	-29.0
	RDT&E Subtotal	-57.3	-67.8
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-148.6
	Economic adjustment for negative program change. (Economic)	N/A	+25.1
	Navy stretchout of annual procurement buy profile. (Schedule)	0.0	+10.7
	Air Force acceleration of annual procurement buy profile. (Schedule)	0.0	-32.4
	Navy refinement of estimated vendor quotes and manufacturing assumptions. (Estimating)	+314.1	+430.7
	Air Force adjustment for Current and Prior Inflation. (Estimating)	+2.1	+2.3
	Air Force refinement of estimated vendor quotes and manufacturing assumptions. (Estimating)	+153.3	+193.9
	Navy refinement of Initial Spares estimate. (Support)	+28.0	+37.5
	Air Force adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3
	Air Force refinement of Initial Spares estimate. (Support)	-3.1	-5.2
	Navy definitization of GBTS contract. (Support)	-39.9	-54.3
	Navy refinement of Mission Support estimate. (Support)	-1.0	-1.7
	Navy refinement of data, tech manuals, and ICS. (Support)	+6.0	+8.0

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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>
Air Force definitization of GBTS contract. (Support)	-85.5	-104.5
Air Force refinement of Mission Support estimate. (Support)	+16.0	+16.9
Air Force recategorization of ASIP/ENSIP and refinement of data, tech manuals, and ICS. (Support)	+40.4	+41.3
Procurement Subtotal	+430.7	+420.0

(3) MILCON

Revised escalation indices. (Economic)	N/A	-1.9
Economic adjustment for negative program change. (Economic)	N/A	+0.4
Navy Replanning/Rephasing of Requirements. (Schedule)	-3.6	-4.4
Air Force replanning/rephasing of requirements. (Schedule)	+0.9	+1.5
Navy refinement of estimate. (Estimating)	+0.1	+0.2
Air Force Refinement of Estimate (Estimating)	-0.6	-0.7
MILCON Subtotal	-3.2	-4.9

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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5.69	-0.63	-0.01	-0.05	--	+0.84	--	-0.22	-0.07	5.62

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	-0.62	--	-0.05	--	+1.00	--	-0.22	+0.11	5.18

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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	JAN 00
FUE/IOC	MAR 00	AUG 01	N/A	AUG 01
Total Cost	277.3	4050.6	N/A	4002
Total Quantity	2	712	N/A	712
Prog Acq Unit Cost	138.65	5.69	N/A	5.62

Air Force IOC is Aug. FY01; Navy IOC is Jul. FY03.

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

a. RDT&E --

JPATS:
Raytheon Aircraft Company, Wichita KS
F33657-94-C-0006, FPIF
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
\$161.5	N/A	1

Estimated Price At Completion	
Contractor	Program Manager
\$162.3	\$175.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$2.4	\$-1.0
Cumulative Variances To Date	\$-4.6	\$-3.2
Net Change	\$-7.0	\$-2.2

Explanation of Change:

Variance data is taken from the November 97 Cost Performance Report and was reflected in the January 1998 DAES report.

Variance Analysis:

The air vehicle contract is now 31% complete and now includes the GBTS subcontract. The elimination of the ceiling price is due to the inclusion of the two cost plus line items within the GBTS subcontract.

The cost variance increased to -10%, primarily driven by rate differences in the general & administrative rate, material cost increases in the factory, and unplanned tests (canopy birdstrike and rudder anomaly). The program manager is concerned about the material cost variances and their impact to future lots. The contractor has assembled a team to investigate the reasons and validate the proper allocation of costs.

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15. Contract Information (Cont'd):

The negative schedule variance of -6% is due to late tooling and parts fabrication, and flight test. The contractor does not currently project any slips to the contract milestones. The program manager has assessed the schedule critical path and the contractor's recovery plan and concluded that DD250 of the first aircraft may slip to Jan 99.

The contractor's estimate at completion results in a variance at completion of -\$8.4M. This was compared to a range of government estimates, using different weighted factors for cost and schedule impacts. The range of EACs fall very closely to the contractor's EAC (within 3%). The program manager has therefore included the contractor EAC as the best (lowest) EAC. The current estimate includes the impact of perceived schedule risk for the remainder of the EMD program.

b. Procurement --			Initial Contract Price		
<u>JPATS PROD LOT 2:</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>	
\$44.0	\$49.2	3	\$38.3	\$46.3	
			<u>Cost Variance</u> <u>Schedule Variance</u>		
Previous Cumulative Variances			\$0.5	\$-0.4	
Cumulative Variances To Date			\$-1.3	\$-2.3	
Net Change			\$-1.8	\$-1.9	

Explanation of Change:

Variance data is taken from the Nov 97 Cost Performance Report and was reflected in the January 1998 DAES report.

Variance Analysis:

Lot 2 is 21% complete at this time.

The schedule variance is due to a delay in delivery of Lot 2 engines.

Although the contractor's estimate (without management reserve) falls below the target cost for Lot 2, the program manager is concerned about the material cost variance (see explanation for RDT&E). The best case EAC remains at target cost, and the worst case remains at ceiling.

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15. Contract Information (Cont'd):

JPATS PROD LOT 3:
Raytheon Aircraft Company, Wichita KS
F33657-94-C-0006, FPIF
Award: September 23, 1996
Definitized: September 23, 1996

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$31.2	\$34.3	6

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$31.4	\$34.5	6

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$23.2	N/A

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$-0.8	\$-0.8
Net Change	\$-0.8	\$-0.8

Explanation of Change:

Variance data is taken from the Nov 97 Cost Performance Report and was reflected in the January 1998 DAES report.

Variance Analysis:

The contract is 8% complete. The program manager's estimate at completion will be included when the lot is at the 15% completion point.

JPATS PROD LOT 4:
Raytheon Aircraft Company, Wichita KS
F33657-94-C-0006, FPIF
Award: April 18, 1997
Definitized: April 18, 1997

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$62.9	\$69.3	15

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$62.9	\$69.3	15

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$58.6	N/A

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$-0.5	\$-0.7
Net Change	\$-0.5	\$-0.7

Explanation of Change:

Variance data is taken from the Nov 97 Cost Performance Report and was reflected in the January 1998 DAES report.

Variance Analysis:

The lot is less than 1% complete. The program manager's estimate at completion will be included when the lot reaches the 15% completion point. The contractor has requested an overtarget baseline of \$59.3M (an

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15. Contract Information (Cont'd):

overtarget amount of \$3.8M), due to the impact of lack of foreign sales.

Contract Comments:

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 (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	119.1	55.3	45.0	60.7	280.1
Procurement	165.0	75.9	107.1	3333.0	3681.0
MILCON	-	2.5	-	38.4	40.9
O&M	-	-	-	-	-
Total	284.1	133.7	152.1	3432.1	4002.0

b. Annual Summary -- JPATS

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 \$
1994				3.6	3.6
1995				3.6	3.7
1996				1.1	1.1
1997				1.7	1.8
1998				0.4	0.4
1999				0.6	0.6
2000				0.3	0.3
Subtotal				11.3	11.5

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				0.9	0.9
1993				1.9	1.9
1994				2.6	2.6
1995				34.8	35.4
1996				26.1	27.0
1997				39.1	41.1

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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 \$
1998				51.5	54.9
1999				41.0	44.4
2000				31.0	34.2
2001				19.9	22.3
2002				1.7	1.9
2003				1.7	2.0
2004					
2005					
2006					
2007					
2008					
2009					
2010					
2011					
Subtotal	1			252.2	268.6

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2000	4		9.7	29.5	33.3
2001	23		52.8	69.7	80.1
2002	17		56.1	69.5	81.5
2003	19		62.2	87.6	105.0
2004	24		77.8	98.7	120.8
2005	25		81.3	91.9	115.0
2006	25		83.8	101.8	130.2
2007	25		87.1	103.7	135.5
2008	25		88.3	115.7	154.6
2009	25		89.8	117.3	160.1
2010	25		90.7	110.0	153.4
2011	25		90.9	104.9	149.6
2012	25		90.9	101.7	148.2
2013	26		95.2	106.4	158.4
2014	26		96.1	107.4	163.4
Subtotal	339		1152.7	1415.8	1889.1

The above profile represents what can be procured with the FY99 President's Budget. Due to Navy funding shortfalls, this profile is less than the directed quantity of 8/24/24/24, etc. The Navy is funding these shortfalls in the FY00 POM which should be finalized this spring.

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

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		26.1	77.2	80.4
1996	6		31.9	16.7	17.7
1997	15		55.2	62.3	66.9
1998	22		64.8	69.6	75.9
1999	19		59.3	96.6	107.1
2000	23		53.8	75.7	85.5
2001	29		66.6	87.4	100.5
2002	52		170.5	185.3	217.4
2003	59		192.2	265.0	317.5
2004	60		194.1	234.9	287.5
2005	60		194.9	237.5	297.1
2006	24		80.5	98.4	125.8
2007				4.9	6.4
2008				4.6	6.2
2009					
2010					
Subtotal	372		1189.9	1516.1	1791.9

Flyaway exceeds total program costs in FY96 due to OSD direction to roll funds to procure Aircraft. OSD directed the use of \$40.5M of FY95 excess funds to procure 6 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					
2000				8.3	9.3
2001				1.3	1.5
2002				0.5	0.6
2003				1.1	1.3
2007				7.7	10.0
2008				0.5	0.7
2011				0.6	0.9

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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 \$
Subtotal				20.0	24.3

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
2000				2.9	3.2
2003				2.7	3.2
2005				2.9	3.6
2006				3.2	4.1
Subtotal				14.0	16.6

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	339		1152.7	1447.1	1924.9
USAF	373		1189.9	1782.3	2077.1
Grand Total	712		2342.6	3229.4	4002.0

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): \$ 68

Percent Total Program Expended: 1.7%

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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-19 STRATEGIC SEALIFT

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

AS OF DATE: December 31, 1997

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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 332-9127; COMM 703-602-9127
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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FOR OPEN PUBLICATION

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

No Security Objection
to Open Publication
(AS AMENDED)

98-C-0131
MAR 23 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

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98-C-0885

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5. References:

SAR Baseline (Development Estimate):

Approved Acquisition Program Baseline dated July 20, 1993.

Approved Program:

Approved Acquisition Program Baseline (APB) 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. The Strategic Sealift Program will provide the U.S. Navy with nineteen large, medium-speed, self-sustaining, roll-on/roll-off (LMSR) ships.

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 calendar year 1994, 1995, 1996 and 1997 options were exercised for a total of 4 additional ships each at Avondale Industries, Inc. and NASSCO.

A limited competition between Avondale and NASSCO was conducted for the two remaining hulls (ships 18 & 19) which resulted in the award of a seventh ship on May 23, 1997 to NASSCO. One calendar year 1998 option each was exercised on November 14, 1997 each for Avondale and NASSCO. This represents the sixth of seven ships for Avondale and the final (seventh) ship for NASSCO. The remaining hull is an FY99 option to the Avondale contract with advance procurement of material in FY98.

The TAKR 299 (USNS Soderman) the last of the five conversion ships, was delivered to the Military Sealift Command (MSC) November 11, 1997. The TAKR 310 (USNS Watson), NASSCO's first new construction ship was launched on 26 July 1997. The TAKR 300 (USNS Bob Hope) was christened on March 15, 1997 and

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7. Executive Summary (Cont'd):

launched on March 27, 1997, whereas the TAKR 301 (USNS Fisher) was christened and launched on October 18, 1997. The TAKR 300 was rescheduled from a January 31, 1998 to a June/July 1998 delivery due to a defect in Peck and Hale cloverleaf fittings, and a late to complete testing program.

The DOD Inspector General (DODIG) issued Report 98043 dated December 30, 1997 recommending that cargo space temperature and humidity control equipment not be installed on the last six ships as the equipment is not required by the Operational Requirements Document. A potential monetary benefit has been postulated; without benefit of cost proposals from each of the shipbuilders. Receipt of these proposals is expected during the second quarter of FY98. In anticipation of these savings, PBD 130 has reduced program funding by \$31.0M. The DODIG report also went on to state that Management Controls were deemed effective and that zero weaknesses were identified during the review.

The total nineteen ship (LMSR) program control of \$5,795.5M (TY\$) is from the National Defense Sealift Fund and Shipbuilding and Conversion, Navy (SCN), procurement accounts. The FY99 President's Budget for NDSF is \$100.0M and when added to prior appropriation reflects a total of \$5,544.1M(TY\$). This reflects funding for eighteen ships and advance procurement and one shipset of Class Standard Equipment for the nineteenth ship. The balance of funding for the nineteenth ship is \$251.4M and will be funded from the SCN portion of the procurement account.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

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8c. Threshold Breaches (Cont'd):

c. Explanation of Breach:

An APB Revision is being processed to reflect slippage in the TAKR 300 (USNS Bob Hope) delivery date due to a defect in Peck and Hale cloverleaf fittings, and delays experienced in the lead ship test program. The TAKR 300 delivery date has slipped from January 1998 to June/July 1998.

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	
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	MAY 98	(Ch-1)
IOC (New Construction First Ship Delivery)	OCT 97	OCT 97	JUN 98	(Ch-2)
OT&E For New Construction	APR 98	APR 98	APR 99	(Ch-3)
Milestone III (Total Program)	AUG 98	AUG 98	JUL 99	(Ch-4)
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	

An APB Revision is being processed to reflect slippage in the TAKR 300 (USNS Bob Hope) delivery date due to a defect in Peck and Hale cloverleaf fittings, and delays in lead ship test program.

b. Current Change Explanations --

(CH-1) The new construction acceptance trials for TAKR 300 (USNS Bob Hope) are changed from Dec 97 to May 98 due to Avondale test program delays and a defect in Peck and Hale cloverleaf fittings.

(CH-2) New Construction delivery of the first ship has changed from Jan 98 to June 98 due to Avondale test program delays and a defect in Peck and Hale cloverleaf fittings.

(CH-3) OT&E For New Construction has been changed from Aug 98 to Apr 99 due to Avondale test program delays and a defect in Peck and Hale

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9b. Schedule (Cont'd):

cloverleaf fittings.

(CH-4) Milestone III has been changed from Aug 98 to Jul 99 since the requirement is to complete OPEVAL prior to conducting Milestone III.

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					
SURGE	400	400 / 380	TBD	390	(Ch-1)
PREPO	350	350 / 300	TBD	335	(Ch-2)
Conversion					
SURGE	400	400 / 300	TBD	320	(Ch-3)
PREPO	350	350 / 225	TBD	270	(Ch-4)
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	>24	>24 / 24	TBD	24	
(knots)					
Range (nm)	17500	17500 / 12000	TBD	12000	
Ship Size	<PANAMAX	<PANAMAX/ PANAMAX	TBD	PANAMAX	
Limitation					

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10b. Performance Characteristics (Cont'd):

b. Current Change Explanations --

CH 1-4 Nominal capacities, exact square footage and range varies for each conversion and new construction design, as reflected in the July 1997 Defense Acquisition Executive Summary (DAES) Report. In all cases the threshold value is exceeded.

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	5006.1
New Construction Prepo	(2882.7)		(2247.2)
New Construction Surge	(1133.4)		(1384.8)
Conversion	(1638.4)		(1374.1)
Total Sailaway	(5654.5)		(5006.1)
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	5044.2
Escalation	894.6	905.2	791.2
Development (RDT&E)	(0.6)	(1.8)	(1.8)
Procurement	(894.0)	(903.4)	(789.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6588.4	5725.1	5835.4

The total nineteen ship LMSR program control of \$5,795.5M (TY\$) is from the National Defense Sealift Fund and Shipbuilding and Conversion, Navy (SCN), procurement accounts. The FY99 President's Budget for NDSF is \$100.0M and when added to prior appropriation reflects a total of \$5,544.1M (TY\$). This reflects funding for eighteen ships and advance procurement and one shipset of Class Standard Equipment for the nineteenth ship. The balance of funding for the nineteenth ship is \$251.4M and will be funded from the SCN portion of the procurement account.

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 (8 prepo and 6 surge).

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:

	UCR Baseline (SEP 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BY\$)	4819.9	5044.2	
(2) Quantity	19	19	
(3) Unit Cost	253.679	265.484	+4.65
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BY\$)	4781.8	5006.1	
(2) Quantity	19	19	
(3) Unit Cost	251.674	263.479	+4.69

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	+245.6	-	+246.8
Quantity	-	-351.5	-	-351.5
Schedule	-	+260.4	-	+260.4
Engineering	-	-	-	-
Estimating	-1.2	-770.5	-	-771.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.0	-616.0	-	-616.0
Current Changes:				
Economic	-	-96.7	-	-96.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-40.3	-	-40.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-137.0	-	-137.0
Total Changes	+0.0	-753.0	-	-753.0
Current Estimate	39.9	5795.5	-	5835.4

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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	-	+137.2	-	+137.2
Engineering	-	-	-	-
Estimating	-1.2	-513.7	-	-514.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.2	-615.1	-	-616.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-33.3	-	-33.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-33.3	-	-33.3
Total Changes	-1.2	-648.4	-	-649.6
Current Estimate	38.1	5006.1	-	5044.2

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-95.1
Economic adjustment for negative program change. (Economic)	N/A	-1.6
Adjustment for Current and Prior Inflation. (Estimating)	+70.8	+83.8
Adjustments for last ship (Estimating)	-74.8	-90.3
Decrease in anticipation of HVAC Removal (Estimating)	-25.3	-30.6
Refinement of program estimates (Estimating)	-4.0	-3.2
Procurement Subtotal	-33.3	-137.0

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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	
329.42	+7.90	-1.16	+13.71	--	-42.74	--	--	-22.29	307.13

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	
327.43	+7.84	-1.28	+13.71	--	-42.67	--	--	-22.40	305.03

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	JUL 99
FUE/IOC	OCT 97	OCT 97	N/A	JUN 98
Total Cost	6588.4	6588.4	N/A	5835.4
Total Quantity	20	19	N/A	19
Prog Acq Unit Cost	329.42	346.76	N/A	307.13

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

a. Procurement --
Class Standard Equip.:
 MacGregor-NAVIRE (USA), Cranford NJ
 N00024-93-C-2220, FFP/AF
 Award: March 29, 1993
 Definitized: March 29, 1993

Initial Contract Price		
Target	Ceiling	Qty
\$13.2	N/A	1

Current Contract Price		
Target	Ceiling	Qty
\$203.9	N/A	19

Estimated Price At Completion	
Contractor	Program Manager
\$200.5	\$203.9

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15a. Contract Information (Cont'd):

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
	\$3.4	\$0.1
Cumulative Variances To Date (10/31/97)	<u>\$4.7</u>	<u>\$-0.2</u>
Net Change	\$1.3	\$-0.3

Explanation of Change:

Nothing significant.

Contract Comments:

There are currently no Program Manager's challenges on this contract.

CONVERSIONS:

NASSCO, SAN DIEGO, CA
N00024-93-C-2214, FPI 50/50 SHARE
Award: July 30, 1993
Definitized: July 30, 1993

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$632.1	\$761.1	3

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$690.2	\$829.0	3

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$827.2	\$827.2

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
	\$-153.1	\$-26.4
Cumulative Variances To Date (11/02/97)	<u>\$-181.3</u>	<u>\$-4.4</u>
Net Change	\$-28.2	\$22.0

Explanation of Change:

All three ships have been delivered. This will be the final report for this Contract.

Contract Comments:

THIS IS THE FINAL REPORT

The TAKR 295 (USNS Shughart) was delivered to the Military Sealift Command (MSC) on May 7, 1996. The TAKR 297 (USNS Yano) was delivered to the MSC on February 8, 1997. The TAKR 299 (USNS Soderman) was delivered to the MSC on November 11, 1997.

CONVERSIONS:

NEWPORT NEWS SHIPBUILDING, NEWPORT NEWS VA
N00024-93-C-2216, FPI 50/50 SHARE
Award: July 30, 1993
Definitized: July 30, 1993

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$423.5	\$478.8	2

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):

\$561.0	N/A	2	\$561.0	\$561.0
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-78.2	\$-23.0
Cumulative Variances To Date (04/30/97)			\$-87.6	\$0.0
Net Change			\$-9.4	\$23.0

Explanation of Change:

NNS is not contractually required to submit a Cost Performance Report (CPR) when contract was changed to Firm Fixed Price; instead NNS submitted monthly financial reports on actual costs incurred. Both ships have been delivered.

Contract Comments:

This is the Final Report.

The TAKR 296 (USNS Gordon) was delivered to MSC on August 23, 1996. The TAKR 298 (USNS Gilliland) was delivered on May 23, 1997.

<u>NEW CONSTRUCTION:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
AVONDALE IND., INC., NEW ORLEANS LA			
N00024-93-C-2205, FPI 50/50 SHARE	\$262.0	\$303.0	1
Award: September 2, 1993			
Definitized: September 2, 1993			

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1132.9	\$1332.4	5	\$1150.9	\$1108.9
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$16.4	\$-16.6
Cumulative Variances To Date (10/31/97)			\$20.2	\$-13.8
Net Change			\$3.8	\$2.8

Explanation of Change:

The cumulative cost variance of +20.2M is due to favorable material purchases on TAKRs 300, 301 and 302 in the areas of steel, piping and machinery. Cost savings have been realized for reduction gears, diesel generators, propellers, control consoles, dampers and deck hoistable ramps.

The cumulative schedule variance of -\$13.8M is attributable to TAKR 300 for -\$5.2M, -\$6.6M for TAKR 301, -\$10.4M for TAKR 302 and a positive schedule variance for TAKR 303. The TAKR 300 negative variance is predominately attributable to labor cost increases in machinery and outfitting material accounts.

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15. Contract Information (Cont'd):

Contract Comments:

The quantity and pricing information does not reflect the option exercise of the 6th ship (TAKR 305). The next SAR submission will report six ships.

The Program Manager's challenge will be to achieve delivery of the first new construction ship to the latest revised schedule of June 98. The original schedule for the TAKR 300 (USNS Bob Hope) has slipped due to a defect in Peck and Hale cloverleaf fittings, and delays in leadship test program. The acceptance trials are changed from Dec 97 to May 98 with delivery changed from Jan 98 to June/July 98.

<u>NEW CONSTRUCTION:</u>			<u>Initial Contract Price</u>		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
NASSCO, SAN DIEGO, CA					
N00024-93-C-2203, FPI 50/50 share			\$267.1	\$315.8	1
Award: September 15, 1993					
Definitized: February 1, 1994					

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1374.4	\$1598.7	6	\$1399.4	\$1354.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.5	\$-14.7
Cumulative Variances To Date (11/02/97)	\$0.0	\$-22.7
Net Change	\$3.5	\$-8.0

Explanation of Change:

The cumulative schedule variance of -\$22.7M is for the six ships being reported and does not consider the \$51.4M in Management Reserve. The TAKR 310 efficiencies suggest a much more favorable estimate at completion particularly since NASSCO has indicated that they will deliver the first ship approximately five months ahead of schedule.

Contract Comments:

This report does not reflect quantity or pricing information for the 7th ship (TAKR 316) exercise option. The next SAR report will reflect the 7th ship option.

The Program Manager's challenge will be to achieve delivery of the first new construction ship to the contractor's proposed delivery date of late Jun 98 at the LRE proposed by the shipbuilder. The government continues to team with the contractor to ensure that the current ship delivery schedule will occur at the lowest cost to the government.

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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</u>	<u>Total</u>
RDT&E	39.9	-	-	-	39.9
Procurement	4762.7	681.4	351.4	-	5795.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4802.6	681.4	351.4	-	5835.4

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	7		2209.0	2209.0	2463.9
1994	2		252.2	252.2	288.8
1995	2		470.5	470.5	546.4
1996	2		505.7	505.7	596.1
1997	3		725.1	725.1	867.9
1998	2		559.9	559.9	681.4
1999	1		283.7	283.7	351.4
Subtotal	19		5006.1	5006.1	5795.5

The appropriation name in Section 16c. should reflect "4557 National Defense Sealift Fund (NDSF)" vice "1611 Shipbuilding and Conversion, Navy".

The quantities have been changed in FY93 from 9 to 7 and FY94 from 0 to 2 in FY94. This more accurately reflects the funds provided under NDSF in FY93 were for the contract award of 7 ships in FY93 and the remaining funds to carry over into FY94 and be combined with the FY94 funds for the two FY94 hulls.

The total nineteen ship IMSR program control of \$5,795.5M (TY\$) is from the National Defense Sealift Fund and Shipbuilding and Conversion, Navy (SCN),

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

procurement accounts. The FY99 President's Budget for NDSF is \$100.0M and when added to prior appropriation reflects a total of \$5,544.1M (TY\$). This reflects funding for eighteen ships and advance procurement and one shipset of Class Standard Equipment for the nineteenth ship. The balance of funding for the nineteenth ship is \$251.4M and will be funded from the SCN portion of the procurement account.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	19	38.1	5006.1	5044.2	5835.4

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	5	5

Percent Total Program Quantities Delivered: 26.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 2928.2

Percent Total Program Expended: 50.2%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

CSP-24. The CSP-24 is prepositioned with military cargo. In Prepositioning Mode, the ship will be deployed with cargo in the holds in a forward area. The cargo hold environmental control system will be used to maintain the cargo holds within the required temperature and humidity range. The ship will be maintained in Full Operating Status (FOS). The ship will participate in occasional fleet exercises. Port facilities may or may not have services such as shore power and steam. For calculating fuel consumption, the ship will not be on shore services and the summer environmental condition is assumed year round. The CSP-24 will operate 33 percent of the time underway and 67 percent of the time in port. While underway, 67 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

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

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	N/A	N/A
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
Total	12.8	6.0

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ADDENDUM (FOR DoD USE ONLY)

19. Cost-Quantity Information:

- a. Baseline (Type) - - Development Estimate, FY 1992 BY \$
- b. End Item - - SEALIFT
- c. Cost Quantity Relationship (Type) - - Log-Linear Unit
- d. First Unit Cost - - \$180.79302 million
- e. Slope - - 115.359%, B = 0.2061
- f. Tabular Data - - Since the R&D units are lab/engineering models and not actual prototypes, they are not included in the cost-quantity calculation.

Fiscal Year	Quantity	Flyaway Cost (Base-Year \$ in Millions)		Plot Point
		Nonrecurring	Recurring	
1993	7	0.0	2136.7	4.2
1994	2	0.0	252.2	0.0
1995	4	0.0	1061.6	11.4
1996	2	0.0	570.1	14.5
1997	2	0.0	555.1	16.5
1998	2	0.0	547.3	18.5
1999	1	0.0	531.5	20.0
Total	20	0.0	5654.5	N/A

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A-23 SMART-T

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

AS OF DATE: December 31, 1997

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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 (732) 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 3080 ICN 33601F *** (Air Force)
APPN 1109 ICN 402700 (Navy) (Shared) USMC Terminal Buy
APPN 2035 ICN BC4002 (Army)
APPN 2035 ICN BS9720 (Army)

*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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APPROPRIATE AGENCY

98-C-0932

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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 (APB) dated 22 May 1992.

ASARC ADM Approval for Milestone II dated 26 May 1992.

AAE Acquisition Program Baseline (APB) dated 19 June 1997.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated June 19, 1997.

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

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7. Executive Summary (Cont'd):

awarded on 9 Nov 92 to Raytheon Company (Marlborough, MA) and Rockwell International (Richardson, TX). Both contractors completed a comprehensive 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.

A Milestone III Decision Review will be conducted in Nov 98, prior to exercising the Full Rate Production option. Initial Operational Test & Evaluation (IOT&E) is scheduled for Jun 98.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	
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	JUN 98	(Ch-1)
LRIP First Delivery	JAN 98	JAN 98	APR 98	(Ch-1)
LDR IOT&E				
Start	FEB 98	FEB 98	MAY 98	(Ch-2)
Complete	MAY 98	MAY 98	JUN 98	(Ch-2)
Milestone III ASARC Review	SEP 98	SEP 98	NOV 98	(Ch-3)
Full Scale Production Award	NOV 98	NOV 98	NOV 98	
MDR FOT&E				
Start	SEP 99	SEP 99	SEP 99	

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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 --

1/ First Article Test (FAT) completion changed from Jan 98 to Jun 98, and LRIP First Delivery changed from Jan 98 to Apr 98 due to delays in system integration. These changes do not adversely impact the execution of IOTE scheduled for May 98 and SMART-T program execution.

2/ LDR IOTE Start/Complete dates changed from Feb 98/May 98 to May 98/Jun 98 to reflect the TSARC approved Outline Test Plan (OTP).

3/ Milestone III ASARC review changed from Oct 98 to Nov 98 by ASARC Executive Secretary. This is simply an administrative change; it does not adversely impact SMART-T program execution.

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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	410	800
Aggregate Data Rate (kbps)	1544	1544	/ 1024	1024	1544
Interface Capability	With MSE	With MSE	/ With 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).

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	262.6	249.0
Procurement	598.2	370.1	346.7
Recurring Rollaway	(397.1)		(207.6)
Other Rollaway	(119.7)		(72.1)
Total Rollaway	(516.8)		(279.7)
Support Cost	(1.9)		(15.5)
Other System Cost	(30.2)		(32.3)
Total Other Wpn Sys	(32.1)		(47.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(49.3)		(19.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 92 Base-Year \$	804.4	632.7	595.7
Escalation	222.8	107.6	84.1
Development (RDT&E)	(19.2)	(27.4)	(23.3)
Procurement	(203.6)	(80.2)	(60.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1027.2	740.3	679.8
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	364	313	313
Total	364	313	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:

	UCR Baseline (JUN 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BY\$)	632.7	595.7	
(2) Quantity	313	313	
(3) Unit Cost	2.021	1.903	-5.84
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BY\$)	370.1	346.7	
(2) Quantity	313	313	
(3) Unit Cost	1.182	1.108	-6.26

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	-8.2	-40.2	-	-48.4
Quantity	-	-52.7	-	-52.7
Schedule	-	+22.6	-	+22.6
Engineering	+24.1	+44.8	-	+68.9
Estimating	+31.4	-342.1	-	-310.7
Other	-	-	-	-
Support	-	-17.6	-	-17.6
Subtotal	+47.3	-385.2	-	-337.9
Current Changes:				
Economic	-2.1	-8.8	-	-10.9
Quantity	-	-	-	-
Schedule	-	-0.6	-	-0.6
Engineering	-1.6	-5.9	-	-7.5
Estimating	+3.3	+4.0	-	+7.3
Other	-	-	-	-
Support	-	+2.2	-	+2.2
Subtotal	-0.4	-9.1	-	-9.5
Total Changes	+46.9	-394.3	-	-347.4
Current Estimate	272.3	407.5	-	679.8

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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	-	-34.6	-	-34.6
Schedule	-	+3.0	-	+3.0
Engineering	+20.0	+36.6	-	+56.6
Estimating	+21.3	-241.4	-	-220.1
Other	-	-	-	-
Support	-	-16.4	-	-16.4
Subtotal	+41.3	-252.8	-	-211.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-1.4	-4.3	-	-5.7
Estimating	+2.9	+3.6	-	+6.5
Other	-	-	-	-
Support	-	+2.0	-	+2.0
Subtotal	+1.5	+1.3	-	+2.8
Total Changes	+42.8	-251.5	-	-208.7
Current Estimate	249.0	346.7	-	595.7

b. 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	+0.1
	Elimination of requirement for Polar Modifications to the SMART-T terminal (Engineering)	-1.4	-1.6
	Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+0.7
	Reprogramming from SMART-T procurement appropriation to fund critical development efforts. (Estimating)	+2.6	+3.0
	Refinement of SMART-T development efforts (Estimating)	-0.4	-0.4
	RDT&E Subtotal	+1.5	-0.4
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-10.9
	Economic adjustment for negative program change. (Economic)	N/A	+2.1
	Acceleration of Marine Corp annual procurement buy profile. (Schedule)	0.0	-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>
Refinement of requirements for various engineering change proposals to the SMART-T terminal (Engineering)	-4.3	-5.9
Adjustment for Current and Prior Inflation. (Estimating)	+1.0	+1.0
Reprogramming from SMART-T procurement appropriation to SMART-T ADTE to fund critical development efforts (Estimating)	-2.6	-3.0
Revised estimate of System Test and Evaluation costs based on latest information. (Estimating)	+5.2	+6.0
Adjustment for Current and Prior Inflation. (Support)	+0.4	+0.4
Revised initial spares estimate based on latest information (Support)	+1.6	+1.8
Procurement Subtotal	+1.3	-9.1

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 Dev Est	Changes								PAUC Cur Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
2.82	-0.19	+0.29	+0.07	+0.20	-0.97	--	-0.05	-0.65	2.17

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	-0.16	+0.20	+0.07	+0.12	-1.08	--	-0.05	-0.90	1.30

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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	MAY 92	N/A	MAY 92
Milestone III	N/A	SEP 98	N/A	NOV 98
FUE/IOC	N/A	DEC 99	N/A	DEC 99
Total Cost	N/A	1027.2	N/A	679.8
Total Quantity	N/A	364	N/A	313
Prog Acq Unit Cost	N/A	2.82	N/A	2.17

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			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$253.4	\$0.0	387	\$253.4	\$253.4

Explanation of Change:

Current Contract Price and Estimated Price at Completion changed from \$212.8 to \$253.4 to reflect several significant contract modifications. This includes development efforts associated with Demand Assigned Multiple Access (DAMA) and the Training Device.

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

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

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15. Contract Information (Cont'd):

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	187.5	18.6	25.2	41.0	272.3
Procurement	93.4	23.4	98.5	192.2	407.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	280.9	42.0	123.7	233.2	679.8

b. Annual Summary -- SMART-T

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 \$
1992				19.7	20.0
1993				42.6	44.3
1994				53.5	56.7
1995				27.8	30.1
1996				18.6	20.5
1997				14.2	15.9
1998				16.4	18.6
1999				21.9	25.2
2000				13.4	15.7
2001				9.2	11.0
2002				6.3	7.6
2003				5.4	6.7
Subtotal				249.0	272.3

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		1.1	1.2	1.5
2002				0.1	0.1

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

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY92 Dollars Nonrec	Flyaway FY92 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
2003				0.1	0.1
Subtotal	6	0.1	3.2	3.8	4.5

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	24	0.3	13.8	15.6	18.2
2000	1		0.5	0.6	0.7
2001		0.1		0.3	0.4
2002				0.2	0.2
2003				0.2	0.3
Subtotal	25	0.4	14.3	16.9	19.8

The 1109 appropriation funds the U.S. Marine Corps (USMC) requirements.

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	26.4	46.1	51.4
1997	23	7.5	18.1	30.6	34.7
1998		12.6		20.3	23.3
1999	45	9.0	36.6	50.7	59.1
2000	77	9.4	38.3	53.1	63.0
2001	44	7.2	29.7	38.1	46.0
2002		9.4		14.8	18.2
2003		5.1		10.0	12.6
2004				0.9	1.1
2005				1.0	1.3
2006				0.8	1.1
2007				0.6	0.8
2008				0.4	0.6
2009				0.5	0.7
2010				0.4	0.6
2011				0.5	0.7
2012				0.5	0.7

SMART-T, December 31, 1997

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 \$
2013				0.4	0.6
2014				0.3	0.5
2015				0.3	0.5
2016				0.2	0.3
2017				0.1	0.1
Subtotal	209	69.1	149.1	270.6	317.9

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	13.6	16.9	19.7
2000	26	0.5	13.5	18.5	21.9
2001	18	0.3	9.5	12.1	14.6
2002		0.1		0.7	0.8
2003		0.1		0.7	0.9
Subtotal	73	2.4	41.1	55.4	65.3

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	69.1	149.1	519.6	590.2
OSD	6	0.1	3.2	3.8	4.5
Navy	25	0.4	14.3	16.9	19.8
USAF	73	2.4	41.1	55.4	65.3
Grand Total	313	72.0	207.7	595.7	679.8

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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): \$ 280.9

Percent Total Program Expended: 41.3%

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.

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	69.3	0.0

AF-15 JSIPS

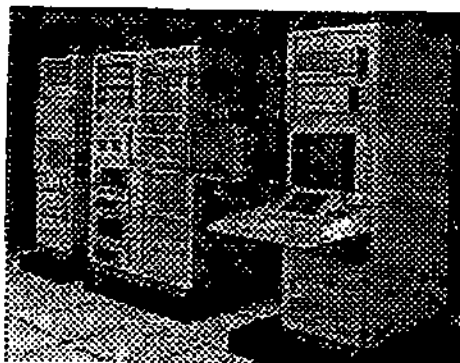
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)873)
PROGRAM: JSIPS (CIGSS)

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AS OF DATE: December 31, 1997

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1. Designation and Nomenclature (Popular Name): Joint Service Imagery Processing System (JSIPS) Common Imagery Ground Surface System ((CIGSS))
2. DoD Component: USAF

Joint Participants:
USMC, Army, and Navy
3. Responsible Office and Telephone Number:
Electronic Systems Center/IYG Col William G. Ludt
50 Griffiss St. Assigned: September 1, 1997
Hanscom AFB DSN 478-1186 ext 8958; COMM 781-271-8958
MA 01731-1625 Ludtgcigw.hanscom.af.mil
4. Program Elements/Procurement Line Items:
RDT&E:
PE 0206625M
PE 0207217F Project 3652
PE 0305154D (Shared)
PE 0305208D
PE 0603261N
PE 0603730A
PROCUREMENT:
APPN 3080 ICN 456GC3453 (Air Force) (Shared)
APPN 1810 ICN 461500 (Navy)
APPN 2035 ICN BZ7320 (Army)
APPN 0300 ICN DAR0000001 (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:

Block II upgrade for the Marine Corps Joint Service Imagery Processing System (JSIPS) located at Camp Pendleton, CA was completed on 13 Mar 97.

ACC declared Initial Operational Capability (IOC) for the 9th AF JSIPS on 5 Mar 97. The original Army system, refurbished and upgraded to the Block II configuration, was delivered to the 12th AF, Davis Monthan AFB, AZ in Feb 97. The 9th AF System was upgraded to a Block II configuration in July 97.

Reconnaissance/Intelligence Ground Stations (R/IGS) Products and Services (RPS) contracts were awarded to Lockheed-Martin and Raytheon E-Systems on 4 Dec 96. Future Block upgrades, Tactical Input Segment (TIS) and Tactical Exploitation Group (TEG) production systems, and other Product Group Manager (PGM) systems

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7. Executive Summary (Cont'd):

will be acquired under these contracts.

Contract award for JSIPS Block III, including Tactical Air Reconnaissance Systems (TARS), Unmanned Aerial vehicle (UAV), and Deployable Transit Case Systems (DTS) under the R/IGS RPS contract is expected in Jan 98.

AFOTEC Operational Utility Evaluation (OUE) on the 12th AF JSIPS took place from 29 Sep - 17 Oct 97, resulting in a report in Dec 97. Data collected is being analyzed for the development of a final corrective action plan in early CY 98.

The TIS delivery order for two initial production units was awarded to Lockheed-Martin under the RPS contract on 30 Apr 97. The program is proceeding on schedule.

A TEG delivery order for three production systems was awarded to Raytheon E-Systems under the RPS contract on 30 Apr 97. The contractor conducted a program review on 26-27 Aug 97. The execution of the program was on target at that time, but since then the slow release of FY 98 funding has affected our ability to order material to meet our contracted CFE dates, and we have had to slow down our contracted efforts. The resulting schedule slips of key CIGSS components will have a TBD schedule impact on the TEG program.

The JSIPS prime contractor submitted a series of Claims/Requests for Equitable Adjustments (REAs) totaling \$65.7M at price. The Government and Raytheon E-Systems reached an agreement on a mutually acceptable basis for settlement of the four claims in early July 97. On 13 July 97, updated funding requests for \$9.167M each were submitted to the Air Force, Army, and Marine Corps. The Army and the Air Force have provided their full shares. Contract modifications for a partial settlement were executed on 26 Sept 97 and 2 Dec 97 using available funds. A contract modification will be done in Jan 98 for the Air Force funds received late in Dec 97. The Marine Corps and Navy have tentatively determined that their funding of the claims constitutes a new start and requires Congressional notification of a reprogramming action.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

Navy TIS

a. Acquisition Program Baseline (APB):

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

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JSIPS (CIGSS), December 31, 1997

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
USAF LRIP (12th AF) Contract Award	N/A	AUG 95	AUG 95
USMC TEG Prototype Delivery	N/A	OCT 96	DEC 96
USMC TEG Production Decision	N/A	OCT 96	JAN 97
USMC TEG Production Contract Award	N/A	OCT 96	APR 97
USAF LRIP (12th AF) Delivery	N/A	FEB 97	APR 97 (Ch-1)
USMC TEG Production Delivery (Initial System)	N/A	JUN 98	DEC 98

b. Current Change Explanations --

(Ch-1) The USAF LRIP (12th AF) delivery current estimate was changed from Aug 97 to Apr 97 because the 12th AF system was delivered to Davis-Monthan AFB, AZ on 22 Apr 97.

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
TIS Delivery Order (Initial Production Units)	N/A	FEB 97	APR 97 (Ch-1)
TIS Delivery (Initial Production Units)	N/A	JUN 98	DEC 98

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9a. Schedule (Cont'd):

Navy TIS

b. Current Change Explanations --

(Ch-1) The TIS Delivery Order (Initial Production Units) current estimate was changed from Aug 97 to Apr 97 because the TIS Production Delivery Order was awarded on 30 Apr 97.

10. Performance Characteristics:

JSIPS

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate	
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	Yes	Yes	(Ch-1)
Reliability.	95	95	/ 95	95	TBD	(Ch-2)
Maintainability (% Operational availability)						
Energy Management	Yes	Yes	/ Yes	Yes	Yes	
Compatible with both commercial and organic power.						
Mobility/Deployability	Yes	N/A	/ N/A	Yes	Yes	
- Modular, segmentable, and transportable						

b. Current Change Explanations --

(Ch-1) ISO shelters changed from 95 to yes and Reliability changed from yes to 95 in demonstrated. Changes were made to correct parameters which were reversed in the Dec 96 SAR.

(Ch-2) Reliability, Maintainability changed from 95 to TBD because the Program Manager's current estimate for Operational Availability is under review as a result of AFOTEC Operational Assessment on the 12th AF System. Reliability changed from yes to 95 in demonstrated for reasons stated in Ch-1.

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10a. Performance Characteristics (Cont'd):
Navy TIS

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Multiple Sensor Inputs (Tactical)	240	240 / 240	TBD	240	(Ch-1)
Compatible with ATARS	N/A	Yes / Yes	TBD	Yes	(Ch-1)
ICD (ICD-F/A-18-064)					
Reliability,	95	95 / 90	TBD	95	(Ch-1)
Maintainability		/			
(% Operational		/			
availability)		/			
		/			
		/			
		/			
Energy Management	Yes	Yes / Yes	Yes	Yes	(Ch-1)
Compatible with					
Shipboard power					
Shipboard Operations	N/A	Yes / Yes	TBD	Yes	(Ch-1)

b. Current Change Explanations --

(Ch-1) Current estimate changed from yes to 240 in Multiple Sensor Inputs, from TBD to yes in Compatible with ATARS, from yes to 95 in Reliability, and from TBD to yes in Shipboard Operations to correct errors in 96 SAR. Demonstrated changed from TBD to yes in Energy Management to correct error in 96 SAR.

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

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	311.3	278.3	298.0
Procurement	190.9	168.2	153.6
Flyaway	(166.9)		(134.3)
Total Other Wpn Sys			(0.0)
Peculiar Support	(11.2)		(9.1)
Initial Spares	(12.8)		(10.2)
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 86 Base-Year \$	502.2	446.5	451.5
Escalation	151.0	129.8	121.7
Development (RDT&E)	(58.8)	(56.6)	(63.6)
Procurement	(92.2)	(73.2)	(58.1)
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 \$	653.2	576.3	573.3
b. Quantity --			
Development (RDT&E)	3	1	1
Procurement	<u>9</u>	<u>5</u>	<u>5</u>
Total	12	6	6

Note: Excludes 1 RDT&E 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 (Refurbished to Prod Configuration.)
- 2 Refurbished units (2 JSIPS units)
- 2 Production TEGs
- 1 LRIP (JSIPS)

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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JSIPS (CIGSS), December 31, 1997

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

Navy TIS

a. Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	10.7	6.2	6.4
Procurement	73.4	69.5	72.6
Flyaway	(64.3)		(61.2)
Total Other Wpn Sys			(0.0)
Peculiar Support	(4.3)		(3.9)
Initial Spares	(4.8)		(7.5)
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	79.0
Escalation	25.3	35.8	34.4
Development (RDT&E)	(9.8)	(2.0)	(1.8)
Procurement	(15.5)	(33.8)	(32.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	109.4	111.5	113.4
b. Quantity --			
Development (RDT&E)	1	1	0
Procurement	14	28	29
Total	15	29	29

Note: Excludes 1 RDT&E prototypes from the SAR Baseline and 0 from the Current Estimate that are not considered fully configured.

Note: The RDT&E unit was disassembled and the hardware was recapitalized. Unit no longer exists.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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JSIPS (CIGSS), December 31, 1997

12. Unit Cost Summary:

JSIPS

	UCR Baseline (AUG 96 APR)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 86 BYS)	446.5	451.6	
(2) Quantity	6	6	
(3) Unit Cost	74.417	75.267	+1.14
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 86 BYS)	168.2	153.6	
(2) Quantity	5	5	
(3) Unit Cost	33.640	30.720	-8.68

Navy TIS

	UCR Baseline (AUG 96 APR)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 86 BYS)	75.7	79.0	
(2) Quantity	29	29	
(3) Unit Cost	2.610	2.724	+4.37
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 86 BYS)	69.5	72.6	
(2) Quantity	28	29	
(3) Unit Cost	2.482	2.503	+0.85

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JSIPS (CIGSS), December 31, 1997

13. Cost Variance Analysis:
JSIPS

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	370.1	283.1	-	653.2
Previous Changes:				
Economic	-0.5	-0.9	-	-1.4
Quantity	-	-65.7	-	-65.7
Schedule	-	+0.1	-	+0.1
Engineering	-3.9	-	-	-3.9
Estimating	+0.4	+11.4	-	+11.8
Other	-	-	-	-
Support	-	-11.9	-	-11.9
Subtotal	-4.0	-67.0	-	-71.0
Current Changes:				
Economic	-0.9	-1.8	-	-2.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.6	-2.0	-	-5.6
Other	-	-	-	-
Support	-	-0.6	-	-0.6
Subtotal	-4.5	-4.4	-	-8.9
Total Changes	-8.5	-71.4	-	-79.9
Current Estimate	361.6	211.7	-	573.3

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	-7.9	+11.5	-	+3.6
Other	-	-	-	-
Support	-	-4.4	-	-4.4
Subtotal	-10.9	-35.5	-	-46.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-2.4	-1.5	-	-3.9
Other	-	-	-	-
Support	-	-0.3	-	-0.3
Subtotal	-2.4	-1.8	-	-4.2
Total Changes	-13.3	-37.3	-	-50.6
Current Estimate	298.0	153.6	-	451.6

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JSIPS (CIGSS), December 31, 1997

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-1.0
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
General reduction in funding. (Estimating) (Estimating)	-2.6	-3.8
RD&E Subtotal	<u>-2.4</u>	<u>-4.5</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-1.8
Economic adjustment for negative program change. (Economic)	N/A	0.0
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.9
General reduction in funding. (Estimating) (Estimating)	-2.1	-2.9
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Decrease in initial spares requirements. (Support)	-0.3	-0.6
Decrease in peculiar support requirements. (Support)	-0.1	-0.1
Procurement Subtotal	<u>-1.8</u>	<u>-4.4</u>

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JSIPS (CIGSS), December 31, 1997

13. Cost Variance Analysis (Cont'd):

Navy TIS

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	20.5	88.9	-	109.4
Previous Changes:				
Economic	+0.3	-2.5	-	-2.2
Quantity	-	+12.5	-	+12.5
Schedule	-	+3.2	-	+3.2
Engineering	-0.7	-	-	-0.7
Estimating	-11.9	-6.9	-	-18.8
Other	-	-	-	-
Support	-	+8.1	-	+8.1
Subtotal	-12.3	+14.4	-	+2.1
Current Changes:				
Economic	-	-2.1	-	-2.1
Quantity	-	+6.2	-	+6.2
Schedule	-	+2.1	-	+2.1
Engineering	-	-	-	-
Estimating	-	-8.1	-	-8.1
Other	-	-	-	-
Support	-	+3.8	-	+3.8
Subtotal	-	+1.9	-	+1.9
Total Changes	-12.3	+16.3	-	+4.0
Current Estimate	8.2	105.2	-	113.4

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JSIPS (CIGSS), December 31, 1997

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

Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	10.7	73.4	-	84.1
Previous Changes:				
Quantity	-	+6.6	-	+6.6
Schedule	-	+1.2	-	+1.2
Engineering	-0.5	-	-	-0.5
Estimating	-3.8	-10.9	-	-14.7
Other	-	-	-	-
Support	-	-0.3	-	-0.3
Subtotal	-4.3	-3.4	-	-7.7
Current Changes:				
Quantity	-	+4.2	-	+4.2
Schedule	-	+0.3	-	+0.3
Engineering	-	-	-	-
Estimating	-	-4.5	-	-4.5
Other	-	-	-	-
Support	-	+2.6	-	+2.6
Subtotal	-	+2.6	-	+2.6
Total Changes	-4.3	-0.8	-	-5.1
Current Estimate	6.4	72.6	-	79.0

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-2.2
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Total Quantity variance associated with increase of 1 unit.	+1.6	+2.4
Quantity increase of 1 unit. (Quantity)	+4.2	+6.2
Allocation to Schedule variance resulting from Quantity Change. (Schedule)	+0.3	+1.8
Allocation to Estimating variance resulting from Quantity Change. (Estimating)	-2.9	-5.6
Stretchout of annual procurement buy profile. (Schedule)	0.0	+0.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.6
General reduction in funding. (Estimating)	-2.2	-3.1
Increase in initial spares requirements. (Support)	+2.8	+4.1

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JSIPS (CIGSS), December 31, 1997

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

b. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decrease in peculiar support requirements. (Support)	-0.2	-0.3
Procurement Subtotal	<u>+2.6</u>	<u>+1.9</u>

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	-0.68	+43.48	+0.02	-0.65	+1.03	--	-2.08	+41.12	95.55

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	-0.54	+12.02	+0.02	--	+1.88	--	-2.50	+10.88	42.34

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	573.3
Total Quantity	12	12	N/A	6
Prog Acq Unit Cost	63.55	54.43	N/A	95.55

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JSIPS (CIGSS), December 31, 1997

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	-0.15	-2.87	+0.18	-0.02	-0.93	--	+0.41	-3.38	3.91

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	-0.16	-2.63	+0.18	--	-0.52	--	+0.41	-2.72	3.63

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	113.4
Total Quantity	N/A	29	N/A	29
Prog Acq Unit Cost	N/A	3.84	N/A	3.91

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

Note: Currently there are no other major contracts.

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JSIPS (CIGSS), December 31, 1997

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	329.1	10.6	12.2	17.9	369.8
Procurement	172.6	38.7	39.7	65.9	316.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	501.7	49.3	51.9	83.8	686.7

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	320.9	10.6	12.2	17.9	361.6
Procurement	160.3	24.0	5.7	21.7	211.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	481.2	34.6	17.9	39.6	573.3

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	14.7	34.0	44.2	105.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	20.5	14.7	34.0	44.2	113.4

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JSIPS (CIGSS), December 31, 1997

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

b. Annual Summary -- JSIPS

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				11.8	15.7
1996				9.8	13.3
1997				12.6	17.4
1998				7.6	10.6
1999				8.6	12.2
2000				3.0	4.3
2001				2.9	4.3
2002				3.1	4.6
2003				3.1	4.7
Subtotal				62.5	87.1

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 \$
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

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

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JSIPS (CIGSS), December 31, 1997

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

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	5.2	20.7	20.9	28.4
1996	1	2.2	20.0	25.4	35.1
1997	1	2.2	19.7	25.0	35.1
1998		14.7		16.8	24.0
1999		3.4		3.9	5.7
2000		4.9		5.6	8.3
2001		2.6		3.0	4.5
2002		2.6		3.0	4.6
2003		2.4		2.8	4.3
Subtotal	4	40.2	60.4	106.4	150.0

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	3.6	14.5	20.7	26.6
1993		15.6		17.8	23.3
1994					
1995				8.7	11.8
Subtotal	1	19.2	14.5	47.2	61.7

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JSIPS (CIGSS), December 31, 1997

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	4	40.2	60.4	168.9	237.1
Navy				60.6	72.0
Army				66.1	77.0
USAF	2	19.2	14.5	156.0	187.2
Grand Total	6	59.4	74.9	451.6	573.3

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					

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				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	2	0.3	3.0	3.8	5.3
1997	1	0.4	3.9	5.0	7.0
1998	3	1.5	13.3	10.3	14.7
1999	10	1.7	14.9	23.5	34.0
2000	13	2.2	20.0	30.0	44.2
Subtotal	29	6.1	55.1	72.6	105.2

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JSIPS (CIGSS), December 31, 1997

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

Navy TIS

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	29	6.1	55.1	72.6	105.2
Navy				6.4	8.2
Grand Total	29	6.1	55.1	79.0	113.4

17. Delivery/Expenditure Information:

JSIPS

a. Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	2	2

Percent Total Program Quantities Delivered: 50.0%

b. Total Expenditures To Date (In Millions of Dollars): \$ 442.1

Percent Total Program Expended: 77.1%

Navy TIS

a. Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	0	0

Percent Total Program Quantities Delivered: 3.4%

b. Total Expenditures To Date (In Millions of Dollars): \$ 13.8

Percent Total Program Expended: 12.2%

Navy RDT&E unit was disassembled and the hardware was recapitalized. Unit no longer exists.

18. Operating and Support Costs:

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JSIPS (CIGSS), December 31, 1997

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

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.

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

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JSIPS (CIGSS), December 31, 1997

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

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.

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

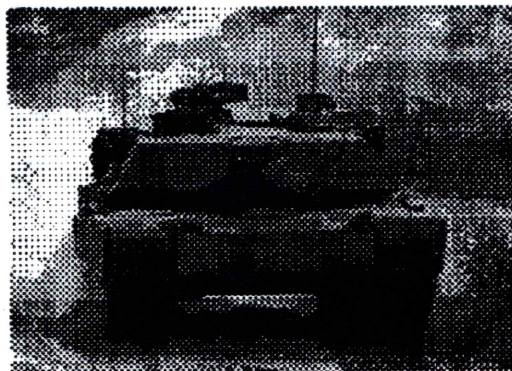
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: ABRAMS Upgrade

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): Tank, Combat, Full Tracked, M1A2

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

U.S. Army Tank-Automotive Command	COL CHRISTOPHE R V. CARDINE
ATTN: SFAE-GCSS-W-AB	Assigned: July 18, 1994
Warren, MI 48397-5000	DSN 786-6885; COMM (810) 574-6885

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

RDT&E:

- (U) PE 23735 (Shared) For M1A2 Development Project D330 (Shared)
- (U) PE 23758 (Shared) Horiz Btlfld Digit'n Project D374
- (U) PE 63639 (Shared) Armament Project 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

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DEPARTMENT OF DEFENSE

~~Classification Authority: [redacted]~~
~~Declassify on: [redacted]~~
~~Declassify on: Originating Agency Determination Required (OADR)~~

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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 successfully completed in July 1996.

A Full Materiel Release was approved for the M1A2 by CG TACOM, on 29 September 1997. The Detroit Arsenal Tank Plant (DATP) as part of the Base Realignment and Closure-95 was officially closed in FY97 and sold to the City of Warren, MI. DATP delivered its first tank in April 1941 and manufactured 44,000 tanks, including the Abrams, in its 56 years of operation.

The Army Long Term Modernization Strategy has future combat system deliveries starting in the FY20-25 timeframe. The modernization plan is to only procure 1150 tanks in the M1A2 SEP configuration and retain 1535 Legacy M1A1's. Force XXI will consist of this mixed fleet until replaced by AAN systems in the 2020-35 time period. The current configuration of both the M1A1 and M1A2 fleets of vehicles will be aging without significant modifications until FY06/07 timeframe.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
M1A2 Milestone II Decision Review	DEC 88	DEC 88	DEC 88
Award Block II FSD Contract	DEC 88	DEC 88	DEC 88
DAB Program Review	AUG 89	AUG 89	AUG 89
Special M1A2 ASARC	MAR 90	MAR 90	MAR 90
First Prototype Delivery (FSED)	JAN 91	JAN 91	JAN 91
Technical Test			
Start	JAN 91	JAN 91	JAN 91
Complete	MAR 92	MAR 92	MAR 92
User Test			
Start	JUN 91	JUN 91	JUN 91
Complete	DEC 91	DEC 91	DEC 91
LRIP Decision (62 Tanks)	MAR 92	MAR 92	MAR 92
Mod FY91 M1A1 Production Contract (Incorporating Block II Changes)	MAY 92	MAY 92	MAY 92
First M1A2 Production Delivery	NOV 92	NOV 92	NOV 92
Live Fire Test			
Start	JAN 93	JAN 93	JAN 93
Complete	JUL 93	JUL 93	OCT 93

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ABRAMS Upgrade, December 31, 1997

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
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
M1A2 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

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>
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 (0% slope)	41.5	41.5 / 41.5	42.5	41.5
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

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

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Fightability-Improved Commander's Weapon Station Visibility over M1A1 (%)	40	40 / 25	25	25
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
(S) Targets Acquired/Unit Time Over M1A1 (%)	(b)(1)			
Average 1st Round Hit Probabilities (Round/ Condition/Ranges)	(b)(1)			
(C) Heat/S-S/1500- 3000m	(b)(1)			
(C) Heat/S-M/1500- 2500m				
(C) Heat/M-S/1500- 2500m				
(C) Heat/M-M/1500- 2500m				
(C) KE/S-S/1500-3000m				
(C) KE/S-M/1500-2500m				
(C) KE/M-S/1500-2500m				
(C) KE/M-M/1500-2500m				
Armor Protection vs Threat (deg)				
Heat Rounds:				
(S) 127mm ATGM (Hull & Turrent Side Crew Areas Bustle and Hull Ammo Compartment)				
(S) 81mm HHIW (Hull Ammo Compartment)				
(S) 81mm HHIW (Turret Bustle Compartment)				
(S) 150mm ATGM (Turret & Hull Front)				

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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>
Kinetic Energy				
Rounds:				
(1) 125mm APFSDS @				
800-1200mm				
(Turret Front)				
(2) 115mm APFSDS (Hull				
Front)				
(3) 115mm APFSDS				
(Hull/Turret Side				
Crew Areas,				
Bustle/Hull Ammo				
Comp)				

(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). Due to manpower cuts and priority changes, the Aberdeen Test Center (ATC) has fallen many months behind in the preparation and completion of all their test reports. ATC has promised that the final report containing the analysis of 1st Round Hit Probabilities will be provided to PM Abrams before the end of 3QFY98, however, live round check fire has already demonstrated outstanding performance.

b. Current Change Explanations -- None

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ABRAMS Upgrade, December 31, 1997

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

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	755.4	755.4	849.8
Procurement	6028.6	6028.6	6166.5
Rollaway	(4968.9)		(5141.0)
Other Wpn System	(791.1)		(756.3)
Peculiar Support	(108.5)		(140.7)
Initial Spares	(160.1)		(128.5)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	207.9	207.9	85.1
Total FY 95 Base-Year \$	6991.9	6991.9	7101.4
Escalation	970.0	970.0	440.1
Development (RDT&E)	(-84.8)	(-84.8)	(-69.6)
Procurement	(1020.8)	(1020.8)	(507.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(34.0)	(34.0)	(1.9)
Total Then Year \$	7961.9	7961.9	7541.5
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1060	1060	1131
Total	1060	1060	1131

Note: Excludes 10 RDT&E 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 1131 M1A2 tanks includes 62 Low Rate Initial Production (LRIP) new production M1A2 tanks, which were all delivered in FY93, and 1069 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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12. (U) Unit Cost Summary:

	UCR Baseline (JAN 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	6991.9	7101.4	
(2) Quantity	1060	1131	
(3) Unit Cost	6.596	6.279	-4.81
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	6028.6	6166.5	
(2) Quantity	1060	1131	
(3) Unit Cost	5.687	5.452	-4.13

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	670.6	7049.4	-	241.9	7961.9
Previous Changes:					
Economic	+7.8	-217.0	-	-0.8	-210.0
Quantity	-	-	-	-	-
Schedule	-	-145.2	-	-10.3	-155.7
Engineering	-	-	-	-	-
Estimating	+89.7	-220.1	-	-143.6	-274.0
Other	-	-	-	-	-
Support	-	-40.6	-	-	-40.6
Subtotal	+97.5	-622.9	-	-154.9	-680.3
Current Changes:					
Economic	-1.5	-131.7	-	-0.3	-133.5
Quantity	-	+444.8	-	-	+444.8
Schedule	-	-42.3	-	-	-42.3
Engineering	+5.0	-	-	-	+5.0
Estimating	+8.6	+5.9	-	+0.3	+14.8
Other	-	-	-	-	-
Support	-	-28.9	-	-	-28.9
Subtotal	+12.1	+247.8	-	-	+259.9
Total Changes	+109.6	-375.1	-	-154.9	-420.4
Current Estimate	780.2	6674.3	-	87.0	7541.5

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ABRAMS Upgrade, December 31, 1997

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

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	755.4	6028.6	-	207.9	6991.9
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+82.0	-194.6	-	-123.1	-235.7
Other	-	-	-	-	-
Support	-	-26.7	-	-	-26.7
Subtotal	+82.0	-221.3	-	-123.1	-262.4
Current Changes:					
Quantity	-	+377.7	-	-	+377.7
Schedule	-	-	-	-	-
Engineering	+4.6	-	-	-	+4.6
Estimating	+7.8	-11.0	-	+0.3	-2.9
Other	-	-	-	-	-
Support	-	-7.5	-	-	-7.5
Subtotal	+12.4	+359.2	-	+0.3	+371.9
Total Changes	+94.4	+137.9	-	-122.8	+109.5
Current Estimate	849.8	6166.5	-	85.1	7101.4

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.5
Addition of work to change Joint Variable Message Format (JVME) within Embedded Battle Command (EBC). (Engineering)	+4.6	+5.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+1.4
Increase to cover shortfalls due to an underestimate of cost to develop Under Armor Auxiliary Power Unit (UAAPU). (Estimating)	+6.4	+7.2
RDT&E Subtotal	+12.4	+12.1
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-160.4
Economic adjustment for negative program change. (Economic)	N/A	+28.7
Quantity variance associated with increase of 71 units. (Quantity)	+377.7	+444.8
Acceleration of annual procurement buy profile. (Schedule)	0.0	-42.3
Adjustment for Current and Prior Inflation. (Estimating)	+20.3	+21.7

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ABRAMS Upgrade, December 31, 1997

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised hardware price estimates due to increased production rates in FY01-03. (Estimating)	-336.3	-385.1
Addition of program closure costs in FY03-05. (Estimating)	+305.0	+369.3
Adjustment for Current and Prior Inflation. (Support)	+3.9	+4.1
Change in Initial Spares (Support)	+1.8	+3.5
Change in Peculiar Support (Support)	+0.6	+1.1
Change in Other Wpn System costs due to shortened schedule. (Support)	-13.8	-37.6

Procurement Subtotal	+359.2	+247.8
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(3) O&M

Revised escalation indices. (Economic)	N/A	-0.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3

O&M Subtotal	+0.3	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	
7.51	-0.30	-0.07	-0.18	--	-0.23	--	-0.06	-0.84	6.67

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	-0.31	-0.02	-0.17	--	-0.19	--	-0.06	-0.75	5.90

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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	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	7541.5
Total Quantity	N/A	N/A	1060	1131
Prog Acq Unit Cost	N/A	N/A	7.51	6.67

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

(U) ☐

Contract DAAE07-94-C-A016, FFP, Awarded: April 29, 1994, is 100% complete and will no longer 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
\$1333.9	\$0.0	600	\$1333.9	\$1333.9

Explanation of Change:

None.

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

(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, 1997

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

(U) M1A2 SEP Dev/FLIR Integ:			Initial Contract Price		
General Dynamics Corp., Warren, MI			Target	Ceiling	Qty
DAAE07-94-C-0727, CPFF			\$0.0	\$115.2	0
Award: August 18, 1995					
Definitized: August 18, 1995					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$0.0	\$120.0	0	\$129.0	\$133.0	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
			\$-1.8	\$-8.0	
Cumulative Variances To Date (09/30/97)			\$-12.8	\$-11.7	
Net Change			\$-11.0	\$-3.7	

Explanation of Change:

(U) ☐

Phase I of the SEP/Gen II FLIR program (\$7M), concept and trade study phase, was completed in August 1995 with the Phase II portion of the initial contract price being \$108.2M. The current contract price and estimated price at completion reflect only Phase II efforts of the SEP/Gen II FLIR program.

GDLS schedule variance increased to -\$11.7M or approximately 15 weeks behind schedule. Reasons for this delay are due to the diversion of GDLS personnel to work production problems; an underestimated manpower budget; as well as the late design of the Commanders Display Unit (CDU), Mission Processing Unit (MPU), and Under Armor Auxilliary Power Unit (UAAFU).

Cost variance increased to -\$12.8M due to an underestimate of the UAAFU cost and the additional scope of work for the MAP Server, Thermo Imaging System Diagnostics, and the remote control capability for the STINGARS.

Because of funding constraints a Stop Work Order (SWO) was issued to GDLS on 19 Nov 97 which included Cost Performance Reports (CPR), Logistics Quality Assurance, Component Qualification Subtests, Computer Software Configuration Item Testing, Packaging Development Engineering and IPRs. The last CPR was received in Oct 97 with data as of September 97.

While the CPR is an important management tool, FM Abrams relies on a variety of management tools, which include IPT feedback, over the shoulder review of technical experts, and critical path analysis. These tools which are still being used on a day to day basis, provide more effective feedback than the CPR data itself for this program.

Cost & Schedule variance is not expected to impact the delivery of the first 10 SEP/GEN II FLIR tanks in August 99.

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ABRAMS Upgrade, December 31, 1997

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

b. Procurement --
(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		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$76.5	\$0.0	340

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$76.5	\$76.5

Explanation of Change:

None.

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

(U) Transmission Upgrade:
Allison Transmission Div, Indianapolis IN
DAAE07-97-CT537, FFP
Award: September 29, 1997
Definitized: September 29, 1997

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$23.5	\$0.0	120

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$23.5	\$0.0	120

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$23.5	\$23.5

Explanation of Change:

None.

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

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ABRAMS Upgrade, December 31, 1997

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 (FY85-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-05)</u>	<u>Total</u>
RDT&E	726.5	38.6	15.1	-	780.2
Procurement	2554.7	608.9	698.8	2811.9	6674.3
MILCON	-	-	-	-	-
O&M	87.0	-	-	-	87.0
Total	3368.2	647.5	713.9	2811.9	7541.5

b. Annual Summary -- ABRAMS Upgrade

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>
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				49.7	51.5
1997				69.9	69.3
1998				36.2	38.6
1999				13.9	15.1
Subtotal				849.8	780.2

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

<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>
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	496.3	475.3
1992				239.0	233.7
1993				163.2	162.8

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ABRAMS Upgrade, December 31, 1997

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 \$
1994	172	34.4	587.4	131.0	133.1
1995	34		101.4	288.8	298.9
1996	100		351.0	550.2	579.2
1997	120		406.6	453.1	483.7
1998	120		459.1	561.6	608.9
1999	120		523.8	639.0	698.8
2000	120		512.7	598.3	665.4
2001	105		478.2	497.2	562.6
2002	90		513.2	533.6	615.3
2003	88	21.2	404.1	474.9	559.3
2004		182.8		209.5	252.2
2005		101.0		127.7	157.1
Subtotal	1131	545.5	4595.5	6166.5	6674.3

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				21.9	22.1
1996				20.0	20.7
1997				23.7	24.9
1998					
Subtotal				85.1	87.0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1131	545.5	4595.5	7101.4	7541.5

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	416	416

(U) Percent Total Program Quantities Delivered: 36.8%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 2744.8

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ABRAMS Upgrade, December 31, 1997

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

(U) Percent Total Program Expended: 36.4%

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 Personn	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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000-3 NAVY AREA TBMD

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

PROGRAM: Navy Area TBMD

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): Navy Area Theater Ballistic Missile Defense (TBMD)

2. (U) DoD Component: BMDO

Joint Participants:
U.S. Navy

3. (U) Responsible Office and Telephone Number:

PEO, Theater Air Defense	CAPT Oliver H. Perry III
PMS 451	Assigned: November 11, 1997
2531 Jefferson Davis Highway	DSN NA; COMM 703-892-7940
Arlington, VA 22242-5170	perry_hap_capt@hq.navsea.navy.mil

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

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

RDT&E:

(U) PE 0603867C
(U) PE 0604867C

PROCUREMENT:

(U) APPN 0300 ICN 0208867C (DCA/DNA)
(U) APPN 1507 ICN 2234 (Navy) (Shared)

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5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline (APB) dated February 22, 1997.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated February 22, 1997.

6. (U) Mission and Description:

(U) The Navy Area Theater Ballistic Missile Defense (TBMD) project builds on the national investment in AEGIS ships, weapon systems, and Navy STANDARD Missile II (SM-2) Block IV missiles. Two classes of ships continue to be deployed with the AEGIS combat system: the CG-47 Ticonderoga-class cruisers and the DDG-51 Burke-class destroyers. Navy Area TBMD will take advantage of the attributes of naval forces including overseas presence, mobility, flexibility, and sustainability in order to provide protection to debarkation ports, coastal airfields, amphibious objective areas, Allied forces ashore, and other high value sites. Navy assets will provide an option for initial TBMD assets and other expeditionary forces in an opposed environment. This program does not replace another system.

7. (U) Executive Summary:

(U) The role of the U.S. Navy in U.S. Ballistic Missile Defense programs was initially addressed in 1991. A Mission Needs Statement (MNS) for Theater Missile Defense was validated by the JROC in November of 1991, and supplemented by a Chief of Naval Operations approved MNS for a sea-based TBMD in February of 1993. Operational Requirements Documents (ORDs) for both AEGIS TBMD and SM-2 Block IVA were approved in December of 1992.

There have been nine successful major events since the last report. These events were AEGIS Baseline 6/Phase III In Process Review (IPR) on July 10-11, 1997; AEGIS Baseline 7/Phase I IPR on September 8-9, 1997; STANDARD Missile (SM-2 Block IVA) Engineering Manufacturing Development (EMD) contract award to STANDARD Missile Company on September 16, 1997; Navy User Operational Evaluation System (UOES) status review conducted on September 29, 1997; the Vertical Launch System (VLS) Critical Design Review (CDR) was conducted on October 21-22, 1997; AEGIS Baseline 6/Ph III Preliminary Design Review (PDR) held on November 17-19, 1997; Initiation of the Arena test phase of the Live Fire Test and Evaluation during November and December 1997; the Navy Area TBMD Design Review was conducted on December 17, 1997; and the Navy Area TBMD program office (FMS 451) was established.

President's Budget for FY99 reprogrammed 600 missiles and AEGIS upgrade requirements to BMDO from U.S. Navy. The U.S. Navy retained procurement of 900 missiles. The total requirement for 1500 missiles and AEGIS upgrades has not changed for the Navy Area TBMD program.

It is the Navy's intention to use all SM-2 Block IV funds to buy 21 SM-2 Block IVA Missiles in FY99 based on approval for release of LRIP Long Lead

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

b. Current Change Explanations --

(U) (Ch-1) Change to start/complete date of White Sands Missile Range flight testing (DTIIC) from JUN 99 to FEB 99/MAR 00 to MAY 00 is based on plan to further reduce risk through expansion of the testing window by advancing the start date and extension of the completion date to accommodate additional hardware and flight(s).

10. (U) Performance Characteristics:

a. Performance --

	Development	Approved	Demon-	Current
	Estimate (SAR)	Program (APB)	strated	Estimate
		Obj/Threshold	Perf	
(S) Defended Area (km)	(b)(1)			
(S) Keep Out Altitude (km)				
(S) Probability of Negation within the defended area (Pn)				
(S) Defended Footprint				
(S) Front Range (km)				
(S) Cross Range (km)				
(S) Interoperability				

b. Current Change Explanations -- None

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Navy Area TBMD, December 31, 1997

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

Material.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
	FEB 97	FEB 97	FEB 97
Milestone II Review			
WSMR Flight Testing (DTIIC)			
Start	FEB 99	FEB 99	FEB 99 (Ch-1)
Complete	FEB 00	FEB 00	MAY 00 (Ch-1)
TECHEVAL (DTIID)			
Start	NOV 00	NOV 00	NOV 00
Complete	DEC 00	DEC 00	DEC 00
OPEVAL (OTII)			
Start	MAR 01	MAR 01	MAR 01
Complete	MAR 01	MAR 01	MAR 01
First Unit Equipped	JUN 01	JUN 01	SEP 01
Milestone III Review	AUG 01	AUG 01	AUG 01

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Navy Area TBMD, December 31, 1997

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

b. Current Change Explanations --

(U) (Ch-1) Change to start/complete date of White Sands Missile Range flight testing (DTIIC) from JUN 99 to FEB 99/MAR 00 to MAY 00 is based on plan to further reduce risk through expansion of the testing window by advancing the start date and extension of the completion date to accommodate additional hardware and flight(s).

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obi/Threshold	Demon- strated Perf	Current Estimate
() Defended Area (km)	(b)(1)			
() Keep Out Altitude (km)				
() Probability of Negation within the defended area (Pn)				
() Defended Footprint				
() Front Range (km)				
() Cross Range (km)				
() Interoperability				

b. Current Change Explanations -- None

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Navy Area TBMD, December 31, 1997

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

a. (U) Cost --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	1845.0	1845.0	1884.1
Procurement	3216.0	3216.0	3180.6
Recurring Flyaway	(3044.7)		(2949.5)
Nonrecurring Flyaway	(71.8)		(103.4)
Total Flyaway	(3116.5)		(3052.9)
Other Weapon System Cost	(0.0)		(0.0)
Peculiar Support	(0.0)		(44.7)
Initial Spares	(99.5)		(83.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 94 Base-Year \$	5061.0	5061.0	5064.7
Escalation	1169.0	1169.0	981.5
Development (RDT&E)	(205.0)	(205.0)	(175.4)
Procurement	(964.0)	(964.0)	(806.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6230.0	6230.0	6046.2
b. (U) Quantity --			
Development (RDT&E)	N/A	N/A	N/A
Procurement	1500	1500	1500
Total	1500	1500	1500

Note: Excludes 35 RDT&E prototypes from the SAR Baseline and from the Current Estimate that are not considered fully configured.

(U) LRIP quantities of 185 (12.3%), as approved at the Milestone II Review, exceeds 10 percent of the total production quantity. The LRIP is required to establish an initial production base for the common missile and permit an orderly increase in the production rate for the common missile, sufficient to lead to full-rate production upon successful completion of operational testing.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. (U) Unit Cost Summary:

	UCR Baseline (FEB 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	5061.0	5064.7	
(2) Quantity	1500	1500	
(3) Unit Cost	3.374	3.376	+0.06
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	3216.0	3180.6	
(2) Quantity	1500	1500	
(3) Unit Cost	2.144	2.120	-1.12

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2050.0	4180.0	-	6230.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-33.4	-180.8	-	-214.2
Quantity	-	-	-	-
Schedule	-	+142.3	-	+142.3
Engineering	-	-	-	-
Estimating	+42.9	-189.3	-	-146.4
Other	-	-	-	-
Support	-	+34.5	-	+34.5
Subtotal	+9.5	-193.3	-	-183.8
Total Changes	+9.5	-193.3	-	-183.8
Current Estimate	2059.5	3986.7	-	6046.2

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Navy Area TBMD, December 31, 1997

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

(U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1845.0	3216.0	-	5061.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+39.1	-65.2	-	-26.1
Other	-	-	-	-
Support	-	+29.8	-	+29.8
Subtotal	+39.1	-35.4	-	+3.7
Total Changes	+39.1	-35.4	-	+3.7
Current Estimate	1884.1	3180.6	-	5064.7

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-33.4
Adjustment for Current and Prior Inflation. (Estimating)	+6.1	+6.5
Decrease for Small Business Innovative Research (SBIR) required reduction of engineering change orders. (Estimating)	-0.4	-0.4
Refinement of estimate based on EMD Contract award. (Estimating)	+43.5	+47.8
Congressional reduction for general requirements required change in engineering change orders. (Estimating)	-10.1	-11.0
RDT&E Subtotal	+39.1	+9.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-190.0
Economic adjustment for negative program change. (Economic)	N/A	+9.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.8	+0.8
Redistribution of buy quantities from FY99-04 to FY05-09. (Schedule)	0.0	+142.3

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Navy Area TBMD, December 31, 1997

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Budget reductions in FY99 resulted in loss of scheduled program requirements for long lead materials. (Estimating)	-66.0	-190.1
Increase requirements for peculiar support. (Support)	+29.8	+34.5
 Procurement Subtotal	 -35.4	 -193.3

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	
4.15	-0.14	+0.01	+0.09	--	-0.10	--	+0.02	-0.12	4.03

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	
2.79	-0.12	+0.01	+0.09	--	-0.13	--	+0.02	-0.13	2.66

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	FEB 97	N/A	FEB 97
Milestone III	N/A	AUG 01	N/A	AUG 01
FUE/IOC	N/A	JUN 01	N/A	SEP 01
Total Cost	N/A	6230	N/A	6046.2
Total Quantity	N/A	1500	N/A	1500
Prog Acq Unit Cost	N/A	4.15	N/A	4.03

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Navy Area TBMD, December 31, 1997

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

(U) First Contractor's CPR due January 1998.

a. RDT&E --			Initial Contract Price		
(U) <u>B/L UPGRADE & CRIT EXPER:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LOCKHEED MARTIN, MOORESTOWN, NJ					
N00024-95-C-5159, CPAF			\$46.5	\$46.5	0
Award: March 15, 1995					
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>
\$46.5	\$46.5	0	\$46.5	\$46.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.7	\$-1.3
Cumulative Variances To Date (11/23/97)	\$0.9	\$-1.2
Net Change	\$0.2	\$0.1

Explanation of Change:

(U) The positive net change in cost variance results from efficiencies in the consolidation of tasks. The positive net change in schedule variance is a result of approved engineering drawings for changes in the missile design. Computer Science Corporation, the subcontractor has shown improvements in performance since the last report. There is no impact to this contract or program for the variances.

(U) <u>TMD - Targets Program:</u>			Initial Contract Price		
COLEMAN RESEARCH CORP, ORLANDO, FL			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DASC50-92-C-0217, CPFF			\$144.2	N/A	25
Award: October 14, 1992					
Definitized: October 14, 1992					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$238.7	N/A	25	\$226.6	\$226.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-5.7	\$-5.0
Cumulative Variances To Date (01/25/98)	\$-6.9	\$-0.1
Net Change	\$-1.2	\$4.9

Explanation of Change:

(U) The targets information provided reflects the Hera contract which supports multiple BMDO programs. This contract provides a pool of targets from which the Navy Area Defense program, as well as other BMDO programs, can draw targets. There are no significant impacts to the contract because of the variances.

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Navy Area TBMD, December 31, 1997

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

(U) <u>SM-2 BLOCK IVA EMD:</u>			Initial Contract Price		
STANDARD MISSILE COMPANY, MCLEAN VA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00024-97-C-5357, CPAF	\$407.7	\$	52		
Award: September 29, 1997					
Definitized: September 29, 1997					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$407.7	N/A	52	\$407.7	\$407.7

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

Explanation of Change:

(U) Cost Performance reporting will be available in February 1998. This is a new contract since the last report.

(U) <u>SM-2 Block IVA LOE:</u>			Initial Contract Price		
STANDARD Missile Company, McLean, VA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00024-96-C-5341, CPAF	\$190.7	N/A	0		
Award: N/A					
Definitized: N/A					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$190.7	N/A	0	\$190.7	\$190.7

Explanation of Change:

None.

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

(U) Contract Comments:

(U) Cost and schedule variance information is not required on this Level of Effort Cost Plus Award Fee contract. This contract is now complete and reporting will not be shown in the next SAR.

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Navy Area TBMD, December 31, 1997

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 (FY00-11)</u>	<u>Total</u>
RDT&E	907.1	278.8	245.8	627.8	2059.5
Procurement	38.3	15.1	64.3	3869.0	3986.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	945.4	293.9	310.1	4496.8	6046.2

b. Annual Summary -- Navy Area TBMD System

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 \$
1993				35.3	35.1
1994				147.9	150.1
1995				135.2	139.9
1996				267.4	281.6
1997				280.7	300.4
1998				256.7	278.8
1999				222.9	245.8
2000				206.6	231.6
2001				140.5	160.2
2002				43.3	50.3
2003				31.1	36.8
2004				28.6	34.6
2005				22.5	27.8
2006				17.2	21.8
2007				12.0	15.5
2008				10.8	14.3
2009				9.6	12.9
2010				8.5	11.7
2011				7.3	10.3
Subtotal				1884.1	2059.5

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1995		8.5	5.3	13.8	14.5
1996		7.0	6.3	13.7	14.6

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

Appropriation: 0300 Procurement, Defense Agencies

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997		8.5		8.5	9.2
1998		4.7	9.0	13.7	15.1
1999		17.8	20.9	38.7	43.3
2000	11		107.5	110.5	125.7
2001	22		128.1	133.8	155.0
2002	57		185.0	191.9	226.6
2003	58		175.8	179.0	215.8
2004	67		169.2	169.2	208.5
2005	77		172.6	172.6	217.3
2006	77		153.9	153.9	198.1
2007	77		153.7	153.7	202.2
2008	77		140.1	140.1	188.3
2009	77		86.2	86.2	118.4
2010			14.7	14.7	20.7
2011			3.0	3.0	4.3
Subtotal	600	46.5	1533.3	1597.0	1977.6

(U) Recurring Flyaway dollars reflect AEGIS upgrades and missile procurements.

Appropriation: 1507 Weapons Procurement, Navy

Fiscal Year	Qty	Flyaway FY94 Dollars Nonrec	Flyaway FY94 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1999		13.2		18.8	21.0
2000	10	26.4	35.9	72.7	82.7
2001	23	17.3	57.1	89.7	103.9
2002	43		92.0	108.4	128.0
2003	51		101.0	117.3	141.4
2004	136		174.8	182.0	224.3
2005	127		197.4	205.6	258.9
2006	127		195.7	203.7	262.2
2007	127		193.4	201.3	264.8
2008	128		187.2	194.9	262.0
2009	128		181.7	189.2	259.9
Subtotal	900	56.9	1416.2	1583.6	2009.1

(U) Note: It is the Navy's intention to use all SM-2 Block IV funding to buy 21 SM-2 Block IVA Missiles in FY99 based on approval for release of LRIP Long Lead Material.

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

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD	600	46.5	1533.3	3481.1	4037.1
Navy	900	56.9	1416.2	1583.6	2009.1
Grand Total	1500	103.4	2949.5	5064.7	6046.2

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): \$ 845.9

(U) Percent Total Program Expended: 14.0%

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The Operations and Support Cost Estimates below assume a 30 year program life, procurement of 1500 SM-2 Block IVA missiles, and computer program and adjunct processor updates to 79 AEGIS Cruisers and Destroyers creates no requirement for additional ship-board or ground-based personnel and has no impact on the operating tempo of the ships. Unit Level Consumption includes the cost to conduct four training mission years after the eight year warranty period expires as well as the cost to dispose of missiles at the end of their life (assumed to be 24 years). Sustaining Support includes the cost of AEGIS Weapon System software maintenance and a missile mid-life refurbishment of the rocket motors and batteries. Indirect costs include technical support provided by Navy facilities during the support phase. There is no antecedent system, therefore column two for cost is left blank.

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

Cost Element	NAVY AREA TBMD	N/A
Mission Pay & Allowances	0.0	N/A
Unit Level Consumption	120.0	N/A
Intermediate Maintenance	785.0	N/A
Depot Maintenance	69.4	N/A
Contractor Support	0.0	N/A
Sustaining Support	502.5	N/A
Indirect Costs	60.1	N/A

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

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

	NAVY AREA TBMD	N/A
Cost Element		
Total	1537.0	N/A

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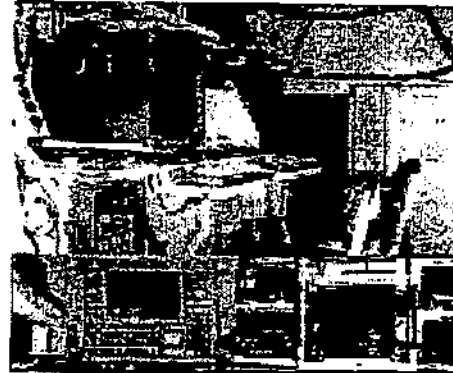
A-13 FAAD C2I

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A) 823)
PROGRAM: FAAD C2I

AS OF DATE: December 31, 1997

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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
	haller@dcim6.monmouth.army.mil

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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5. References:

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 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

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6. Mission and Description (Cont'd):

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-Appique').

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 redesignated 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 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.

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7. Executive Summary (Cont'd):

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).

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 AN/MPQ-64 Ground Based Sensor, was officially designated the Sentinel radar system by Headquarters, Department of the Army, on October 3, 1996. Sentinel achieved FUE with the fielding of six radars to 1-44 Air Defense Artillery (ADA) battalion, 4th Infantry Division (ID), Jun 97. The Sentinel Maintenance Trainer was installed at Fort Sill, OK, and handed off in Sep 97. The Government has accepted a total of 25 Sentinel Systems.

Block I software has been fielded to the 101st Airborne Division (ABN), 2nd Infantry Division (ID), Training Base at U.S. Army Air Defense Artillery School (USAADSCH), and 10th Mountain Light Infantry Division (LID). Block II software and Sentinel have been fielded to the 3rd ID, USAADSCH, and 1st Cavalry Division, and fieldings are in process to the 82nd ABN, 4th ID, and 25th LID.

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. Sentinel development (NDI) in February 1992 to provide air defense command and control capability, and the FAAD C2 Block III development 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. The FAAD C2 CHS-2 Integration/Fielding contract was awarded in FY 97. Sentinel awarded the Option for Full Scale Production Contract in FY 97.

FAAD C2I participated in the following tests/demonstrations since the last SAR submission: Joint Technical Information Distribution System (JTIDS) Limited Users Test, Fort Huachuca, AZ, Jan - Feb 97; Task Force (TF) XXI Brigade Tactical Operations Center (TOC) and FAAD C2 Exhibit at the Association of the United States Army Symposium, Fort Monmouth, NJ, May 97; TF XXI Advanced Warfighting Experiment (AWE), National Training Center, Fort Irwin, CA, May 97; an AWE briefing for the House Armed Services Committee and Senate was conducted at Fort Hood, TX, Jun 97; the All Service Combat Identification Evaluation Team (ASCIET) 1997 Exercise at Camp Shelby, MS, Aug - Sep 97, with soldiers from the 3rd MECH ID, 82d Airborne Div, 101st Air Assault Div, and 10th Mountain Div, interoperating with the Air Force Airborne Warning and Control System (AWACS) and Navy E-2C Hawkeye using their JTIDS radios; the FAAD C2 and Low Level Air Picture Interface/Forward Area Shelterized Tactical (LLAPI/FAST) Tower System Communications Test conducted Oct 97, Munich, GE; the FAAD C2 (Block III) System

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7. Executive Summary (Cont'd):

and the Air and Missile Defense Planning and Control System successfully participated in the Division XXI Advanced Warfighting Experiment at the 4th Infantry Division, Fort Hood, TX, Nov 97; Sentinel Production Verification Performance Test (Electronic Countermeasure/Electronic Counter-Countermeasure testing and Identification Friend or Foe demonstration) at White Sands Missile Range (WSMR), May 97, and the Logistics Demonstration at Redstone Arsenal, AL, May 97; the Sentinel Reliability Demonstration at WSMR was completed May 97.

Program Budget Decision 745 increased Other Procurement, Army (OPA) FAAD C2 funding of \$29.5M to accomplish fielding of five additional National Guard Corps Missile Battalions, and Sentinel was increased by \$50.1 to include funds for 21 additional radars.

The following International Programs exist: A Memorandum of Understanding between the U.S. and Germany for the Low Level Air Picture Interface/FAST Program; a Foreign Military Sales (FMS) Case between Sentinel and the Government of Turkey. Potential future FMS cases for FAAD C2 and Sentinel: Turkey, Portugal, and Taiwan.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. Nunn-McCurdy Unit Cost:

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

c. Explanation of Breach:

Increased Other Procurement, Army (OPA) FAAD C2 funding by \$29.5M to accomplish fielding of five additional National Guard Corps Missile Battalions, and Sentinel was increased by \$50.1 to include funds for 21 additional radars. Also, the increases in Block III functional requirements through participation in the army digitization effort and programmatic requirements to increase commonality/joint interoperability have delayed the completion of Block III and the initiation of Block IV as scheduled. A Program Deviation Report and revised Acquisition Program Baseline (APB) change request will be submitted.

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9. Schedule:

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate	
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	
System Certification Test	JUL 98	JUL 98	JUL 98	
Block III IPR	MAR 99	MAR 99	MAR 01 (Ch-1)	
FUE	JUN 99	JUN 99	JUN 01 (Ch-1)	
IOC	JUN 00	JUN 00	JUN 02 (Ch-1)	
Organic Support Capability	JUN 00	JUN 00	JUN 02 (Ch-1)	
Depot Support Capability	JUN 00	JUN 00	JUN 02 (Ch-1)	
BLOCK IV (P3I)				
Contract Award	SEP 99	SEP 99	SEP 00 (Ch-1)	
CDR Complete	OCT 00	OCT 00	OCT 01 (Ch-1)	
System Certification Test	AUG 03	AUG 03	AUG 04 (Ch-1)	
FUE	MAY 04	MAY 04	MAY 05 (Ch-1)	
IOC	AUG 05	AUG 05	AUG 06 (Ch-1)	
Organic Support Capability	SEP 05	SEP 05	SEP 06 (Ch-1)	
Depot Support Capability	SEP 05	SEP 05	SEP 06 (Ch-1)	

b. Current Change Explanations --

(Ch-1)- Battlefield digitization and integration of the Defense Information Infrastructure (DII) Common Operating Environment (COE) software infrastructure will delay the following schedule milestones:

Milestone	From	To
BLOCK III (Objective)		
Block III IPR	MAR 99	MAR 01
FUE	JUN 99	JUN 01
IOC	JUN 00	JUN 02
Organic Support Capability	JUN 00	JUN 02
Depot Support Capability	JUN 00	JUN 02
BLOCK IV (P3I)		
Contract Award	SEP 99	SEP 00
CDR Complete	OCT 00	OCT 01

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FAAD C2I, December 31, 1997

9b. Schedule (Cont'd):

System Certification Test	AUG 03	AUG 04
FUE	MAY 04	MAY 05
IOC	AUG 05	AUG 06
Organic Support Capability	SEP 05	SEP 06
Depot Support Capability	SEP 05	SEP 06

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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->				
C**2-> FU) (m) w/1				
sigma)				
Initial track	6.0	6.0 / 6.0	<=1.5	6.0
report delivery				
time to FU				
(sec)				
Air Defense	30	30 / 30	<=7.5	30
Warning				
Weapons Control	30	30 / 30	<=7.5	30
Order				
Sensor Management	30	30 / 30	<=7.5	30
Probability of	.90	.90 / .90	>=.91	.90
correct target ID				
passed to FU				
Shelterized	30	30 / 30	<=30	30
subsystem march				
order and emplace-				
ment 90% of time,				
non-remoted equip				
(less EPLRS and				
JTIDS mast antenna)				
(min)				
Identification	AWACS	AWACS / AWACS	MET	AWACS
Friend or Foe	Proced-	Proced- / Proced-		Proced-
Methods	ural	ural / ural		ural
	Mark	Mark / Mark XII		Mark
	XII	XII /		XII
Simultaneous Air	210	210 / 110	210	210
Vehicle Track &				
Display @ ABMOC				

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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>
BLOCK III (Objective)				
Target (Non- maneuvering)	158-390 (x,y)	158-390 / 204-449 (x,y) / (x,y)	TBD	158-390 (x,y)
positional accuracy reported to a Fire Unit (FU) with range of air defense sensor inputs (Path=Sensor-> C**->FU) (m) w/1 sigma	165-559 (z)	165-559 / 257-4000 (z) / (z)		165-559 (z)
Initial Track Report delivery time to FU (sec)	6.0	6.0 / 6.0	TBD	6.0
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 Correct Target ID Identification	.9	.9 / .9	TBD	.9
Friend or Foe methods	AWACS Preced- ural Mark XII	AWACS / AWACS Preced- / Preced- ural / ural Mark / Mark XII / XII	TBD	AWACS Preced- ural Mark XII
Simultaneous Air Vehicle track and display @ ABMOC	210	210 / 100	TBD	210
BLOCK IV (P3I)				
Target (non-maneuvering)	158-390 (x,y)	158-390 / 204-449 (x,y) / (x,y)	TBD	158-30- (x,y)
position accuracy reported to a Fire Unit (FU) with range of air defense sensor inputs (Path=Sensor-> C**2I->FU) (m) w/1 sigma	165-559 (z)	165-559 / 257-4000 (z) / (z)		165-559 (z)
Initial track report delivery time to FU (sec)	6.0	6.0 / 6.0	TBD	6.0
Air Defense Warning	30	30 / 30	TBD	30
Weapons Control Order	30	30 / 30	TBD	30

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10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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 Proced- ural Mark XII	AWACS / AWACS Proced- / Proced- ural / ural Mark / Mark XII / XII	TBD	AWACS Proced- ural Mark XII
Simultaneous Air Vehicle track and display @ ABMOC	210	210 / 100	TBD	210

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)	466.2	466.2	510.0
Procurement	593.6	628.4	788.7
Flyaway	(481.3)		(688.1)
Other Weapon System Costs	(74.5)		(71.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(37.8)		(29.6)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	1059.8	1094.6	1298.7
Escalation	67.4	32.6	59.4
Development (RDT&E)	(-8.5)	(-8.5)	(-8.4)
Procurement	(75.9)	(41.1)	(67.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1127.2	1127.2	1358.1

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.

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FAAD C2I, December 31, 1997

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

b. Quantity --

Development (RDT&E)	1	1	1
Procurement	14	14	18
Total	15	15	19

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 93-98 - \$4.4M.

The Sentinel 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.

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (JUN 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	1094.6	1298.7	
(2) Quantity	15	19	
(3) Unit Cost	72.973	68.353	-6.33
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	628.4	788.7	
(2) Quantity	14	18	
(3) Unit Cost	44.886	43.817	-2.38

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	457.7	669.5	-	1127.2
Previous Changes:				
Economic	-2.9	-17.3	-	-20.2
Quantity	-	-	-	-
Schedule	-	-45.7	-	-45.7
Engineering	-	+6.0	-	+6.0
Estimating	+33.7	+74.8	-	+108.5
Other	-	-	-	-
Support	-	-26.9	-	-26.9
Subtotal	+30.8	-9.1	-	+21.7
Current Changes:				
Economic	-4.6	-13.4	-	-18.0
Quantity	-	+82.3	-	+82.3
Schedule	-	+6.9	-	+6.9
Engineering	+7.6	+85.1	-	+92.7
Estimating	+10.1	+24.6	-	+34.7
Other	-	-	-	-
Support	-	+10.6	-	+10.6
Subtotal	+13.1	+196.1	-	+209.2
Total Changes	+43.9	+187.0	-	+230.9
Current Estimate	501.6	856.5	-	1358.1

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	-	+5.2	-	+5.2
Estimating	+28.4	+57.4	-	+85.8
Other	-	-	-	-
Support	-	-20.0	-	-20.0
Subtotal	+28.4	+11.8	-	+40.2
Current Changes:				
Quantity	-	+74.6	-	+74.6
Schedule	-	+10.2	-	+10.2
Engineering	+6.0	+70.2	-	+76.2
Estimating	+9.4	+19.8	-	+29.2
Other	-	-	-	-
Support	-	+8.5	-	+8.5
Subtotal	+15.4	+183.3	-	+198.7
Total Changes	+43.8	+195.1	-	+238.9
Current Estimate	510.0	788.7	-	1298.7

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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>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-4.6
Digitization of FAAD C2 with Force XXI	+6.0	+7.6
Battle Command Brigade and Below (FBCB2)		
(Engineering)		
Adjustment for Current and Prior	+0.6	+0.6
Inflation. (Estimating)		
Additional Operational Test for FAAD C2	+2.4	+2.8
Block III (Estimating)		
Added requirement for FAAD TRW Settlement	+1.6	+1.9
(Estimating)		
Added for Sentinel P3I effort. (Estimating)	+4.8	+4.8
	0.0	0.0
RDT&E Subtotal	+15.4	+13.1
(2) <u>Procurement</u>		
Adjustment for current escalation indices.	N/A	-13.4
(Economic)		
Increase of 4 units, from 14 to 18. (Quantity)	+27.8	+30.7
Allocation to Estimating variance resulting	+2.7	+2.8
from FAAD C2 quantity change. (Estimating)		
Allocation to Engineering variance resulting	+0.2	+0.2
from FAAD C2 Quantity Change. (Engineering)		
Allocation to Schedule variance resulting	-1.1	-1.2
from FAAD C2 Quantity Change. (Schedule)		
Quantity Variance resulting from increase of	+46.8	+51.6
21 Sentinel radars. (Quantity)		
Allocation to Engineering resulting from	-3.3	-3.6
Sentinel quantity change. (Engineering)		
Acceleration of annual procurement buy	0.0	-2.9
profile. (Schedule)		
Change in annual Sentinel procurement buy	0.0	-3.1
profile. (Schedule)		
Procure and field FAAD C2 CHS 2 workstations	+8.3	+10.0
and handhelds for the first five units		
(Engineering)		
Procure and field the 10 year rebuy of	+51.4	+62.1
FAAD C2 CHS equipment. (Engineering)		
Procure and field EPLRS installation kits in	+13.6	+16.4
place of SINCGARS for FAADC2 divisions.		
(Engineering)		
Adjustment for Current and Prior Inflation.	+3.4	+3.6
(Estimating)		
FAAD C2 Post Production Software Support	+8.3	+12.8
changed from OMA to OPA funded. (Estimating)		
Accelerated Sentinel schedule. (Schedule)	+11.3	+14.1

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Plus-up for Tactical Operations Center (TOC) support. (Estimating)	+5.4	+5.4
Adjustment for current and prior inflation. (Support)	+0.5	+0.5
Added FAAD C2 Initial Spares due to quantity increase. (Support)	+4.9	+5.9
Added FAAD C2 Spares requirement due to quantity increase. (Support)	+0.9	+1.0
Added FAADC2 Other Weapon System requirement due to quantity increase. (Support)	+1.9	+2.8
Added Sentinel initial spares due to quantity increase. (Support)	+2.2	+2.2
Added Sentinel Other Weapons Systems Cost due to quantity increase. (Support)	-1.9	-1.8
Procurement Subtotal	+183.3	+196.1

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	
75.15	-2.01	-11.49	-2.04	+5.19	+7.54	--	-0.86	-3.67	71.48

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	-1.71	-6.04	-2.16	+5.06	+5.52	--	-0.91	-0.24	47.58

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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	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	1358.1
Total Quantity	N/A	N/A	15	19
Prog Acq Unit Cost	N/A	N/A	70.65	71.48

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

a. Procurement --

Sentinel:
Raytheon Company, Fullerton, CA
DAAH01-91-C-0002, FFP
Award: January 31, 1995
Definitized: January 31, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$158.4	\$	62

Current Contract Price		
Target	Ceiling	Qty
\$158.4	\$	62

Estimated Price At Completion	
Contractor	Program Manager
\$158.4	\$158.4

Explanation of Change:

None.

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

FAAD C2I (f/Blk III):
TRW Defense Systems Group, Carson City CA
DAAH01-94-C-5199, CFI
Award: September 8, 1994
Definitized: August 29, 1995

Initial Contract Price		
Target	Ceiling	Qty
\$43.9	N/A	0

Current Contract Price		
Target	Ceiling	Qty
\$46.4	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$45.8	\$45.1

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.1	\$-0.6
Cumulative Variances To Date (01/23/98)	\$0.9	\$-0.7
Net Change	\$0.8	\$-0.1

Explanation of Change:

Schedule Slip due to late government furnished equipment.

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 (FY00-07)</u>	<u>Total</u>
RDT&E	344.7	21.2	9.3	126.4	501.6
Procurement	332.2	88.6	80.4	355.3	856.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	676.9	109.8	89.7	481.7	1358.1

b. Annual Summary -- Blocks II/III/IV

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>
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				41.6	41.4
1996				22.0	22.3
1997				19.0	19.6
1998				20.3	21.2
1999				8.8	9.3
2000				12.1	13.1
2001				15.6	17.1
2002				23.3	26.0
2003				17.3	19.7
2004				8.8	10.3
2005				24.0	28.6
2006				9.5	11.6

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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 \$
Subtotal	1			510.0	501.6

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	59.7	78.5	79.7
1996	4	0.6	95.4	109.5	112.4
1997	4	0.2	105.6	118.4	123.6
1998	3		71.0	83.7	88.6
1999	2		62.4	74.9	80.4
2000	2		51.4	55.7	60.8
2001	2		39.5	42.7	47.5
2002			36.4	39.5	44.7
2003			34.4	36.1	41.5
2004			44.9	48.5	57.3
2005			41.9	48.8	58.9
2006			32.6	32.6	40.2
2007			3.2	3.2	4.1
Subtotal	18	2.1	686.0	788.7	856.5

Recurring dollars in FY00-06 are for Sentinel (sensors) and FAAD C2 (Block III Workstations), EPLRS installation kits, and CHS-2 rebuys.

PM-SICPS controlled costs for Standard Integrated Command Post System (SICPS), which is Government Furnished Equipment (GFE) for FAAD C2I program, are included in the FAAD C2 current estimate.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	19	2.1	686.0	1298.7	1358.1

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17. Delivery/Expenditure Information:

a. Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	1	1
Procurement	3	3

Percent Total Program Quantities Delivered: 21.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 502.3

Percent Total Program Expended: 37.0%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The Mission Pay and Allowances cost includes the direct costs to support the primary personnel and to operate the system. The other O&S costs include unit level consumption intermediate maintenance, depot maintenance, contractor support, and sustaining support for the TCU suites, and all ancillary equipment to include the GFE such as trucks, shelters, generators, etc. All costs were taken from the approved ASARC Program Office Estimate (POE) (April 1995).

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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N-2 AIM-9X

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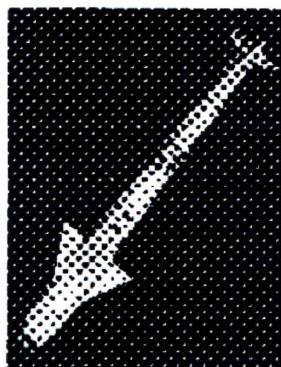
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: AIM-9X

AS OF DATE: December 31, 1997

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AS AMENDED
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FOR OPEN PUBLICATION

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

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:
Program Executive Officer (PMA259) CAPT Thomas MacKenzie
47123 Buse Road Unit IPT, Suite 451 Assigned: January 31, 1995
Patuxent River, MD 20670-1547 DSN 757-7311; COMM (301)757-7311
MACKENZIE.TL.JFK@NAVAIR.NAVY.MIL
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0207161F Project 4132
(U) PE 0207161N Project 0457
(U) PE 0603715D Project W0456

No Security Objection
to Open Publication
(AS AMENDED)
98-5-949
MAR 24 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

~~Derived from:~~

~~Downgrade instructions: Sidelinder AIM-9X Mal Security Classification of 10/15/96~~

~~Declassify on: Y2~~

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5. (U) References:

SAR Baseline (Development Estimate):

(U) USD(A&T) AIM-9X Acquisition Decision Memorandum dated December 16, 1994.

Approved Program:

(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, a fielded system, qualifying this as a research category operational systems development. Improvements in missile seeker and kinematics allow retrofit of components to current missiles to the maximum extent possible. Retrofitting of components will extend the operational effectiveness of existing inventories at an affordable cost while continuing evolution of the AIM-9 series.

7. (U) Executive Summary:

(U) Demonstration/Validation contracts were awarded December 20, 1994 to Raytheon Company and Hughes Aircraft Company and completed June 30, 1996. 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. 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) was staffed in accordance with direction from the ADM that the cost and schedule sections be revised after the contract was awarded.

The Captive Test Unit (CTU) flight test (DT-IIA) was initiated on 12 May 1997 at NAWC-China Lake. Phase I of Developmental Test (DT-IIA) completed in December 1997 and Phase II of DT-IIA is scheduled to commence in March 1998. An Affordability/Producibility integrated product team (IPT) is working with a focus on engineering to reduce end item unit cost and life cycle costs. This IPT also looks at Cost As an Independent Variable (CAIV) for potential cost-performance trades. A formal Risk Mitigation Program has been successfully implemented between Hughes and the Government. Design Review I (DR I = Preliminary Design Review) was successfully completed 15 July 1997. An emerging OSD program protection policy has resulted in an AIM-9X anti-tamper requirement.

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

In December 1997, Hughes Missile Systems Company became Raytheon Missile Systems Company as a result of Raytheon's acquisition of Hughes.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 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
Critical Design Review	JUL 98	JUL 98	MAR 98 (Ch-1)
IOT&E			
Complete	AUG 01	AUG 01	AUG 01
LRIP DAB Decision	APR 00	APR 00	APR 00
Milestone III SAE Review	MAR 02	MAR 02	MAR 02
Initial Operational Capability	(b)(1)		

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

b. Current Change Explanations --

(U) (CH-1) Revised from July 1998 to March 1998 due to efficiencies in the contractor's design effort. The contractor has produced data to establish the functional baseline required for the critical design.

10. (U) Performance Characteristics:

a. Performance --

Day/Night Capability	Development	Approved	Demon-	Current
	Estimate (SAR)	Program (APB)	strated	Estimate
	Yes	Obj/Threshold	Perf	Yes
(b)(1)	Yes	Yes / Yes	TBD	Yes

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AIM-9X, December 31, 1997

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Cueing/Verification	Inter- face to all current and planned aircraft systems which provide accurate Line of Site to target	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 target / System	TBD	Inter- face to all current and planned aircraft systems which provide accurate Line of Site to target
(S) Acquisition (deg.)	(b)(1)			
(S) Track (deg.)				
(S) Launch (deg.)				
(S) Probability of Kill				
(S) Captive Carry Reliability (hr.)				
(S) Incoming Missile Reliability	(b)(1)			
Detect Non-				
Operational Missile (BIT) All Components				

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AIM-9X, December 31, 1997

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Detect Non- Operational Missile (BIT-able Components)	>.or.= 0.95	>.or.= / >.or.= 0.95 / 0.90	TBD	>.or.= 0.95
False Alarm Rate	<.or.= .01	<.or.= / <.or.= .01 / 0.01	TBD	<.or.= .01
BIT Time (sec)	<.or.=20	<.or.=20/ <.or.=20	TBD	<.or.=20

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)	531.4	531.4	520.5
Procurement	1932.6	1932.6	2072.5
Flyaway	(1677.2)		(2019.8)
Other Weapons Systems	(138.2)		(0.0)
Peculiar Support	(78.1)		(36.7)
Initial Spares	(39.1)		(16.0)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 97 Base-Year \$	2464.0	2464.0	2593.0
Escalation	768.9	768.9	657.9
Development (RDT&E)	(22.1)	(22.1)	(15.2)
Procurement	(746.8)	(746.8)	(642.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	3232.9	3232.9	3250.9

(U) Note: The LRIP quantities approved at Milestone II are 150 (1st year) and 250 (2nd year). This does not represent more than 10% of the planned program buy.

Funding for Seek Eagle is not included here; it is in a separate program element and managed at Eglin AFB.

b. (U) Quantity --

Development (RDT&E)	49	49	49
Procurement	10000	10000	10000
Total	10049	10049	10049

c. (U) Foreign Military Sales --

There has been considerable international interest in the AIM-9X. Introductory briefs have been given to Australia, Norway, Belgium, Denmark,

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

the Netherlands, Sweden, Canada, and Switzerland. Policy documents are in review for AIM-9X releasability.

d.. (U) Nuclear Costs --
None.

12. (U) Unit Cost Summary:

	UCR Baseline (DEC 96 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 97 BY\$)	2464.0	2593.0	
(2) Quantity	10049	10049	
(3) Unit Cost	0.245	0.258	+5.31
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 97 BY\$)	1932.6	2072.5	
(2) Quantity	10000	10000	
(3) Unit Cost	0.193	0.207	+7.25

13. (U) Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Development Estimate	553.5	2679.4	-	3232.9
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-12.7	-169.4	-	-182.1
Quantity	-	-	-	-
Schedule	+8.9	-	-	+8.9
Engineering	+19.1	+149.4	-	+168.5
Estimating	-33.1	+240.1	-	+207.0
Other	-	-	-	-
Support	-	-184.3	-	-184.3
Subtotal	-17.8	+35.8	-	+18.0
Total Changes	-17.8	+35.8	-	+18.0
Current Estimate	535.7	2715.2	-	3250.9

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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
Development Estimate	531.4	1932.6	-	2464.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+0.1	-	+0.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+0.1	-	+0.1
Current Changes:				
Quantity	-	-	-	-
Schedule	+8.5	-	-	+8.5
Engineering	+18.4	+114.8	-	+133.2
Estimating	-37.8	+143.7	-	+105.9
Other	-	-	-	-
Support	-	-118.7	-	-118.7
Subtotal	-10.9	+139.8	-	+128.9
Total Changes	-10.9	+139.9	-	+129.0
Current Estimate	520.5	2072.5	-	2593.0

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-12.7
Additional cost accrued to maintain schedule. (Schedule)	+8.5	+8.9
Increased program requirements (additional captive carry flights, anti-tamper, bit reprogrammer) (Engineering)	+18.4	+19.1
Revised cost of Government engineering/program management. (Estimating)	-43.7	-46.3
Adjustment for current and prior year inflation. (Estimating)	+5.9	+13.2
RDT&E Subtotal	-10.9	-17.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-169.4
Increased program requirements (anti-tamper, bit reprogrammer) (Engineering)	+114.8	+149.4
Revised estimate of Government engineering/program management and hardware contractor support. (Estimating)	+109.1	+165.1
Revised acquisition of test equipment and bit reprogrammer. (Estimating)	-84.1	-109.3

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Correction to align flyaway and support costs. (Support)	-118.7	-184.3
Correction to align flyaway and support costs. (Estimating)	+118.7	+184.3
	0.0	0.0
Procurement Subtotal	+139.8	+35.8

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	
0.32	-0.02	--	--	+0.02	+0.02	--	-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	
0.27	-0.02	+0.01	--	+0.01	+0.02	--	-0.02	--	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
FUE/IOC	(b)(4)	(b)(4)	(b)(4)	(b)(4)
Total Cost	695	3232.9	N/A	3250.9
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 --		Initial Contract Price		
(U) AIM-9X:		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Hughes Aircraft Co., Tuscon, AZ				
N00019-97-C-0027, CPIF/AF		\$169.2	\$0.0	49
Award: December 13, 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>
\$173.3	\$0.0	49	\$173.3	\$191.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/17/97)	\$-0.8	\$-2.8
Net Change	\$-0.8	\$-2.8

Explanation of Change:

(U) Hughes' unfavorable variances are due to the following: software/algorithms, power conversion unit/battery, flight certification and the Control Actuation System (CAS). Software/algorithms efforts are behind schedule, however, early phases of a work-around schedule to maintain the test asset delivery are meeting expectations. The power conversion unit is causing a space/volume constraint issue. This is being worked so as not to impact the test asset delivery schedule. Preliminary redesign efforts appear to be a feasible solution. The battery is experiencing a power factor problem at lower temperatures (redesign of the chemical make-up of the battery is underway). This will not impact test asset delivery. Priority scheduling of Government wind tunnel testing facility is impacting F-15 flight certification. Priorities will be worked to resolve support flight certification for the Separation Control Test Vehicle (SCTV) launches. A program round vehicle firing occurred in October 1997; power shortages associated with the CAS (a sub-system of the program round vehicle) resulted in a failure to perform expected flyout. The CAS problem will have minimal program impact, corrective measures will be verified with the SCTVs and incorporated into the tactical design.

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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 (FY00-17)</u>	<u>Total</u>
RDT&E	167.8	109.1	118.9	139.9	535.7
Procurement	-	-	-	2715.2	2715.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	167.8	109.1	118.9	2855.1	3250.9

b. Annual Summary -- AIM9X

Appropriation: 0400 RDT&E, Defense Agencies

<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>
1995				47.5	46.4
Subtotal				47.5	46.4

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

<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>
1996				28.3	28.1
1997				44.9	45.3
1998				56.5	57.9
1999				63.4	65.9
2000				40.4	42.7
2001				19.4	20.9
2002				8.9	9.7
2003				5.5	6.1
Subtotal	26			267.3	276.6

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>
1996				18.9	18.8
1997				28.9	29.2
1998				50.0	51.2

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

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 \$
1999				51.0	53.0
2000				38.6	40.8
2001				15.8	17.0
2002				2.5	2.7
Subtotal	23			205.7	212.7

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	4.5	22.5	29.7	32.0
2001	125	2.2	26.7	32.4	35.5
2002	300	4.5	48.6	55.5	62.0
2003	300	2.0	54.4	58.2	66.4
2004	300	8.2	53.9	63.9	74.5
2005	300	8.3	53.3	64.9	77.4
2006	300	7.8	52.5	62.1	75.6
2007	300	7.9	52.1	61.7	76.8
2008	300	7.6	51.6	61.0	77.6
2009	300	7.7	54.2	63.6	82.7
2010	300	8.4	58.3	68.4	90.9
2011	300	8.2	58.0	67.9	92.2
2012	300	8.2	57.6	67.5	93.7
2013	300	8.2	57.3	67.3	95.4
2014	300	8.1	56.8	66.7	96.7
2015	300	8.1	56.5	66.3	98.2
2016	300	8.1	56.3	66.1	100.1
2017	300	7.9	56.0	64.0	99.0
Subtotal	5000	125.9	926.6	1087.2	1426.7

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	4.6	22.7	29.9	32.2
2001	125	2.3	26.9	32.6	35.7
2002	300	4.1	48.4	55.8	62.3
2003	300	1.0	54.9	59.3	67.7
2004	300	1.2	54.3	58.7	68.5

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

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 \$
2005	300	3.3	54.0	58.8	70.1
2006	300	3.2	53.3	56.6	68.9
2007	300	3.2	52.5	55.7	69.3
2008	300	3.1	51.8	55.0	70.0
2009	300	3.1	51.4	54.5	70.8
2010	300	3.2	50.9	54.3	72.1
2011	300	3.2	52.4	55.6	75.5
2012	300	3.3	56.7	60.1	83.4
2013	300	3.3	55.7	59.0	83.7
2014	300	3.4	59.7	63.1	91.5
2015	300	3.4	55.7	59.1	87.5
2016	300	3.3	55.4	58.8	89.0
2017	300	3.3	55.1	58.4	90.3
Subtotal	5000	55.5	911.8	985.3	1288.5

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
OSD				47.5	46.4
Navy	5026	125.9	926.6	1354.5	1703.3
USAF	5023	55.5	911.8	1191.0	1501.2
Grand Total	10049	181.4	1838.4	2593.0	3250.9

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): \$ 158.4

(U) Percent Total Program Expended: 4.9%

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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 the Operating and Support costs are as of December 1997. Mission pay and allowance costs are the direct costs for the primary mission personnel and the costs to operate this joint service air-to-air missile (excluding base operating support). The estimate assumes 12 carriers deployed per year at 300 missiles per carrier (beginning in the third year of operations). Unit level consumption primarily relates to the annual training firings and transportation receipt, segregation, storage and issue (RSSI). The system is procured with an all-up-round (AUR) warranty of 2000 hours or 120 months, whichever come first, on all contractor furnished equipment (CFE). Depot AUR maintenance is limited to component repair of failed Government furnished equipment (GFE) and 2nd destination transportation. The AOTD, rocket motor, and warhead are to be provided as GFE. The cost estimate considers a fifteen (15) year service life and spans a thirty-three (33) year time period. Contractor support is required to repair out of warranty and voided warranty AURs. This cost includes the required AUR repairs, software support, and technical publication revisions. The sustaining support consists of replenishment spares, support equipment replacement, systems engineering and program management, and missile demilitarization. Intermediate maintenance and indirect costs are as noted.

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	0.0	0.3
Contractor Support	1.9	1.9
Sustaining Support	3.5	3.5
Indirect Costs	N/A	N/A
Total	6.4	7.7

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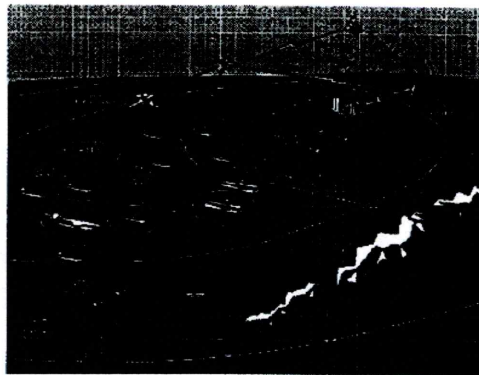
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: CEC

AS OF DATE: December 31, 1997

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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 CAPT Daniel E. Busch
Air Defense) Cooperative Engagement Assigned: September 22, 1997
2531 Jefferson Davis Highway DSN 332-7413; COMM (703) 602-7413
Arlington, VA 22242-5170

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

RDT&E:

(U) PE 0204152N (Shared) Project E0463 (Shared)
(U) PE 0603658N Project U2039, U2394
(U) PE 0603755N (Shared) 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)

No Security Objection
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~~(AS AMENDED)~~
98-5-0648
MAR 24 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

AS AMENDED
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~~Derived from:~~

~~Downgrade instructions: CEC SECURITY CLASSIFICATION GUIDE OF 6 DEC 94~~

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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 3, 1997.

6. (U) Mission and Description:

(U) Cooperative Engagement Capability (CEC) significantly improves Battle Force air and missile defense capabilities by coordinating measurement data from all battle force air search sensors into a single, real-time, composite track picture. 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 (relative spatial positioning) 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 and area 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 convert sensor data from each CU to output data which can be utilized for real-time target tracking by all cooperating units. The data is passed to the ships' combat system and the ship can then cue its onboard sensors for fire control and target prosecution, or use the fire control quality data from other units through CEC to engage targets without tracking by ownship sensors.

7. (U) Executive Summary:

(U) IOT&E: COMOPTEVFOR report of Initial Operational Testing and Evaluation (IOT&E) of AN/USG-2 equipment was issued 2 December 1997 and indicated that CEC has the potential to be operationally effective and operationally suitable. The CEC hardware performed as designed during the test period. However, interoperability between combat systems and tactical data links was noted as a major concern. ACDS Block 1 software reliability and the AN/UYQ-70 display performance were major contributors to the problems experienced during the test period.

System Deliveries: The Navy accepted delivery of 11 AN/USG-1 and 8 AN/USG-2 units produced under terms of the E&MD contract with Raytheon/E-Systems, Inc.

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

The equipment was delivered to various ships and Land Based Test Sites and supported Initial Operational Test and Evaluation (IOT&E) of the CEC system conducted May-August 1997.

An In-Process Review (IPR) of preparations for scheduled CEC IOT&E testing (DT-IIB/OT-IIA1) was conducted 25 March 1997 at the Applied Physics Laboratory, Johns Hopkins University. The major issue identified with potential impact to the scheduled testing was related to readiness of ACDS Baseline 1 software.

Test Schedule: Because of the difficulty in simultaneously developing and testing ACDS Block 1, CEC and AEGIS Baseline 6 software, and the uncertain availability of ships for Battle Group interoperability testing during the OPEVAL period, additional test periods being considered to reduce risk. CEC OPEVAL phase 1 is planned to be carried out in mid 1998 following an extensive series of at sea engineering and TECHEVAL testing. OPEVAL phase 2 is planned to take place in mid 1999 using two full CEC equipped battlegroups along with land based test sites and CEC equipped aircraft. This test phase will stress the CEC system with the maximum number and challenging targets. The milestone III decision will follow later.

Production Schedule: A decision to begin Low Rate Initial Production (LRIP) of the CEC AN/USG-2 is anticipated in early 1998. Contract award is planned shortly thereafter to meet targeted ship installation schedules. Pending ASN(RD&A)'s decision, the LRIP will provide for four units immediately with subsequent procurement phased in after satisfactory completion of required evaluations and tests.

Airborne System Integration: An In-Process Review (IPR) of the CEC airborne AN/USG-3 system to be integrated with E-2C aircraft was conducted 19 May 1997 at Raytheon/E-Systems, Inc. A Critical Design Review (CDR) of the airborne transceiver was also conducted 20-21 May 1997. No issues were identified with potential major impact to the airborne system development.

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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	Yes
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	Yes
-- Average Procurement Unit Cost (APUC)	Yes

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 an APB schedule breach in Milestone III and the Full Rate Production Contract Award due to delay in completion of OPEVAL. Additional testing will be required in 1999.

* There is an APB cost breach due to Congressional increase, quantity increases, support of equipment and refinement of learning curve.

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-IIA1)			
Start	MAY 97	MAY 97	MAY 97
Complete	JUL 97	AUG 97	AUG 97
LRIP Decision	DEC 97	DEC 97	FEB 98 (Ch-1)
Low Rate Production Contract Award	JAN 98	JAN 98	MAR 98 (Ch-1)
Service Final DT&E			
Start	MAR 98	MAR 98	MAR 98
Complete	APR 98	APR 98	JUN 98 (Ch-2)
IOT&E - OPEVAL (OT-IIA2)			
Start	MAY 98	APR 98	JUN 98 (Ch-2)
Complete	MAY 98	AUG 98	JUL 98 (Ch-2)
Milestone III	OCT 98	OCT 98	DEC 99 (Ch-3)

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Full Rate Production Contract Award	NOV 98	NOV 98	FEB 00	(Ch-3)
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	
FOT&E-1 (DTIIIA/OT-IIIA)E-2C				
Start	N/A	NOV 00	NOV 00	
Complete	N/A	MAR 01	MAR 01	
FOT&E-2 (DTIIIA/OT-IIIA)E-2C				
Start	N/A	DEC 02	DEC 02	
Complete	N/A	APR 03	APR 03	
AIR IOC	N/A	DEC 02	DEC 02	
Start	N/A	NOV 00	MAY 01	
Complete	N/A	MAR 01	SEP 01	
Start	N/A	DEC 02	JUN 03	
Complete	N/A	APR 03	OCT 03	
AIR IOC	N/A	DEC 02	JUN 03	

b. Current Change Explanations --

- (U) (CH-1) LRIP decision and contract award dates were moved to accommodate program review schedule.
- (CH-2) TECHEVAL now scheduled for June 98 with OPEVAL in July 98.
- (CH-3) Milestone III and Full Rate Production Contract Award moved to accommodate July 98 OPEVAL and subsequent analysis.

10. (U) Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Track Base Size	(b)(1)			
(S) Track Measurement				
Update Rate (1/sec)				
(S) Local				
(S) Remote				
Operational				
Availability				
(S) Data Rate (without any Compression Technology Implemented) (Mbps)				
(S) Anti-jam Resistance (kW/MHz) (b)(1)				

(U) - Developmental and Operational Testing of the AN/USG-2 system was conducted May-Aug 1997 off the Virginia Coast.

- COMOPTEVFOR report of Initial Operational Testing and Evaluation (IOT&E)

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

of AN/USG-2 equipment indicated that CEC has the potential to be operationally effective and operationally suitable. The CEC hardware performed as designed during the test period. Interoperability between combat systems and tactical data links was AN/UYQ-70 display performance were major contributors to the problems experienced during the test period.

- Because of the difficulty in simultaneously developing and testing ACDS Block 1, CEC and AEGIS Baseline 6 software, and the uncertain availability of ships for Battle Group interoperability testing during the OPEVAL period, additional test periods are being considered to reduce risk. CEC OPEVAL phase 1 is planned to be carried out in mid-1998 following an extensive series of at-sea engineering and TECHEVAL testing. OPEVAL phase 2 is planned to take place in mid-1999 using two full CEC equipped battle groups along with land based test sites and CEC equipped aircraft. This test phase will stress the CEC system targets. The Milestone III decision will follow later.

b. Current Change Explanations --
(U) 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)	1030.4	1202.0	1386.7
Procurement	1150.3	1490.6	1699.3
Rollaway	(677.3)		(0.0)
Flyaway			(1050.1)
Total Flyaway	(677.3)		(1050.1)
Other Weapon Systems Co.	(473.0)		(0.0)
Other Wpn Sys			(649.2)
Total Other Wpn Sys	(473.0)		(649.2)
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	47.3	47.3
Total FY 95 Base-Year \$	2221.9	2739.9	3133.3
Escalation	351.2	424.6	442.8
Development (RDT&E)	(57.8)	(68.1)	(72.1)
Procurement	(280.3)	(346.6)	(362.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(13.1)	(9.9)	(7.9)
Total Then Year \$	2573.1	3164.5	3576.1

(U) A Program Deviation Report has been initiated. A proposed APB will be submitted within 30 days. The Deviation is due to Congressional increase and PR99 adjustments in RDT&E. The procurement deviation is due to quantity increases, congressional plus-up, and support of equipment and refinement of learning curve.

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

b. (U) Quantity --	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	9	11	11
Procurement	174	216	215
Total	183	227	226

(U) * There are 14 LRIP units. Procurement year is in FY98 and FY99.

(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 and engagement data, 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 convert sensor data from each CU to output data which can be utilized for real-time target tracking by all cooperating units. The data is passed to the ships' combat system and the ship can then cue its onboard sensors for fire control and target prosecution, or use the fire control quality data from other units through CEC to engage targets without tracking by ownship sensors.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (JUL 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BY\$)	2739.9	3133.3	
(2) Quantity	227	226	
(3) Unit Cost	12.070	13.864	+14.86
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BY\$)	1490.6	1699.3	
(2) Quantity	216	215	
(3) Unit Cost	6.901	7.904	+14.53

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	1088.2	1430.6	-	54.3	2573.1
Previous Changes:					
Economic	-6.9	-28.0	-	-3.1	-38.0
Quantity	+8.0	+95.1	-	-	+103.1
Schedule	-	+33.0	-	-	+33.0
Engineering	+69.0	-	-	-	+69.0
Estimating	+111.8	+93.4	-	+6.0	+211.2
Other	-	-	-	-	-
Support	-	+117.7	-	-	+117.7
Subtotal	+181.9	+311.2	-	+2.9	+496.0
Current Changes:					
Economic	-12.7	-74.8	-	-2.1	-89.6
Quantity	-	+102.9	-	-	+102.9
Schedule	-	+7.8	-	-	+7.8
Engineering	-	-	-	-	-
Estimating	+201.4	+158.6	-	+0.1	+360.1
Other	-	-	-	-	-
Support	-	+125.8	-	-	+125.8
Subtotal	+188.7	+320.3	-	-2.0	+507.0
Total Changes	+370.6	+631.5	-	+0.9	+1003.0
Current Estimate	1458.8	2062.1	-	55.2	3576.1

(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	+7.7	+70.0	-	-	+77.7
Schedule	-	-	-	-	-
Engineering	+67.1	-	-	-	+67.1
Estimating	+96.8	+96.6	-	+6.1	+199.5
Other	-	-	-	-	-
Support	-	+77.2	-	-	+77.2
Subtotal	+171.6	+243.8	-	+6.1	+421.5
Current Changes:					
Quantity	-	+69.2	-	-	+69.2
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	+184.7	+137.0	-	-	+321.7
Other	-	-	-	-	-
Support	-	+99.0	-	-	+99.0
Subtotal	+184.7	+305.2	-	-	+489.9
Total Changes	+356.3	+549.0	-	+6.1	+911.4
Current Estimate	1386.7	1699.3	-	47.3	3133.3

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

b. (U) Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
(1)	<u>RDT&E</u>		
	Revised escalation indices. (Economic)	N/A	-12.7
	Congressional increase (74.0) for additional effort for HAWK, E2C, LAMPS, Satellites, and Marine Corps and PR99 Adjustment (153.8). (Estimating)	+179.7	+196.2
	Adjustment for current and prior inflation. (Estimating)	+5.0	+5.2
	<u>RDT&E Subtotal</u>	<u>+184.7</u>	<u>+188.7</u>
(2)	<u>Procurement</u>		
	Revised escalation indices. (Economic)	N/A	-74.8
	Adjustment to reconcile prior flyaway and support cost estimate. (Estimating)	-22.6	-29.6
	Adjustment to reconcile prior flyaway and support cost estimates. (Support)	+22.6	+29.6
	Quantity increase of 24 units, from 49 to 73 (APN) (Quantity)	+84.3	+122.9
	Quantity decrease of 7 units, from 30 to 23 (SCN) (Quantity)	-24.9	-33.1
	Quantity increase of 3 units, from 116 to 119 (OPN) (Quantity)	+9.8	+13.1
	Restructuring of procurement buy profile. (Schedule)	0.0	+7.8
	Additional support required for 20 additional units (All). (Support)	+76.4	+96.2
	Refinement of prior estimation due to adjustments made to learning curve assumptions. (Estimating)	+89.4	+111.8
	Adjustment for current and prior inflation. (Estimating)	+1.3	+1.4
	Congressional increase to procure FY98 LRIP quantities. (Estimating)	+68.9	+75.0
	<u>Procurement Subtotal</u>	<u>+305.2</u>	<u>+320.3</u>
(3)	<u>O&M</u>		
	Revised escalation indices. (Economic)	N/A	-2.1
	Refinement of prior estimate. (Estimating)	0.0	+0.1
	<u>O&M Subtotal</u>	<u>0.0</u>	<u>-2.0</u>

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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	
14.06	-0.56	-1.78	+0.18	+0.31	+2.53	--	+1.08	+1.76	15.82

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	-0.48	-0.64	+0.19	--	+1.17	--	+1.13	+1.37	9.59

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	DEC 99
FUE/IOC	N/A	N/A	N/A	N/A
Total Cost	N/A	2573.1	N/A	3576.1
Total Quantity	N/A	183	N/A	226
Prog Acq Unit Cost	N/A	14.06	N/A	15.82

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

Initial Contract Price

Target	Ceiling	Qty
\$115.0	\$0.0	9

Current Contract Price

Target	Ceiling	Qty
\$439.0	\$0.0	22

Estimated Price At Completion

Contractor	Program Manager
\$412.8	\$419.6

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-12.5	\$-14.4
Cumulative Variances To Date (12/31/97)	\$-27.3	\$-5.4
Net Change	\$-14.8	\$9.0

Explanation of Change:

(U) E-Systems unfavorable cost variance reflects the following: Material costs due to Raytheon/TR Module subcontract growth, Randtron subcontract growth and higher material costs. Also, completion of the BIT (Built-in-Test) Algorithm resulted in additional lines of code for the implementation of 95% fault isolation for non-critical and 100% for critical. The unfavorable schedule variance has improved significantly this past year. The variance has no impact on the Critical Path of the program. Nineteen of the planned nineteen units have been delivered.

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> (FY00-15)	<u>Total</u>
RDT&E	836.2	212.0	131.6	279.0	1458.8
Procurement	-	94.8	61.8	1905.5	2062.1
MILCON	-	-	-	-	-
O&M	-	-	4.4	50.8	55.2
Total	836.2	306.8	197.8	2235.3	3576.1

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				203.4	202.2
1995				151.7	153.8
1996				248.1	255.9
1997				214.0	224.3
1998				199.4	212.0
1999				121.9	131.6
2000				75.3	82.7
2001				57.9	64.7
2002				68.6	77.9
2003				46.4	53.7

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

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	11			1386.7	1458.8

Appropriation: 1506 Aircraft Procurement, Navy

Fiscal Year	Qty	Flyaway FY95 Dollars Nonrec	Flyaway FY95 Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
1997					
1998					
1999					
2000	5		19.8	29.2	32.6
2001	7		25.9	40.8	46.4
2002	9		28.8	50.8	59.0
2003	8		24.9	46.4	55.0
2004	2		7.2	16.8	20.4
2005	2		7.2	12.8	15.9
2006	4		14.0	25.1	31.8
2007	4		13.7	24.6	31.8
2008	4		13.4	24.1	31.8
2009	4		13.2	23.5	31.8
2010	4		12.8	23.0	31.8
2011	4		12.5	22.5	31.8
2012	4		12.3	22.1	31.8
2013	4		12.1	21.6	31.8
2014	4		11.8	21.1	31.7
2015	4		11.5	20.6	31.7
Subtotal	73		241.1	425.0	547.1

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		14.6	19.7	21.5
1999	1		9.7	13.1	14.5
2000	2		15.3	20.7	23.4
2001	2		13.8	18.7	21.5
2002	3		19.8	26.7	31.4
2003	4		29.2	39.5	47.4
2004	2		12.4	16.7	20.5

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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 \$
2005	2		11.9	16.1	20.2
2006	1		5.7	7.6	9.8
2007	2		11.3	15.2	19.9
2008	2		11.3	15.2	20.4
Subtotal	23		155.0	209.2	250.5

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	7		55.6	68.4	73.3
1999	4		26.5	43.4	47.3
2000	10		66.8	97.4	107.9
2001	8		61.1	83.6	94.3
2002	16		104.8	150.8	173.2
2003	12		83.4	150.1	175.8
2004	6		33.9	85.4	102.2
2005	16		56.6	93.7	115.5
2006	15		55.8	92.3	115.4
2007	13		59.7	96.9	123.8
2008	9		35.6	66.7	87.1
2009	3		14.2	31.1	41.5
2010				5.3	7.2
Subtotal	119		654.0	1065.1	1264.5

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	4.4
2000				4.6	5.0
2001				5.0	5.6
2002				5.5	6.2
2003				5.4	6.2
2004				5.6	6.6
2005				5.5	6.6
2006				4.8	5.9
2007				3.5	4.4
2008				2.4	3.1

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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 \$
2009				0.9	1.2
2010					
2011					
2012					
2013					
2014					
2015					
Subtotal				47.3	55.2

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	226		1050.1	3133.3	3576.1

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	Plan	Actual
RDT&E	11	11
Procurement	8	8

(U) Percent Total Program Quantities Delivered: 8.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 860.6

(U) Percent Total Program Expended: 24.1%

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.

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.

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

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-6 B-1 CMUP-JDAM

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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: B-1B CMUP-JDAM

AS OF DATE: December 31, 1997

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1. Designation and Nomenclature (Popular Name): B-1B Conventional Mission Upgrade Program - Joint Direct Attack Munition

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

ASC/YD B-1B System Program Office	Col Ben F. McCarter
Building 556	Assigned: June 1, 1997
2690 Loop Road, West, Rm 104	DSN 986-9187; COMM (937) 656-9187
WPAFB, OH 45433-7148	Ben.McCarter@blb.wpafb.af.mil

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0604226F

PROCUREMENT:

APPN 3010 ICN 0101126F (Air Force)

O&M:

PE 0101126F

5. References:

SAR Baseline (Development Estimate):

DAE Approved Acquisition Program Baseline dated January 25, 1995.

Approved Program:

SAE Approved Acquisition Program Baseline (APB) dated October 15, 1997.

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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 re-roled 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:

In the Jan 92 publication of The Bomber Roadmap, the Secretary of the Air Force designated the B-1B as the backbone of the bomber force. In the Aug 92 Mission Need Statement and the Apr 93 Operational Requirements Document, HQ Air Combat Command (ACC) specified the need for an improved conventional mission capability on the B-1B as well as computer and defensive system improvements. Conventional capability was to be accomplished in phases. First, area munitions (Conventional Bomb Units (CBUs)), second, guided munitions (Joint Direct Attack Munition (JDAM) and Wind Corrected Munition Dispenser (WCMD)), and third, standoff munitions (Joint Standoff Weapon (JSOW) and Joint Air-to-Surface Attack Missile (JASSM)). Due to funding constraints and lack of an affordable solution, the computer and defensive system upgrades were delayed. This resulted in a block upgrade approach outlined as follows: The Conventional Mission Upgrade (CMUP)-JDAM (integrates a MIL-STD 1760 interface, Global Positioning System, communications upgrades and the JDAM precision munition); CMUP-Computer (upgrades the on-board computers); and the CMUP-Defensive System Upgrade (improves the electronic countermeasures suite).

Acquisition streamlining initiatives used early in the program avoided cost by accelerating the process from requirements definition through contract award. Initiatives were taken to identify only minimal absolute system requirements. Likewise the SOW and contract data requirements were tailored to assure only the most critical requirements and data needs were specified. The program continues to use acquisition reform initiatives to avoid and save any unnecessary cost throughout all phases of the B-1 program.

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7. Executive Summary (Cont'd):

Proposal development is underway for the JDAM/1760 Low Rate Initial Production (LRIP) #2 and full-rate production. Contract award will occur upon completion of Development Test and Evaluation (DT&E) and launcher kit Functional Configuration Audit (FCA). JDAM/1760 Milestone III decision will occur after dedicated Operational Test and Evaluation (OT&E) and B-1B-system FCA. The live fire test consolidated report is due to OSD in Apr 98.

The SPO and contractor team used the Teaming on Proposals (TOPS) process to jointly develop the proposal and model contract for GPS/Comm Lots I and II full rate production. Milestone III approval was obtained on Jul 3, 97 with contract awarded on Jul 25, 97 (Lot I with a priced Lot II option). The GPS/Comm aircraft kitproof modification was delivered to Oklahoma City Air Logistics Center on Nov 26, 97 and installation began in Dec 97. Contract options were exercised on the Lot II buy which will complete the procurement of GPS/Comm mod kits for the B-1 fleet.

DT&E flight testing began in Aug 97. Offensive radar system (ORS) software completed functional qualification testing and was installed in the test aircraft. Some functionality limitations continue to exist in the avionics flight software (AFS). Incremental AFS software releases have reduced these limitations. The contractor has stated that full software functionality will not be available in Feb 98 as planned. Several options are being examined for delivering fully functional software to flight test in time to complete DT&E in Jun 98. However, additional problems with late delivery of KY-100 (government furnished property), Demand Assigned Multiple Access (DAMA) and Conventional Weapons Interface Unit (CWIU) hardware to flight test; and late delivery of mission planning software to flight test contribute to flight test schedule risk. These issues require deferring some testing until later in the flight test program as well as additional regression testing requirements. Failure to meet required completion dates would impact schedule for subsequent CMUP program, i.e. Computer Upgrade, and Defensive System Upgrade. Actions being taken include surging test flights, deferring low priority test points; moving certain ground test activities from the flight test aircraft to the kitproof aircraft and taking steps to ensure maximum test aircraft availability.

Due to loss of an aircraft this reporting period, quantities now reflect 94 aircraft instead of 95.

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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
-- OEM	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	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	N/A	N/A
Critical Design Review Complete			
JDAM/1760	APR 96	APR 96	MAY 96
GPS/Communications	APR 96	APR 96	MAY 96
Computer	N/A	N/A	N/A
Service Final DT&F			
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	N/A	N/A
Complete	N/A	N/A	N/A
Low Rate Production Contract Award			
JDAM/1760	DEC 96	DEC 96	JUN 96
GPS/Communications	FEB 96	FEB 96	MAY 96
Computer	N/A	N/A	N/A

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
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	N/A	N/A
IOT&E			
JDAM/1760			
Start	AUG 97	AUG 97	AUG 97
Complete	JUN 98	JUN 98	SEP 98
GPS/Communications			
Start	AUG 97	AUG 97	AUG 97
Complete	JUN 98	JUN 98	SEP 98
Computer			
Start	N/A	N/A	N/A
Complete	N/A	N/A	N/A
Milestone III-JDAM/1760	JAN 99	JAN 99	DEC 98
Milestone III	JAN 97	JAN 97	JUL 97
-GPS/Communications			
Milestone III-Computer	N/A	N/A	N/A
Full Rate Production Contract			
Award			
JDAM/1760	JAN 99	JAN 99	DEC 98
GPS/Communications	JAN 97	JAN 97	JUL 97
Computer	N/A	N/A	N/A
Organic Support Capability			
Date			
JDAM/1760	JUL 01	N/A	DEC 98 (Ch-1)
GPS/Communications	NOV 99	N/A	DEC 98 (Ch-1)
Computer	N/A	N/A	N/A
Service Depot Support Date			
JDAM/1760	JUL 01	N/A	DEC 98 (Ch-1)
GPS/Communications	NOV 99	N/A	DEC 98 (Ch-1)
Computer	N/A	N/A	N/A
Initial Operational			
Capability (IOC)			
JDAM/1760	JUL 01	JUL 01	DEC 98
GPS/Communications	NOV 99	NOV 99	DEC 98
Computer	N/A	N/A	N/A

Footnotes:

Milestone I is considered to have occurred upon issuance of USD(A) memo to SECDEF, Apr 30, 93, 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

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9a. Schedule (Cont'd):

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 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) - Organic Support Capability date and Service Depot Support Date for JDAM/1760 changed from May 00 to Dec 98 and for GPS/Comm changed from Nov 99 to Dec 98. These changes are due to the production acceleration of 7 aircraft. Supportability dates are no longer listed as Key Acquisition Program Baseline parameters for schedule. These events are not under the control of the System Program Director and were deleted by SAE approved Acquisition Program Baseline change dated October 15, 1997.

10. Performance Characteristics:

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Accurate GPS-Aided Munition	Capabil- ity to airborne retarget GPS- aided munition (intent JDAM)	Capabil- / Capabil- ity to / ity to airborne/ employ retarget/ GPS- GPS- / aided aided / munition munition/ (intent (intent / JDAM) JDAM) /	TBD	Capabil- ity to airborne retarget GPS- aided munition (intent JDAM)
Mission Capable (MC) Rate (%)	75	75 / 65	TBD	.65
Supportability CWIU MTBF (hrs)	3000	3000 / 1000	TBD	2262

Note (For information only): Basic performance factors for the B-1B (speed,

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10a. Performance Characteristics (Cont'd):

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 replaceable 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 10C plus 15,000 operating flight hours.

b. Current Change Explanations - -

(Ch-1) Supportability-CWIU MTBF (hrs) changed from 1600 to 2262 due to maturation of system design.

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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)	405.1	342.6	322.1
Procurement	199.0	208.4	216.5
Recurring Flyaway	(178.5)		(193.8)
Nonrecurring Flyaway	(4.1)		(3.1)
Total Flyaway	(182.6)		(196.9)
Total Other Wpn Sys			(0.0)
Peculiar Support	(3.0)		(5.4)
Initial Spares	(13.4)		(14.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition OEM	0.0	246.3	228.5
Total FY 95 Base-Year \$	604.1	797.3	767.1
Escalation	68.8	53.8	44.6
Development (RDT&E)	(30.6)	(16.6)	(13.9)
Procurement	(38.2)	(26.3)	(22.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition OEM	(0.0)	(10.9)	(8.4)
Total Then Year \$	672.9	851.1	811.7
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	95	95	94
Total	95	95	94

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. Also, due to a loss of one aircraft in September 1997 the number of operational aircraft being modified under the B-1 CMUP-JDAM program is now 94.

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 defined in the APB as delivery of the first kit proof upgrade kit. The kit proof upgrade kit quantities are 2 for GPS and 6 for JDAM.

c. Foreign Military Sales --
None

d. Nuclear Costs --
None

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12. Unit Cost Summary:

	UCR Baseline (OCT 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 95 BYS)	797.3	767.1	
(2) Quantity	95	94	
(3) Unit Cost	8.393	8.161	-2.76
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 95 BYS)	208.4	216.5	
(2) Quantity	95	94	
(3) Unit Cost	2.194	2.303	+4.97

The current estimate data elements entered in section 12a-b. 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. Also, due to a loss of one aircraft in September 1997 the number of operational aircraft being modified under the B-1 CMUP-JDAM program is now 94.

13. Cost Variance Analysis:

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

	RD&E	PROC	MILCON	O&M	TOTAL
Development Estimate	435.7	237.2	-	-	672.9
Previous Changes:					
Economic	-9.7	-12.4	-	-	-22.1
Quantity	-	-	-	-	-
Schedule	-	-0.3	-	-	-0.3
Engineering	+3.6	-	-	-	+3.6
Estimating	-70.4	+6.2	-	+257.2	+193.0
Other	-	-	-	-	-
Support	-	+4.0	-	-	+4.0
Subtotal	-76.5	-2.5	-	+257.2	+178.2
Current Changes:					
Economic	-0.9	-5.2	-	-1.0	-7.1
Quantity	-	-1.3	-	-	-1.3
Schedule	-	+1.4	-	-	+1.4
Engineering	-	-	-	-	-
Estimating	-22.3	+8.8	-	-19.3	-32.8
Other	-	-	-	-	-
Support	-	+0.4	-	-	+0.4
Subtotal	-23.2	+4.1	-	-20.3	-39.4
Total Changes	-99.7	+1.6	-	+236.9	+138.8
Current Estimate	336.0	238.8	-	236.9	811.7

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

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	-66.0	+6.4	-	+246.3	+186.7
Other	-	-	-	-	-
Support	-	+3.0	-	-	+3.0
Subtotal	-62.5	+9.4	-	+246.3	+193.2
Current Changes:					
Quantity	-	-1.0	-	-	-1.0
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-20.5	+8.9	-	-17.8	-29.4
Other	-	-	-	-	-
Support	-	+0.2	-	-	+0.2
Subtotal	-20.5	+8.1	-	-17.8	-30.2
Total Changes	-83.0	+17.5	-	+228.5	+163.0
Current Estimate	322.1	216.5	-	228.5	767.1

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.7
Economic adjustment for negative program change. (Economic)	N/A	+0.8
Adjustment for Current and Prior Inflation. (Estimating)	+1.5	+1.6
Revised program estimate incorporating Jun 97 Service Cost Position (Estimating)	-22.0	-23.9
RDT&E Subtotal	-20.5	-23.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-5.3
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Quantity variance associated with decrease of 1 unit. (Quantity)	-1.0	-1.3
Stretchout of annual procurement buy profile. (Schedule)	0.0	+1.4
Adjustment for Current and Prior Inflation. (Estimating)	+1.8	+1.9
Revised Program Estimate incorporating Jun 97 Service Cost Position (Estimating)	+7.1	+6.9

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

b. Current Change Explanations --

		(Dollars in Millions)	
		Base-Year	Then-Year
Revised estimate of Initial spares incorporating Jun 97 Service Cost Position (Support)		+3.1	+3.4
Revised estimate of Peculiar Support incorporating Jun 97 Service Cost Position (Support)		-2.9	-3.0
Procurement Subtotal		+8.1	+4.1
(3) O&M			
Revised escalation indices. (Economic)		N/A	-1.2
Economic adjustment for negative program change. (Economic)		N/A	+0.2
Adjustment for Current and Prior Inflation. (Estimating)		+1.2	+1.2
Revised program estimate incorporating Jun 97 Service Cost Position. (Estimating)		-19.0	-20.5
O&M Subtotal		-17.8	-20.3

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	-0.31	+0.07	+0.01	+0.04	+1.70	--	+0.05	+1.56	8.64

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	-0.19	+0.01	+0.01	--	+0.16	--	+0.05	+0.04	2.54

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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	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	811.7
Total Quantity	N/A	95	N/A	94
Prog Acq Unit Cost	N/A	7.08	N/A	8.64

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

a. RDT&E --

CMUP EMD:

Boeing North American, Seal Beach CA
F33657-94-C-0001, CPAF
Award: March 16, 1995
Definitized: March 16, 1995

Initial Contract Price

<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$261.7	N/A	0

Current Contract Price

<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$307.8	N/A	0

Estimated Price At Completion

<u>Contractor</u>	<u>Program Manager</u>
\$307.8	\$307.8

Previous Cumulative Variances
Cumulative Variances To Date (01/30/98)
Net Change

<u>Cost Variance</u>	<u>Schedule Variance</u>
\$-1.5	\$-1.8
\$0.6	\$-1.3
\$2.1	\$0.5

Explanation of Change:

The cost and schedule variances are based on data from the program's Cost Performance Report (CPR) of January 30, 1998 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. The contractor is now Boeing North American instead of Rockwell International due to a merger between the two companies.

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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 (FY94-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-02)</u>	<u>Total</u>
RDT&E	269.9	58.6	7.5	-	336.0
Procurement	54.8	61.6	44.5	77.9	238.8
MILCON	-	-	-	-	-
O&M	194.0	40.7	1.4	-	236.9
Total	519.5	160.9	53.4	77.9	811.7

b. Annual Summary -- B-1 CMUP-JDAM

Appropriation: 3600 Research, Development, Test + Eval, AP

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			54.8	54.8	55.7
1996			113.9	113.9	117.9
1997			90.5	90.5	95.2
1998			54.9	54.9	58.6
1999			6.9	6.9	7.5
Subtotal			322.1	322.1	336.0

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	8	3.1	5.0	10.3	10.9
1997	46		40.6	40.9	43.9
1998	83		55.2	56.5	61.6
1999	47		37.1	40.1	44.5
2000	27		48.9	55.0	62.1
2001	9		7.0	13.2	15.2
2002				0.5	0.6
2003					
2004					
Subtotal	220	3.1	193.8	216.5	238.8

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

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

quantities in Sec 16b. table are the kit quantities (e.g. FY96 procures 6 JDAM/1760 launcher kits and 2 GPS/Comm kit). The GPS/Comm kit buy schedule (FY96-FY98) is 2,28,64 with installations (FY98-FY00) of 8,23,63 to comply with the GPS 2000 mandate. Installation funding is provided in the year install occurs. The 1760/JDAM buy schedule (FY96-FY01) 6,18,19,47,27,9 procures 126 rotary launcher kits and is an organizational/intermediate level installation. In FY02-FY04 there are no quantity buys as funding is for support and spares only.

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				70.9	73.4
1997				41.3	43.4
1998				38.2	40.7
1999				1.3	1.4
Subtotal				228.5	236.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	220	3.1	515.9	767.1	811.7

17. Delivery/Expenditure Information:

a. Deliveries To Date

	<u>Plan</u>	<u>Actual</u>
RDT&E		
Procurement	220	1

Percent Total Program Quantities Delivered: N/A

b. Total Expenditures To Date (In Millions of Dollars): \$ 506

Percent Total Program Expended: 62.3%

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

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

FY98-FY01 and Steady State FY02-FY26. A 1.48 Utilization Factor (Equip Op Hrs per Flying Hour) was used for 94 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 94 B-1 Aircraft CMUP Modifications	Avg Annual Cost Per Antecedent
Mission Pay & Allowances	52.1	0.0
Unit Level Consumption	31.8	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	122.5	0.0

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ADDENDUM (FOR DoD USE ONLY)

19. Cost-Quantity Information:

- a. Baseline (Type) - - Development Estimate, FY 1995 BY S
- b. End Item - - B-1 CMUP-JDAM
- c. Cost Quantity Relationship (Type) - - Log-Linear Unit
- d. First Unit Cost - - \$0.84202 million
- e. Slope - - 102.918%, B = 0.0415
- f. Tabular Data - - Since the R&D units are lab/engineering models and not actual prototypes, they are not included in the cost-quantity calculation.

Fiscal Year	Quantity	Flyaway Cost (Base-Year \$ in Millions)		Plot Point
		Nonrecurring	Recurring	
1996	4	4.1	4.4	2.2
1997	46	0.0	25.4	23.2
1998	87	0.0	30.6	90.2
1999	66	0.0	59.1	169.3
2000	18	0.0	59.0	212.4
2001		0.0	0.0	0.0
2002		0.0	0.0	0.0
2003		0.0	0.0	0.0
2004		0.0	0.0	0.0
Total	221	4.1	178.5	N/A

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 19f. represent procured modification kit quantities. Also, due to a loss of one aircraft in September 1997 the number of operational aircraft being modified under the B-1 CMUP-JDAM program is now 94.

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A-8 BRADLEY UPGRADE

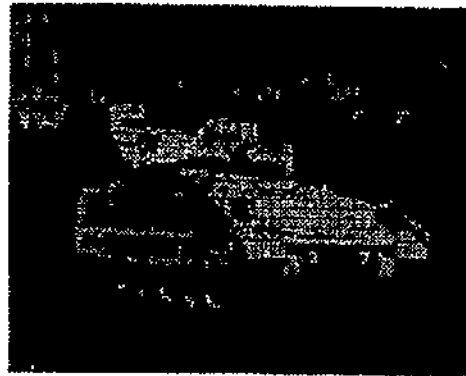
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823) PROGRAM: BFVS A3 Upgrade

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AS OF DATE: December 31, 1997

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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 Paul S. Izzo
PM, Bradley Fighting Vehicle Systems Assigned: July 24, 1997
ATTN: SEAE-GCSS-W-BV. DSN 786-5630; COMM (810) 574-5630
Warren, MI 48397-5000 IZZOP@CC.TACOM.ARMY.MIL

4. Program Elements/Procurement Line Items:

RDT&E:

PE 23735 Project 2TT, 332, 371

PROCUREMENT:

APPN 2033 ICN G20900 (Army) (Shared)

APPN 2033 ICN G80717 (Army) (Shared)

5. References:

SAR Baseline (Development Estimate):

AAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

AAE Approved Acquisition Program Baseline (APB) dated August 4, 1997.

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DEPARTMENT OF DEFENSE

98-C-0934

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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 Linebacker 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 Modernization program aimed at upgrading the existing fleet by correcting deficiencies identified in the Battlefield Development Plan, while accomplishing the intent of the Base Sustainment Program approved by the Secretary of Defense as part of the 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 remanufacture these vehicles. Acquisition Decision Memorandum (ADM) approval from Milestone II was received on Mar 29, 1994.

The first prototype delivery was October 1, 1996. By December 1997 phase one of Reliability Availability Maintainability (RAM) testing and the first Limited User Test (LUTi) were successfully completed. Contractor activity during the last year was intense with software detail, coding and unit testing to support the software releases in February and October 1997. The Test and Evaluation Master Plan (TEMP) was approved in February 1997 and identified the interface with the Army's overarching command and control system - the Force Battle Command Brigade and Below.

The Acquisition Decision Memorandum for the M2/M3A3 Bradley Army System Acquisition Review Council (ASARC) was signed on July 18, 1997. Approval was given for; entry into Low Rate Initial Production (LRIP), updated BFVS A3 Exit Criteria for Milestone III, and designation of PEO-GCSS as Milestone Decision Authority for the follow-on LRIP decision. The A3 LRIP contract was signed with United Defense (LP) on July 25, 1997 and subcontracts were also awarded.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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	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	NOV 97 (Ch-1)
PQT			
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	MAY 99 (Ch-1)
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

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9b. Schedule (Cont'd):

b. Current Change Explanations --

(Ch-1) 2nd LRIP Award moved from May 1998 to Nov 1997. PEO Approval was received for execution of the FY98 option of 18 ea additional vehicles. Delivery moved from Aug 1999 to May 1999.

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	MIL-STD-188-220	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 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 / and auto / track / track with / with IBAS / IBAS and CIV /	Dual track and auto track with IBAS	Dual track and Auto track with IBAS
Survivability:				
NBC protection for dismount element while in vehicle	Ventila- ted face pieces	Ventila- / ted / face / pieces	Ventila- ted face pieces	Ventila- ted Face Pieces
Mobility:				
Ability of the BFVS to navigate in all weather conditions with GPS (accuracy plus or minus in meters)	16	16 / 16	16	16
The driver display will present navigational information	GPS informa- tion and map	GPS / Informa- / tion / and map /	GPS Informat ion	GPS Informat ion

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10a. Performance Characteristics (Cont'd):

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold		Demon- strated Perf	Current Estimate
	MIA2 Tank	MIA2 Tank	/ MIA2 / Tank	MIA2 Tank	MIA2 Tank
Maintain cross-country mobility with main battle tank					
RAM (Mean Miles Between Failure)	N/A	500	/ 400	279	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

Command and Control: Full command and control functionality will be demonstrated in the Future Battle Command Brigade and Below Initial Operating Test and Evaluation (IOTE) in FY00.

RAM (Mean Miles Between Failure)- Demonstrated performance to date exceeds RAM growth curve for this point in testing.

Integrated Logistics Support: System fault isolation capability will be demonstrated in the A3 IOTE 4th quarter FY99.

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)	394.1	458.5	462.4
Procurement	2703.2	3709.3	3884.0
Non-recurring	(27.9)		(15.9)
Recurring	(2476.8)		(3399.6)
Total Rollaway	(2504.7)		(3415.5)
Training Devices	(53.1)		(83.0)
Other	(58.2)		(197.9)
Total Other Wpn Sys	(111.3)		(280.9)
Peculiar Support	(40.1)		(78.3)
Initial Spares	(47.1)		(109.3)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 94 Base-Year \$	3097.3	4167.8	4346.4
Escalation	941.5	1038.4	834.9
Development (RDT&E)	(31.4)	(31.7)	(28.1)
Procurement	(910.1)	(1006.7)	(806.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	4038.8	5206.2	5181.3
b. Quantity --			
Development (RDT&E)	2	0	0
Procurement	1600	1602	1602
Total	1602	1602	1602

Note: Excludes 8 RDT&E prototypes from the SAR Baseline and 8 from the Current Estimate that are not considered fully configured.

The current funded LRIP quantity is 126, 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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12. Unit Cost Summary:

	UCR Baseline (Aug 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 94 BY\$)	4167.8	4346.4	
(2) Quantity	1602	1602	
(3) Unit Cost	2.602	2.713	+4.27
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 94 BY\$)	3709.3	3884.0	
(2) Quantity	1602	1602	
(3) Unit Cost	2.315	2.424	+4.71

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	425.5	3613.3	-	4038.8
Previous Changes:				
Economic	-12.7	-280.5	-	-293.2
Quantity	-3.1	+4.8	-	+1.7
Schedule	-	+289.0	-	+289.0
Engineering	-	+407.1	-	+407.1
Estimating	+48.4	+869.9	-	+1052.0
Other	-	-	-	-
Support	-	+168.7	-	+168.7
Subtotal	+32.6	+1459.0	-	+1625.3
Current Changes:				
Economic	-3.2	-204.9	-	-208.1
Quantity	-	-	-	-
Schedule	-	-10.8	-	-10.8
Engineering	-	-101.6	-	-101.6
Estimating	+35.6	-264.4	-	-362.5
Other	-	-	-	-
Support	-	+200.2	-	+200.2
Subtotal	+32.4	-381.5	-	-482.8
Total Changes	+65.0	+1077.5	-	+1142.5
Current Estimate	490.5	4690.8	-	5181.3

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

Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	394.1	2703.2	-	3097.3
Previous Changes:				
Quantity	-3.0	+3.0	-	-
Schedule	-	+131.7	-	+131.7
Engineering	-	+303.4	-	+303.4
Estimating	+39.0	+733.4	-	+880.1
Other	-	-	-	-
Support	-	+107.4	-	+107.4
Subtotal	+36.0	+1278.9	-	+1422.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-62.4	-	-62.4
Estimating	+32.3	-198.3	-	-273.7
Other	-	-	-	-
Support	-	+162.6	-	+162.6
Subtotal	+32.3	-98.1	-	-173.5
Total Changes	+68.3	+1180.8	-	+1249.1
Current Estimate	462.4	3884.0	-	4346.4

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-3.2
Adjustment for Current and Prior Inflation. (Estimating)	+2.2	+2.4
Increased actual cost in contract (Estimating)	+21.2	+23.4
Change in cost to Initial Operational Test & Evaluation (IOTE) (Estimating)	+8.9	+9.8
RDT&E Subtotal	+32.3	+32.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-249.9
Economic adjustment for negative program change. (Economic)	N/A	+45.0
Adjustment for Current and Prior Inflation. (Estimating)	+4.1	+4.5
Revised annual procurement buy profile. (Schedule)	0.0	-10.8
Elimination of Engine Enhancement Program and Pontoons (Engineering)	-182.3	-256.1
Addition of Vehicle Intercom System (VIS) and hatches (Engineering)	+76.7	+105.8
Addition of A3 Linebacker components costs (Engineering)	+43.2	+48.7

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Savings due to breakout of subcontracted items (AR) (Estimating)	-198.6	-248.6
Savings due to planned competition of GFE items (AR) (Estimating)	-71.9	-89.9
Savings due to planned multiyear procurements (AR) (Estimating)	-186.9	-241.1
Change in policy to fund depot Inspect and Repair Only as Necessary (IRON) cost with Procurement Appropriation (Estimating)	+110.2	+133.7
Change in estimated cost of depot IRON (Estimating)	-23.0	-30.9
Revised estimates of contractors' costs due to more experience in the development phase, increases in actual costs, and change in estimating methodology (Estimating)	+149.5	+186.6
Change in estimate of in-house project management costs (Estimating)	-16.8	-19.5
Change in estimate of Survivability Suite of Enhancement Systems (SSES) (Army Horizontal Technology Integration (HTI) Initiative) (Estimating)	+35.1	+40.8
Adjustment for Current and Prior Inflation. (Support)	+0.4	+0.4
Change in estimated cost of Initial Spares (Support)	-2.1	-0.2
Change in estimated cost of Peculiar Support (Support)	+62.6	+77.2
Change in Training Devices requirements (Support)	+9.7	+9.9
Increase cost of Total Package Fielding (TPF) (Support)	+29.4	+35.9
Changes in estimated cost of Data, Classroom Spares, New Equipment Training (NET), and Contractor Logistics Support (CLS) (Support)	+62.6	+77.0
Procurement Subtotal	-98.1	-381.5
(3) <u>O&M</u>		
Revised escalation indices. (Economic)	N/A	-5.5
Economic adjustment for negative program change. (Economic)	N/A	+5.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Change in policy to fund depot IRON with PAA (Estimating)	-107.8	-133.8
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	-0.31	--	+0.17	+0.19	+0.43	--	+0.23	+0.71	3.23

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	-0.30	--	+0.17	+0.19	+0.38	--	+0.23	+0.67	2.93

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	NOV 98	N/A	NOV 99
FUE/IOC	N/A	SEP 98	N/A	AUG 00
Total Cost	N/A	4038.8	N/A	5181.3
Total Quantity	N/A	1602	N/A	1602
Prog Acq Unit Cost	N/A	2.52	N/A	3.23

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

The Initial Contract Price (Target) of 278.3 is a correction of the 280.0 reported in the Dec 1996 SAR.

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

\$278.3 N/A 8

Current Contract Price
Target Ceiling Qty

\$271.2 N/A 8

Estimated Price At Completion
Contractor Program Manager

\$295.0 \$295.0

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-22.7	\$-7.0
Cumulative Variances To Date (12/26/97)	\$-37.4	\$-5.8
Net Change	\$-14.7	\$1.2

Explanation of Change:

The net unfavorable cost variance is due mainly to increase in cost expended by prime contractor software development/management and vehicle software/hardware integration. Additional technical management has been required due to the complexity of the software and with more hours expended than planned to regain some of the schedule delays.

<u>Imp BEVS Acquis Sys (IBAS:</u> Texas Instruments Inc, McKinney TX DAAH01-93-C-0206, CPIF/AF Award: February 18, 1994 Definitized: July 22, 1994	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$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>
\$57.8	\$	14	\$62.5	\$64.2

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-6.4	\$-0.3
Cumulative Variances To Date (12/31/97)	\$-7.6	\$-0.2
Net Change	\$-1.2	\$0.1

Explanation of Change:

Net changes are due to vehicle integration issues that have driven unanticipated software changes. Gyroscope performance drove redesign of electronics and hardware (castings) in the periscope-head.

b. Procurement -- <u>New Contract:</u> United Defense L.P., York,, PA DAAEO796CX036, FFP Award: July 25, 1997 Definitized: July 25, 1997	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$66.2	N/A	35

<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>
\$100.8	N/A	53	\$100.8	\$100.8

Explanation of Change:

None.

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BFVS A3 Upgrade, December 31, 1997

15. Contract Information (Cont'd):

Cost and Schedule variance reporting 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)

<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	342.7	74.6	70.9	2.3	490.5
Procurement	176.4	116.2	292.4	4105.8	4690.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	519.1	190.8	363.3	4108.1	5181.3

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				74.3	76.9
1996				111.1	117.2
1997				81.6	87.4
1998				68.7	74.6
1999				64.3	70.9
2000				2.1	2.3
Subtotal				462.4	490.5

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

<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>
1997	35	9.0	151.1	162.2	176.4
1998	18	0.5	100.9	105.2	116.2
1999	73	5.2	225.0	262.4	292.4
2000	103		244.2	340.4	385.7
2001	163		340.6	394.8	455.3
2002	181	0.6	368.7	377.0	443.0
2003	142		307.2	311.1	373.3
2004	231		438.9	539.2	661.3
2005	235	0.6	435.5	475.8	596.4
2006	235		434.5	450.4	577.0
2007	186		353.0	358.6	469.5

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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 \$
2008				63.1	84.4
2009				43.8	59.9
Subtotal	1602	15.9	3399.6	3884.0	4690.8

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					
1999					
2000					
2001					
2002					
2003					
2004					
2005					
2006					
2007					
Subtotal					

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	1602	15.9	3399.6	4346.4	5181.3

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): \$ 387.9

Percent Total Program Expended: 7.5%

Eight prototype EMD vehicles have been delivered.

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BFVS A3 Upgrade, December 31, 1997

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 the average operating tempo of 874 miles per year (for the M2A3). The source for this cost estimate is the A3 Army Cost Position (ACP), dated July 1997.
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	194.9	N/A
Unit Level Consumption	44.7	0.0
Intermediate Maintenance	0.0	0.0
Depot Maintenance	1.9	0.0
Contractor Support	5.4	0.0
Sustaining Support	8.9	0.0
Indirect Costs	6.8	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	262.6	0.0

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A-19 MCS

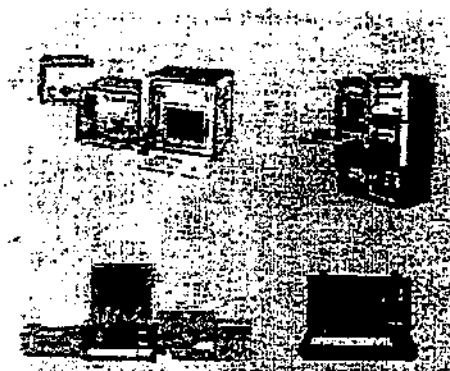
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: MCS

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AS OF DATE: December 31, 1997

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1. Designation and Nomenclature (Popular Name): MANEUVER CONTROL SYSTEM (MCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

PM-ATCCS, SFAE-C3S-AT

FORT MONMOUTH, NJ 07703-5405

COL STANLEY C LEJA

Assigned: August 24, 1995

DSN 992-4041; COMM 732-532-4041

leja@doim6.monmouth.army.mil

4. Program Elements/Procurement Line Items:

RDTE:

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 19, 1997.

4-10-98
APB OF 19-12-97

MAR 26 1998

98-C-0930

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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 TCTs 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 (which became Loral Command and Control Systems) for the software effort and a separate contract was awarded to TRW for the system engineering/integration effort. Under these efforts, Version 10 software was completed, and fielded in 1989.

MCS Version 11 software development effort was continued under Loral. However, Loral experienced significant delays in their development effort. As a result, there was little confidence in Loral's ability to deliver Version 11

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7. Executive Summary (Cont'd):

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 interoperability 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 Interoperability Demonstration (as an MCS Operational Assessment) which was included as a part of the ATCCS level testing at Fort Hood, Texas. The MCS Operational Requirements Document (ORD) (October 26, 1992) remains valid for Block III, Version 12.0. The PEO C3S directed the PM 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 ORD for Block IV was approved November 15, 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, upon being successfully tested via an Operational Assessment/Operational Test (OA/OT). Software enhancements in Version 12.1 through 12.3 include developing and analyzing basic course of action, tools, war gaming, and embedded training at the operator and staff section level.

On November 22, 1996, a C3I Systems Overarching Integrated Product Team (OIPT) 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. An Acquisition Decision Memorandum was signed on January 24, 1997 authorizing the Army 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 was conducted in May 1997 using these 81 systems with the available MCS Block III software; the assessment concluded that MCS Block III is suitable for use in the TRADOC training base. The MCS IOT&E will 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

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7. Executive Summary (Cont'd):

base operational assessment.

For this period, in March 1997, the MCS Block III software was successfully used in Task Force XXI AWE. The lessons that were learned during Task Force XXI AWE, were successfully implemented in software modifications which were used in the Division AWE. MCS Block III, was part of the Army Battle Command System software baseline, which was used during Division AWE in November 1997. This demonstrated the tremendous operational potential of digital technology in achieving Information Dominance. A System Stress Test, of MCS Block III, was held at the Consolidated Technical Support Facility, Ft. Hood, TX in December 1997. This test demonstrated developmental test exit and operational test entrance criteria. The results supported proceeding to the Initial Operational Test and Evaluation in June 1998. The latest MCS Acquisition Decision Memorandum (ADM) was signed on July 16, 1997, authorizing the Army to extract the training base content from the MCS program. In FY 1997 and FY 1998, \$6.0M and \$15.7M, respectively, were extracted from the MCS Acquisition Program Baseline (APB) along with 207 High Capacity Unit (HCU) Vls, reducing the quantity from 3156 to 2949.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
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
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 (Build I)	DEC 88	DEC 88	DEC 88
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			
Limited User Test (LUT)	N/A	NOV 96	NOV 96 (Ch-3)
System Segment Acceptance Test-1	N/A	FEB 96	FEB 96
Low Rate Initial Production (LRIP)	N/A	FEB 97	FEB 97 (Ch-3)
V12.01 IOT&E			
Start	N/A	JUN 98	JUN 98 (Ch-1)
Complete	N/A	JUL 98	JUL 98 (Ch-1)
Milestone III DAB	N/A	DEC 98	DEC 98 (Ch-1)

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9a. Schedule (Cont'd):

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
Issue V12.01 to the Field	N/A	JAN 99	JAN 99	(Ch-1)
IOC	N/A	FEB 99	FEB 99	
BLOCK IV				
AN/TYQ-45 (CHS)				
Award MCS Contract	N/A	SEP 96	SEP 96	
MCS Version 12.1	N/A	N/A		
FOTE	N/A	N/A	N/A	(Ch-2)
QA/OT	N/A	FEB 99	FEB 99	(Ch-2)
Issue V12.1 to the Field	N/A	JUL 99	JUL 99	
MCS Version 12.2	N/A	N/A		
FOTE	N/A	N/A	N/A	(Ch-2)
QA/OT	N/A	FEB 00	FEB 00	(Ch-2)
Issue V12.2 to the Field	N/A	AUG 00	AUG 00	
MCS Version 12.3	N/A	N/A		
FOTE	N/A	N/A	N/A	(Ch-2)
QA/OT	N/A	FEB 01	FEB 01	(Ch-2)
Issue V12.3 to the Field	N/A	AUG 01	AUG 01	
Convert to Post Deployment Software Support (PDSS)	N/A	DEC 02	DEC 02	

b. Current Change Explanations --

(Ch-1) - The selection of the 4ID as the MCS IOT&E test unit, resulted in a three month delay in the IOT&E, due to test unit schedule conflicts. Because of commitments to send units to the National Training Center, the 4ID is not able to provide the IOT&E the required number of command posts in Mar 98. The following milestones have changed:

	From	To
Block III		
V12.01 IOTE		
Start	Mar 98	Jun 98
Complete	Mar 98	Jul 98
Milestone III DAB	Sep 98	Dec 98
Issue Version 12.01 to the Field	Aug 98	Jan 99

(Ch-2) - FOTE was changed to an Operational Assessment/Operational Test to account for a range of Operational Testing that would be compliant with DOT&E guidance. This provides multiple levels of operational testing and evaluation for system increments ranging from abbreviated assessments to a full Operational Test (OT). The scope of the OT will be matched to the risk of the specific system increment.

Block IV		
MCS Version 12.1 FOTE	Feb 99	N/A
MCS Version 12.2 FOTE	Jun 99	N/A
MCS Version 12.3 FOTE	Jun 00	N/A
MCS Version 12.1 QA/OT		Feb 99
MCS Version 12.2 QA/OT		Jun 99
MCS Version 12.3 QA/OT		Jun 00

(Ch 3) These milestones were added to the APB approved in December 1997 and

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9b. Schedule (Cont'd):

did not appear in the previous SAR.

10. Performance Characteristics:

a. Performance --

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APS) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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 TCT'	310	310 / 310	310	310
Operational				
Availability (Ao)				
AN/UYQ-30 TCT	.88	.88 / .88	.88	.88
AN/UYQ-30 TCT'	.84	.84 / .84	.84	.84
BLOCK II				
AN/UYQ-43 (V)1 & (V)2				
100% Memory	5	5 / 5	10	5
Retention during power fluc/loss (at least xx mins)				
Emergency Purge Memory (within xx mins)	3	3 / 3	1.32	3
Mean Time to Repair	.5	.5 / .5	.5	.5
Organizational (Hr)				
Operational	.76	.76 / .76	.76	.76
Availability (Ao)				
BLOCK III				
AN/TYQ-45 (CHS)				
100% Memory	5	N/A / N/A	N/A	N/A
Retention during power fluc/loss (at least xx mins)				
Purge Memory (within xx mins)	3	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
Mean Time to Repair Organizational (Hr)	.5	N/A	/ N/A	N/A	N/A
Situation Awareness	N/A	□	/ N/A	TBD	
Integrity of Common Picture %	N/A	95	/ 95	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	N/A	95	/ 85	TBD	95
Exchange Integrity IAW Applicable UIRs (%)					
Continuity of Operations					
Commander's Situation Report Availability					
After:					
Planned Outage (min)	N/A	90	/ 90	TBD	90
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

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10a. Performance Characteristics (Cont'd):

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

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.

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10b. Performance Characteristics (Cont'd):

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	274.3
Procurement	545.5	336.2	356.8
Flyaway	(451.3)		(278.2)
Support Fielding Costs			(42.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(94.2)		(35.9)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 80 Base-Year \$	760.7	595.4	631.1
Escalation	511.4	375.5	387.9
Development (RDT&E)	(123.1)	(160.2)	(164.8)
Procurement	(388.3)	(215.3)	(223.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1272.1	970.9	1019.0

LRIP quantities in FY97 are 81 HCU V1s.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	6365	2949	2949
Total	6365	2949	2949

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) quantities for MCS are 81 HCU V1 systems procured in February 1997.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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12. Unit Cost Summary:

	UCR Baseline (DEC 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 80 BY\$)	595.4	631.1	
(2) Quantity	2949	2949	
(3) Unit Cost	0.202	0.214	+5.94
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 80 BY\$)	336.2	356.8	
(2) Quantity	2949	2949	
(3) Unit Cost	0.114	0.121	+6.14

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	-12.5	-13.1	-	-25.6
Quantity	-	-219.9	-	-219.9
Schedule	-	+18.1	-	+18.1
Engineering	-	-3.6	-	-3.6
Estimating	+105.0	-89.0	-	+16.0
Other	-	-	-	-
Support	-	-40.9	-	-40.9
Subtotal	+92.5	-348.4	-	-255.9
Current Changes:				
Economic	-2.7	-4.1	-	-6.8
Quantity	-	-28.0	-	-28.0
Schedule	-	+20.2	-	+20.2
Engineering	-	-0.2	-	-0.2
Estimating	+11.0	-3.7	-	+7.3
Other	-	-	-	-
Support	-	+10.3	-	+10.3
Subtotal	+8.3	-5.5	-	+2.8
Total Changes	+100.8	-353.9	-	-253.1
Current Estimate	439.1	579.9	-	1019.0

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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	-	-0.3	-	-0.3
Estimating	+53.8	-55.4	-	-1.6
Other	-	-	-	-
Support	-	-20.1	-	-20.1
Subtotal	+53.8	-187.4	-	-133.6
Current Changes:				
Quantity	-	-13.5	-	-13.5
Schedule	-	+0.4	-	+0.4
Engineering	-	-	-	-
Estimating	+5.3	+7.3	-	+12.6
Other	-	-	-	-
Support	-	+4.5	-	+4.5
Subtotal	+5.3	-1.3	-	+4.0
Total Changes	+59.1	-188.7	-	-129.6
Current Estimate	274.3	356.8	-	631.1

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+1.0
Revised estimate increases RDT&E for the Block IV development & the continuation of the Program Office infrastructure to support the ongoing MCS software development & future P3I programs. (Estimating)	+4.6	+10.0
RDT&E Subtotal	+5.3	+8.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-4.7
Economic adjustment for negative program change. (Economic)	N/A	+0.6
Total Quantity variance associated with decrease of 207 units.	-7.4	-15.6
ADM direction to extract from the MCS program, 207 High Capacity Unit (HCU) Vls (training base units) changing the quantity from 1358 to 1151. (Quantity)	-13.5	-28.0
Allocation to Schedule variance resulting from Quantity Change. (Schedule)	+0.4	+18.0

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

b. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Allocation to Engineering variance resulting from Quantity Change. (Engineering)	0.0	-0.2
Allocation to Estimating variance resulting from Quantity Change. (Estimating)	+5.7	-5.3
Stretchout of annual procurement buy profile due to a transfer of procurement dollars to RDT&E for the MCS Block IV development. (Schedule)	0.0	+2.2
Adjustment for Current and Prior Inflation. (Estimating)	0.0	+0.1
A revised estimate resulting from a change in MCS methodology. (Estimating)	+1.6	+1.5
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Reduction in Initial Spares due to quantity decrease. (Support)	-2.8	-5.8
Increase in Support Fielding Costs due to an increase in level of effort for Interim Contractor Support. (Support)	+7.1	+15.9
Procurement Subtotal	-1.3	-5.5

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	+0.15	+0.01	--	+0.01	--	-0.01	+0.15	0.35

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	
0.15	-0.01	+0.09	+0.01	--	-0.03	--	-0.01	+0.05	0.20

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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	MAY 83	N/A	MAY 83
FUE/IOC	N/A	SEP 86	N/A	SEP 86
Total Cost	N/A	1272.1	N/A	1019
Total Quantity	N/A	6365	N/A	2949
Prog Acq Unit Cost	N/A	0.2	N/A	0.35

May 1983 represents Block 1, Milestone III. Block III current schedule for Milestone III is December 1998.

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

a. RDT&E ---		Initial Contract Price		
<u>Maneuver Control System:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LOCKHEED MARTIN CORP, TINTON FALLS NJ				
DAAB07-96-C-E008, CPIF and T&M		\$54.1	\$95.1	1
Award: September 26, 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>
\$54.1	\$95.1	1	\$63.1	\$63.1
Previous Cumulative Variances		Cost Variance Schedule Variance		
Cumulative Variances To Date				
Net Change				

Explanation of Change:

None.

Contract Comments:

Contractor's estimate has been matched to the PM's estimate. Lockheed Martin has been replanning the Block IV software development, and is reporting against a temporary NTE proposal baseline. PM ATCCS is in receipt of Lockheed Martin's current proposal for evaluation. After finalization of negotiations and contract modifications, contractor's performance data will be included in this report.

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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 (FY00-04)</u>	<u>Total</u>
RD&E	347.0	24.5	28.9	38.7	439.1
Procurement	430.6	-	13.0	136.3	579.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	777.6	24.5	41.9	175.0	1019.0

b. Annual Summary -- MCS

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

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY80 Dollars Nonrec</u>	<u>Flyaway FY80 Dollars Rec</u>	<u>Total Program Base-Year \$</u>	<u>Total Program Then-Year \$</u>
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				8.5	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				18.8	34.8
1997				14.4	27.2
1998				12.8	24.5
1999				14.9	28.9
2000				9.1	18.0
2001				5.2	10.4
2002				1.8	3.7
2003				1.9	3.9
2004				1.3	2.7
Subtotal				274.3	439.1

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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 \$
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					
1995					
1996	123		7.5	10.0	18.7
1997	81		3.3	7.3	13.9
1998					
1999	53		3.2	6.6	13.0
2000	299		12.5	20.1	40.1
2001	374		15.7	28.6	58.0
2002			0.3	0.3	0.6
2003			0.3	1.5	3.1
2004	221		9.0	16.0	34.9
Subtotal	2949	4.0	274.2	356.8	579.9

The recurring costs from FY89 through FY93 were for hardware component upgrades and through FY90 for software development. No end items were purchased during these years. Funds in FY02/03 are for personnel costs in support of MCS program.

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	2949	4.0	274.2	631.1	1019.0

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	2949	1921

Percent Total Program Quantities Delivered: 65.1%

b. Total Expenditures To Date (In Millions of Dollars): \$ 766.8

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

Percent Total Program Expended: 75.3%

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 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. POI 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 Project Management	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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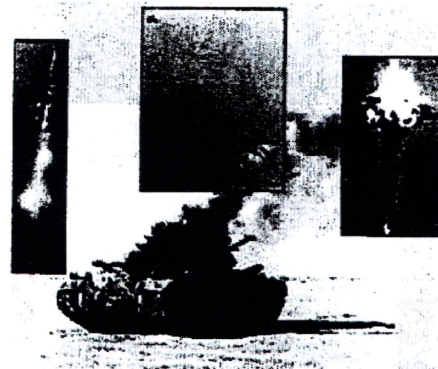
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: SADARM

AS OF DATE: December 31, 1997

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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 COL BERNARD E. ELLIS
SENSE & DESTROY ARMOR (SADARM) Assigned: October 3, 1997
PICATINNY ARSEN, NJ 07806-5000 DSN 880-2573; COMM 973-724-2573
BELLIS@PICA.ARMY.MIL
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 64802 Project D369
(U) PE 64814 Project D644, D2ST
PROCUREMENT:
(U) APPN 2034 ICN E66300 (Army)

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5. (U) References:

SAR Baseline (Development Estimate):

(U) DAE Approved Acquisition Program Baseline, dated 24 July 1989.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated August 4, 1997.

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 design was for 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). In 1991, due to a reevaluation of the European threat, the quantities were cut to 39,018 projectiles and 23,712 rockets. 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 73,612.

SADARM successfully completed Engineering and Manufacturing Development (EMD) during testing at Yuma Proving Ground, AZ, on April 30, 1996.

The Government began accepting SADARM production projectiles in November 1996. System level production testing continued through 1997. Operational Testing is scheduled for June to July 1998.

A SADARM Product Improvement (PI) program was initiated in FY 1997. A sole source development contract was awarded to Aerojet, Azusa, CA, in February 1997. Because the PI SADARM will be more effective than the basic SADARM, the total procurement quantity was reduced from 73,612 projectiles to 50,000 projectiles, resulting in a

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

savings of \$493M.

The FY 98 Appropriations Act reduced the funding for the PI program until scheduled testing on the baseline system completes in 1998. This delays the cut in of the new design by a minimum of one year to FY 2002.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

c. (U) Explanation of Breach:

The FY 98 SADARM RDT&E program was decremented \$10.9M by Congress to delay the PI program until Operational Testing is completed in 1998. The PI development effort is in the process of being restructured to accommodate this Congressional decrement. The immediate impact is a minimum one year delay in the planned cut-in to production and a shortfall in FY 01 and FY 02 RDT&E funding. This caused a Fact of Life schedule breach for the remaining PI milestones.

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9. (U) Schedule:

a. Milestones --

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate	
	NOV 84	NOV 84	NOV 84	
Generic SADARM Submunition Development				
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 96	NOV 96	
Milestone III DAB	N/A	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	
Award Product Improvement (PI) Contract	N/A	FEB 97	FEB 97	(Ch-1)
Complete PI Contract	N/A	MAY 01	TBD	(Ch-2)
First PI Production Delivery	N/A	JAN 02	TBD	(Ch-2)

b. Current Change Explanations --

(U) (Ch-1) Reflects actual award date.

(Ch-2) Expected to slip 1 year from previous plan as a result of decrement to FY 98 RDT&E funding. Current estimate will be updated based on resolution of funding shortfall.

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10. (U) Performance Characteristics:

a. Performance --

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

(b)(1)

b. Current Change Explanations --

(U) (Ch-1) Discontinued estimates of parameters that are not in current APB which have been replaced by more recent parameters.

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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)	237.7	365.1	356.2
Procurement	496.0	1263.4	1350.7
	(248.0)		(0.0)
Recurring Flyaway	(248.0)		(1280.9)
Nonrecurring Flyaway	(0.0)		(56.5)
Total Flyaway	(496.0)		(1337.4)
Pallets	(0.0)		(0.0)
Data			(12.6)
Total Other Wpn Sys	(0.0)		(12.6)
Peculiar Support	(0.0)		(0.7)
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 \$	733.7	1628.5	1706.9
Escalation	-198.6	680.2	674.1
Development (RDT&E)	(8.2)	(50.0)	(46.5)
Procurement	(-206.8)	(630.2)	(627.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	535.1	2308.7	2381.0

(U) In addition to the above, \$589.8M (then year) was spent on MIRS SADARM Rocket RDT&E prior to termination.

b. (U) Quantity --

Development (RDT&E)	132	189	189
Procurement	10156	50000	50000
Total	10288	50189	50189

Note: Excludes 772 RDT&E 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:

	UCR Baseline (AUG 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 89 BY\$)	1628.5	1706.9	
(2) Quantity	50189	50189	
(3) Unit Cost	0.032	0.034	+6.25
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 89 BY\$)	1263.4	1350.7	
(2) Quantity	50000	50000	
(3) Unit Cost	0.025	0.027	+8.00

(U) Unit cost increase is a result of reduced procurement funding through all POM years, stretching the program from what was planned in the August 1997 APB.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	245.9	289.2	-	535.1
Previous Changes:				
Economic	-0.8	-143.2	-	-144.0
Quantity	-	+1019.3	-	+1019.3
Schedule	+7.9	+672.3	-	+680.2
Engineering	+62.8	-	-	+62.8
Estimating	+99.3	+523.5	-	+622.8
Other	-	-	-	-
Support	-	+24.8	-	+24.8
Subtotal	+169.2	+2096.7	-	+2265.9
Current Changes:				
Economic	-1.0	-44.2	-	-45.2
Quantity	-	-449.6	-	-449.6
Schedule	-	-52.6	-	-52.6
Engineering	-	+212.2	-	+212.2
Estimating	-11.4	-69.4	-	-80.8
Other	-	-	-	-
Support	-	-4.0	-	-4.0
Subtotal	-12.4	-407.6	-	-420.0
Total Changes	+156.8	+1689.1	-	+1845.9
Current Estimate	402.7	1978.3	-	2381.0

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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	+251.6	-	+258.0
Engineering	+47.8	-	-	+47.8
Estimating	+73.2	+329.6	-	+402.8
Other	-	-	-	-
Support	-	+15.3	-	+15.3
Subtotal	+127.4	+1280.2	-	+1407.6
Current Changes:				
Quantity	-	-222.0	-	-222.0
Schedule	-	-47.4	-	-47.4
Engineering	-	+144.8	-	+144.8
Estimating	-8.9	-50.9	-	-59.8
Other	-	-	-	-
Support	-	-2.0	-	-2.0
Subtotal	-8.9	-177.5	-	-186.4
Total Changes	+118.5	+1102.7	-	+1221.2
Current Estimate	356.2	1350.7	-	1706.9

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.1
Economic adjustment for negative program change. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.3
Revisions to prior funding to reflect actuals. (Estimating)	-0.8	-0.8
Revised program estimates (Estimating)	+0.5	+0.7
Congressional decrement to PI program. (Estimating)	-8.3	-11.0
Distributed Congressional decrements. (Estimating)	-0.5	-0.6
RDT&E Subtotal	-8.9	-12.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-125.2
Economic adjustment for negative program change. (Economic)	N/A	+81.0
Total Quantity variance associated with decrease of 23612 units.	-347.9	-659.9
Quantity decrease of 23612 units. (Quantity)	-222.0	-449.6
Allocation to Schedule variance resulting from Quantity Change. (Schedule)	-47.4	-102.4

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
Allocation to Estimating variance resulting from Quantity Change. (Estimating)	-78.5	-107.9
Stretchout of annual procurement buy profile. (Schedule)	0.0	+49.8
Incorporation of PI design changes. (Engineering)	+144.8	+212.2
Adjustment for Current and Prior Inflation. (Estimating)	+2.0	+2.6
Revise non-recurring estimated to include VECs. (Estimating)	+25.6	+35.9
Reduced Pallets due to lower quantities. (Support)	-0.4	-0.8
Reduced data due to shorter schedule due to lower quantities. (Support)	-1.6	-3.2
Procurement Subtotal	-177.5	-407.6

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	
0.05	--	-0.03	+0.01	+0.01	+0.01	--	--	--	0.05

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	--	-0.01	+0.01	--	+0.01	--	--	+0.01	0.04

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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	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	\$35.1	N/A	2381
Total Quantity	N/A	10228	N/A	50189
Prog Acq Unit Cost	N/A	0.05	N/A	0.05

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

a. RDT&E --

(U) SADARM Product Imprvmt:

Aerojet, Azusa, CA

DAAE30-97-C-1017, CPAF

Award: February 24, 1997

Definitized: February 24, 1997

Initial Contract Price
Target Ceiling Qty

\$46.7 N/A

Current Contract Price
Target Ceiling Qty
\$46.7 N/A

Estimated Price At Completion
Contractor Program Manager
\$46.5 \$46.7

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
	\$0.0	\$0.0
Cumulative Variances To Date (12/31/97)	<u>\$0.6</u>	<u>\$-0.2</u>
Net Change	\$0.6	\$-0.2

Explanation of Change:

None.

(U) Contract Comments:

This is the first time this contract is being reported.

Variances are not considered significant.

This contract is being restructured to reflect the FY 98 Congressional decrement.

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

b. Procurement --
(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>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$41.8	N/A	150	\$44.8	\$45.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.7	\$-0.1
Cumulative Variances To Date (12/31/97)	\$-2.1	\$-2.4
Net Change	\$-1.4	\$-2.3

Explanation of Change:

(U) The schedule variance is a result of the delay in delivery of the hardware. Incorporation of corrective actions resulting from First Article Test failure is causing a delay in production. The cost variance is due to problems incurred as a result of the complexity of sensor integration test equipment software development as well as corrective actions.

(U) SADARM LRP2 BASIC:
Aerojet, Azusa, CA
DAAE30-97-C-1005, FFP
Award: February 6, 1997
Definitized: February 6, 1997

			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$81.6	N/A	600	

<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>
\$81.6	N/A	600	\$81.6	\$81.6

Explanation of Change:

None.

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

(U) Contract Comments:

This is the first time this contract is being reported in the SAR.

Contract DAAE30-95-C-0080, LRP1 Basic for FY 95 production of 110 projectiles is over 90% complete and is no longer reporting.

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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 (FY00-12)</u>	<u>Total</u>
RDT&E	356.2	10.8	20.8	14.9	402.7
Procurement	168.3	66.4	56.5	1687.1	1978.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	524.5	77.2	77.3	1702.0	2381.0

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				28.6	31.8
1992				55.3	62.9
1993				19.3	22.5
1994				35.1	41.6
1995				33.5	40.5
1996				12.8	15.8
1997				7.8	9.7
1998				8.5	10.8
1999				16.1	20.8
2000				9.8	12.9
2001				1.5	2.0
Subtotal	189			356.2	402.7

(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 and 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
1992	74.9	85.2

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

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	6.3	18.7	24.4	29.8
1996	150	6.7	32.9	36.2	44.9
1997	600	2.2	68.4	74.2	93.6
1998	507	3.9	45.3	51.7	66.4
1999	550	2.6	40.2	43.5	56.5
2000	520	5.6	37.9	44.1	58.3
2001	1450	9.7	43.6	54.0	72.6
2002	1820	12.7	44.7	58.1	79.6
2003	1926	4.3	55.4	60.4	84.4
2004	2727	2.5	107.3	110.5	157.8
2005	4500		116.0	116.8	170.4
2006	6000		122.3	123.1	183.6
2007	6000		118.3	119.1	181.5
2008	6000		114.0	114.8	178.9
2009	6000		110.6	111.4	177.4
2010	6000		107.8	108.6	176.7
2011	5140		97.5	98.3	163.4
2012				1.5	2.5
2013					
2014					
Subtotal	50000	56.5	1280.9	1350.7	1978.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	50189	56.5	1280.9	1706.9	2381.0

17. (U) Delivery/Expenditure Information:

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	132	132
Procurement	110	110

(U) Percent Total Program Quantities Delivered: 0.5%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 443.8

(U) Percent Total Program Expended: 18.6%

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

(U) RDT&E quantity excludes units that are not fully configured.

Expenditures to date exclude \$589.8M spent on MLRS SADARM Rocket.

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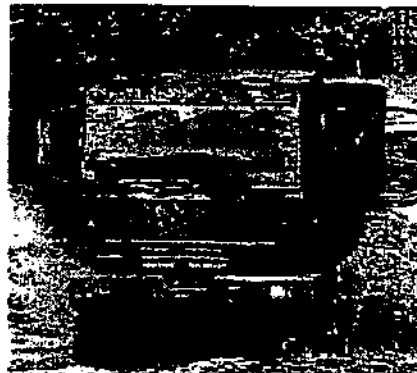
SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)

PROGRAM: FMTV

AS OF DATE: December 31, 1997

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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, Ground	COL Kenneth R. Dobeck
Combat and Support Systems	Assigned: July 15, 1996
ATTN: SFAE-GCSS-W-MTV	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 ICN

APPN 2036 ICN D15500 (Army)

APPN 2035 ICN DA035A (Army)

APPN 2035 ICN DS1010 (Army)

APPN 2035 ICN DV0310 (Army)

APPN 2035 ICN DV0320 (Army)

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DIRECTORATE FOR PRELIMINARY
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

98-C-0935

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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 Air Drop (LVAD) capability for contingency and rapid deployment operations. Trailer airdrop capability and a new truck variant, a water tanker, were approved by TRADOC in May 97 for introduction later in the program. 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.

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.

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. First Unit Equipped (FUE) occurred in January 1996 at Ft. Bragg, NC. 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.

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7. Executive Summary (Cont'd):

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.

On 21 Aug 1997, PEO, Tactical Wheeled Vehicles was dissolved, and PM, Medium Tactical Vehicles became part of PEO, Ground Combat and Support Systems (PEO-GCSS). Subsequently, on 30 Dec 1997, the Product Manager, Remanufacture Programs, was split off from the PM to become a stand-alone Product Manager under PEO-GCSS.

On 11 Sep 97, the Army Acquisition Executive approved a two-phase acquisition strategy for FMTV which would result in a second-source production qualification phase awarded competitively in FY98, followed by a three-year, multiyear procurement to the second source in FY00. The FY98 House Conference Report supported the Army's FMTV second source acquisition strategy to include authority to enter a multiyear contract with the current source. The second-source Determination and Finding is being processed within Army, and the multiyear contract with the current source is currently being negotiated using the Alpha contracting method.

FMTV Total Package Fielding continued throughout 1997. As of 31 Dec 1997, a total of 5,134 vehicles have been shipped and 4,904 received at the fielding sites.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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 Operational Capability (IOC)-FMTV	DEC 95	DEC 95	JAN 96
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
Production Decision Review Van, Tanker, & Trailer	JUN 96	JUN 96	NOV 96
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
IOT&E, Trailer			

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9a. Schedule (Cont'd):

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Start	APR 00	APR 00	APR 00
Complete	AUG 00	AUG 00	AUG 00

b. Current Change Explanations -- None

10. Performance Characteristics:

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Highway Speed on 2% Grade at GVW (mph)	55	55 / 55	54.8	55	
Highway Speed on 3% Grade at GVW (mph)	45	45 / 45	48.7	45	(Ch-1)
Highway Speed on 2% Grade at GCW (mph)	40	40 / 40	45.5	40	(Ch-1)
Highway Speed on 3% Grade at GCW (mph)	30	30 / 30	35.8	35	(Ch-1)
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	12000	(Ch-1)
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:	□	□ / N/A	TBD		
MMBOMF (miles)					
Truck, Cargo (LMTV)	3000	3000 / 2450	12000	5500	(Ch-1)
Truck, Cargo (MTV)	2700	2700 / 1950	12000	5500	(Ch-1)
Tractor	3300	3300 / 2600	4800	3800	(Ch-1)
Wrecker	2300	2300 / 2000	4800	2800	(Ch-1)
Trailer (LMTV)	2800	2800 / 1985	5000	2800	(Ch-1)
Trailer (MTV)	2600	2500 / 1600	5000	2800	(Ch-1)
MMBOMF (miles)					
Truck, Cargo (LMTV)	2228	2228 / 1832	>8279	>8279	(Ch-2)
Truck, Cargo (MTV)	2035	2035 / 1446	6386	6386	
Tractor	2480	2480 / 1960	3606	3606	
Wrecker	1875	1875 / 1500	4720	4720	

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10a. Performance Characteristics (Cont'd):

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate	
Trailer (LMTV)	2056	2056 / 1489	5000	5000	
Trailer (MTV)	1913	1913 / 1200	5000	5000	
MMHPOM					
Truck, Cargo (LMTV)	.01	.01 / .011	.0037	.0057	(Ch-1)
Truck, Cargo (MTV)	.011	.011 / .012	.0048	.0070	(Ch-1)
Tractor	.012	.012 / .015	.0062	.0091	(Ch-1)
Wrecker	.015	.015 / .018	.0069	.0097	(Ch-1)
Trailer (LMTV)	.003	.003 / .005	.0003	.0020	(Ch-1)
Trailer (MTV)	.003	.003 / .005	.0006	.0020	(Ch-1)
Transportability:					
Surface Transportation (Highway, Ship & Rail)	H, S&R	H, S&R / H, S&R	H,S&R	H,S&R	
Air Transportation	C-141	C-141 / C-141	C-141	C-141	
Mobility: (vehicle cone index)					
Truck Cargo	25	25 / 25	25	25	
Truck & Trailer Combination	35	35 / 35	30	35	

MMBMMF - Mean Miles Between Hardware Mission Failure
MMBOMF - Mean Miles Between Operational Mission Failure
MMHPOM - Maintenance Man hours/Operating Mile (Total of Unit, Intermediate Direct Support, and Intermediate General Support Maintenance)
GVW - Gross Vehicle Weight
GCW - Gross Combined Weight

b. Current Change Explanations --

(Ch-1) Some Performance Characteristics have been changed from the previous SAR to reflect FMTV System Specification #ATPD 2131A, 10 Feb 98, as follows:

Characteristic	From	To
Highway Speed on 3% Grade at GVW (mph)	48.7	45
Highway Speed on 2% Grade at GCW (mph)	45.5	40
Highway Speed on 3% Grade at GCW (mph)	35.8	35
LMTV Towed Load (lbs)	7500	12000
MMBMMF(miles) Truck, Cargo (LMTV)	12000	5500
Truck, Cargo (MTV)	12000	5500
Tractor	4800	3800
Wrecker	4800	2800
Trailer (LMTV)	5000	2800
Trailer (MTV)	5000	2800

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10b. Performance Characteristics (Cont'd):

MMPOM (hours) Truck, Cargo (LMTV)	.0100	.0057
Truck, Cargo (MTV)	.0110	.0070
Tractor	.0120	.0091
Wrecker	.0150	.0097
Trailer (LMTV)	.0003	.0020
Trailer (MTV)	.0006	.0020

(Ch-2) MMSOMF for Truck, Cargo (LMTV) was changed from 16847 to >8279 to reflect the OPTEC scored value for performance, instead of the higher value demonstrated when all operational testing mileage was taken into account.

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

	Production Estimate (SAR)	Approved Program (AFB)	Current Estimate
a. Cost --			
Development (RDT&E)	121.8	121.8	121.6
Procurement	11472.4	11472.4	11790.6
Rollaway	(10677.1)		(11042.7)
Other Wpn Systems Cost	(777.3)		(723.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(18.0)		(24.0)
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	11912.2
Escalation	7327.1	7327.1	3830.0
Development (RDT&E)	(-6.2)	(-6.2)	(-6.5)
Procurement	(7333.3)	(7333.3)	(3836.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	18921.3	18921.3	15742.2
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	85488	85488	85488
Total	85488	85488	85488

Note: Excludes 51 RDT&E 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 --
 DFMTV Foreign Military Sales through 31 Dec 1997:

<u>Country</u>	<u>Quantity</u>	<u>Estimated Cost</u>
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11c. Total Program Cost and Quantity (Cont'd):

Saudi Arabia	99	\$13.5M
Taiwan	3	.4M
Thailand	117	22.8M
Greece	4	.6M

d. Nuclear Costs -- None.

12. Unit Cost Summary:

	UCR Baseline (SEP 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	11594.2	11912.2	
(2) Quantity	85488	85488	
(3) Unit Cost	0.136	0.139	+2.21
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	11472.4	11790.6	
(2) Quantity	85488	85488	
(3) Unit Cost	0.134	0.138	+2.99

13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	115.6	18805.7	-	18921.3
Previous Changes:				
Economic	-0.4	-1691.0	-	-1691.4
Quantity	-	-	-	-
Schedule	+0.7	-452.4	-	-451.7
Engineering	-	+6.0	-	+6.0
Estimating	+0.4	+112.2	-	+112.6
Other	-	-	-	-
Support	-	-127.2	-	-127.2
Subtotal	+0.7	-2152.4	-	-2151.7
Current Changes:				
Economic	-1.2	-1153.3	-	-1154.5
Quantity	-	+215.6	-	+215.6
Schedule	+0.8	-139.9	-	-139.1
Engineering	-	-	-	-
Estimating	-0.8	+43.9	-	+43.1
Other	-	-	-	-
Support	-	+7.5	-	+7.5
Subtotal	-1.2	-1026.2	-	-1027.4
Total Changes	-0.5	-3178.6	-	-3179.1
Current Estimate	115.1	15627.1	-	15742.2

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	121.8	11472.4	-	11594.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	+0.2	+42.6	-	+42.8
Engineering	-	+5.7	-	+5.7
Estimating	-0.5	+56.8	-	+56.3
Other	-	-	-	-
Support	-	-73.8	-	-73.8
Subtotal	-0.3	+31.3	-	+31.0
Current Changes:				
Quantity	-	+221.4	-	+221.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.1	+39.1	-	+39.2
Other	-	-	-	-
Support	-	+26.4	-	+26.4
Subtotal	+0.1	+286.9	-	+287.0
Total Changes	-0.2	+318.2	-	+318.0
Current Estimate	121.6	11790.6	-	11912.2

Changes in trailer quantities are identified separately in the Current Change explanation even though the SAR unit of measure is trucks only.

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Correct prior SAR to move schedule effect	0.0	-0.8
RDT&E effort from Estimating to Schedule.		
(Estimating)		
(Schedule)	0.0	+0.8
Revised escalation indices. (Economic)	N/A	-1.2
Rounding associated with application of the revised inflation indices to the Base Year program. (Estimating)	+0.1	0.0
RDT&E Subtotal	+0.1	-1.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-1153.3
Adjustments due to changes in model mix (i.e. requirement for more of the more expensive models, and fewer of the less expensive models). (Quantity)	+219.5	+233.1
Increase in the number of MTV Trailers accompanied by a like reduction in the number of LMTV Trailers. (Quantity)	+89.0	+124.3

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

b. Current Change Explanations ---

	(Dollars in Millions)	
	Base-Year	Then-Year
Decrease in the number of LMTV Trailers accompanied by a like increase in the number of MTV Trailers. (Quantity)	-87.1	-141.8
Change in annual procurement buy profile of the MTV Truck. (Schedule)	0.0	-146.9
Change in the annual procurement buy schedule of the LMTV Truck. (Schedule)	0.0	+16.4
Change in the annual procurement buy profile of the MTV Trailer. (Schedule)	0.0	-9.7
Change in the annual procurement buy schedule of the LMTV Trailer. (Schedule)	0.0	+0.3
Adjustment for Current and Prior Inflation. (Estimating)	+9.1	+9.4
Refinement to remove 5 Ton funding. (Estimating)	-12.3	-12.1
Testing and Engineering Support due to introduction of a second source contractor. (Estimating)	+42.3	+46.6
Other Weapon Systems costs associated with introduction of a second source contractor. (Support)	+2.9	+3.2
Other Weapon Systems cost changes associated with field support. (Support)	+21.4	+1.8
Change in Initial Spares due to change in model mix. (Support)	+1.4	+1.8
Adjustment for Current and Prior Year Inflation. (Support)	+0.7	+0.7
Procurement Subtotal	+286.9	-1026.2

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 Init 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

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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	
0.22	-0.03	--	-0.01	--	--	--	--	-0.04	0.18

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Init 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	-0.03	--	-0.01	--	--	--	--	-0.04	0.18

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	15742.2
Total Quantity	0	119542	85488	85488
Prog Acq Unit Cost	0	0.07	0.22	0.18

In the Development Estimate, the unit of measure for the PAUC and PUC included truck and trailer quantities. The unit of measure was changed to truck quantities only in the 31 December 1993 SAR and this unit of measure continues to be used in the Production Estimate and Current Estimate cost columns.

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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 Estimated Price At Completion
Target Ceiling Qty Contractor Program Manager
 \$1398.0 N/A 10843 \$1398.0 \$1398.0

Explanation of Change:

None.

Cost and Schedule variance reporting 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)

<u>Appropriation</u>	<u>Prior Years</u> (FY88-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-23)	<u>Total</u>
RDT&E	90.7	-	-	24.4	115.1
Procurement	1315.8	204.0	336.3	13771.0	15627.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1406.5	204.0	336.3	13795.4	15742.2

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					

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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 \$
1999					
2000					
2001				1.5	1.6
2002					
2003					
2004				7.9	9.2
2005				2.9	3.5
2006					
2007					
2008					
2009					
2010					
2011				1.9	2.6
2012				3.5	4.9
2013				1.8	2.6
Subtotal				121.6	115.1

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	55.1	81.1	76.2
1992	1301	9.9	153.7	187.6	180.1
1993	2008	12.1	237.3	260.6	255.3
1994	183	2.6	24.7	33.5	33.3
1995	3351	11.9	343.5	364.5	370.2
1996	825	46.8	100.4	160.0	164.3
1997	1807	5.7	208.7	226.4	236.4
1998	1213	19.2	152.4	192.6	204.0
1999	1889	17.7	269.0	313.2	336.3
2000	2297	15.9	326.8	376.8	411.5
2001	2576	27.4	368.2	419.6	466.4
2002	3776	13.7	490.4	540.0	611.6
2003	4010	10.5	552.2	604.4	699.0
2004	3194	3.9	410.1	445.8	526.9
2005	3194	19.5	400.9	450.5	544.2
2006	3193	16.8	392.1	424.0	523.4
2007	3193	4.5	383.8	401.9	507.1
2008	3191	3.1	417.5	434.5	560.3
2009	3191	3.9	409.4	426.2	561.6
2010	3191	19.5	400.2	432.4	582.4
2011	3191	16.8	391.3	427.2	588.0
2012	3191	4.4	383.0	414.7	583.4
2013	3191	3.0	417.2	453.2	651.9

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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 \$
2014	3191	3.9	409.2	445.6	654.7
2015	3191	19.4	400.1	451.0	677.2
2016	3189	16.8	391.0	438.3	672.6
2017	3191	4.5	383.0	417.7	655.1
2018	3020	3.1	366.9	401.3	643.6
2019	3021	3.9	359.9	394.6	646.4
2020	3020	19.4	351.6	400.8	671.1
2021	3020	16.7	344.1	389.6	666.7
2022	3095	4.4	346.8	374.8	655.5
2023		1.3		6.0	10.8
2024					
Subtotal	85488	402.2	10640.5	11790.6	15627.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	85488	402.2	10640.5	11912.2	15742.2

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	0	0
Procurement	5321	5321

Percent Total Program Quantities Delivered: 6.2%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1432.5

Percent Total Program Expended: 9.1%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --
The average miles/vehicle/year for the LMTV truck is 2,796 miles and for the MTV truck, 2,635 miles. These revised operating tempos are associated with the FY99 Program Objective Memorandum (POM) profile. 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. Trailers do not have dedicated crew.

The current Baseline Cost Estimate, June 1995, was used to develop the costs in Section 18b, with the exception of Unit Level Consumption, which was updated based on the most recent FMTV System Specification and its impact on

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

replenishment consumables (repair parts). Petroleum, Oil and Lubricants (POL) costs, also part of Unit Level Consumption, have been revised to incorporate the reduced operating tempo identified above compared to the higher optempos in the December 1996 SAR. The standard unit of measure for this program - the quantity of trucks only - has been used in developing O&S costs reported below.

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	5.3	8.3
Unit Level Consumption	0.6	1.3
Intermediate Maintenance	0.0	0.0
Depot Maintenance	0.0	0.0
Contractor Support	0.0	0.0
Sustaining Support	0.3	0.3
Indirect Costs	2.4	3.5
Total	8.6	13.4

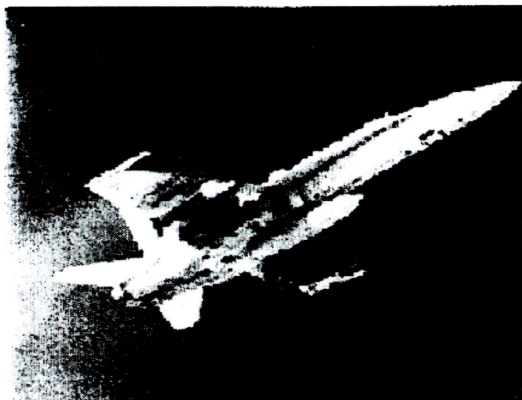
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: JSOW

AS OF DATE: December 31, 1997

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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 CAPT C.H. Johnston
Bldg 2272 Assigned: August 6, 1996
47123 Buse Road Unit #IPT DSN 757-7477; COMM (301)757-7477
Patuxent River, MD 20670-1547 johnstonb.ntrprs@navair.navy.mil

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

RDT&E:

(U) PE 0604727F
(U) PE 0604727N

PROCUREMENT:

(U) APPN 1507 ICN 223000 (Navy)
(U) APPN 3020 ICN JSOW00 (Air Force)

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No Security Objection
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(AS AMENDED)

98-C-0897
MAR 24 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

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DEPARTMENT OF DEFENSE

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5. (U) References:

Baseline

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 December 10, 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 enhances aircraft survivability by providing the capability for launch aircraft to standoff outside the range of most target area surface-to-air threat systems. The JSOW launch-and-leave capability allows several target kills per aircraft sortie.

The JSOW program developed a Baseline weapon for use against fixed area targets. The JSOW Baseline variant includes a kinematically efficient airframe and integrated Global Positioning System (GPS)/Inertial Navigation System (INS) navigation capability, and a BLU-97/B submunition payload. This weapon is designed to allow for pre-planned product improvements. The JSOW/BLU-108 variant incorporates the Sensor Fuzed Weapon submunition (BLU-108) into the baseline vehicle. The JSOW/BLU-108 variant provides a standoff delivery capability against massed armor and land combat vehicles. The Unitary warhead variant adds a terminal seeker, a man-in-the-loop data link, and a unitary warhead to enable the attack of blast/frag sensitive and moving point targets. The JSOW Unitary provides increased accuracy and lethality, and the capability for aimpoint selection, target discrimination, and bomb impact assessment.

Through adherence to international standards for weapons interfaces and minimized weight and dimension considerations, JSOW is compatible with Air Force and NATO aircraft. JSOW is a joint Navy/Air Force program.

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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).

JSOW (AGM-154A) OPEVAL report was completed during October 1997. COMOPTEVFOR found JSOW operationally effective, operationally suitable, and ready for fleet introduction.

JSOW Baseline (AGM-154A) has been deployed aboard the NIMITZ. The weapon is functioning as designed with no problems identified to date.

An Acquisition Program Baseline (APB) was signed on December 10, 1997 incorporating BLU-108 test schedule changes.

AGM-154A Low Rate Initial Production, Lot II production contract was awarded to Raytheon TI Systems on December 30, 1997. The contract procures 180 AGM-154A's for the Navy and Air Force.

8. (U) Threshold Breaches:

Baseline

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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):

Unitary

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

9. (U) Schedule:

Baseline

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
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
LRIP Contract Option Exercised	OCT 96	OCT 96	FEB 97

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

	<u>Development</u> <u>Estimate (SAR)</u>	<u>Approved</u> <u>Program (APB)</u>	<u>Current</u> <u>Estimate</u>
LRIP First Delivery	MAY 98	MAY 98	MAY 98
OPEVAL (OT-IIB)			
Start	AUG 96	AUG 96	FEB 97
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

(b)(1)

b. Current Change Explanations -- None

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9a. (U) Schedule (Cont'd):
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
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
Complete (Report)	SEP 01	SEP 01	AUG 00
LRIP Contract Option Exercised	OCT 00	OCT 00	OCT 00
LRIP First Delivery	APR 02	APR 02	JAN 02
OPEVAL (OT-IIB)			
Start	NOV 01	NOV 01	NOV 00
Complete (Report)	MAY 02	MAY 02	MAY 01
Milestone III	SEP 02	SEP 02	JUL 02
Initial Operational Capability	(b)(1)		
Organization Level Support	TBD	TBD	TBD
Intermediate Level Support	TBD	TBD	TBD
Depot Level Support	TBD	TBD	TBD

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

Baseline

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(c) Carriage Envelope	(b)(1)			
(c) Airspeed				
(c) Altitude (k-ft) MSL				
Operational				
Suitability				
(c) Weapon Availability				
(Ao)				

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
() Tactics and Targeting	(b)(1)			
Launch Envelope				
() Airspeed (IMN)				
() Airspeed (IMN/KCAS)				Ch-1)
() Altitude (ft)				
() Pitch Angle				
() Off Axis Launch Angle				Ch-1)
() Roll Angle (deg)				
Survivability				
Accuracy (CEP)				
() Weapon (ft)				
() Weapon (Air Vehicle) (ft)				Ch-1)
() Weapon System, F/A-18				
Reliability				
() Mean Flt Hrs Between Failure (MFHBF)				
() System Mission				Ch-1)
() System in Service Time (mo)				
Built-In-Test (BIT)				
Failure Detection Rate				
Fault Isolation Rate				
False Alarm Rate				
Maintainability				
() Combat Load Time (min for two wpns)				

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

	<u>Development Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>			
Aircraft Compatibility	(b)(1)						
Size (in.)							
Weight (lbs)							
Range							
() Low							
() High							
Range (nm from launch at specified conditions)							
Low Altitude (NM)	N/A	>or=15 / (200 ft / MSL, .8	>or=12 / (500 ft / MSL, .8	>or=12 / (500 ft / MSL, .8			
() High MSL	(b)(1)	(b)(1)					
Weapon Effectiveness	(b)(1)						
Targets							
()							
()							
BLU							
() Weapon Effectiveness (Kill per Weapon) Non-Countermeasures Environment Reliability System Mission							

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

b. Current Change Explanations --

(U) (Ch-1) Updated to reflect OPEVAL report.

Unitary

a. Performance --

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
Launch Envelope	(b)(1)			
(C) Airspeed (IMN/KCAS)				
(C) Off Axis Launch Angle (deg)				
Survivability				
(C) Accuracy (CEP)				
(C) Weapon (ft)				
(C) Weapon (Air Vehicle) (ft)				
(C) Range (nm from launch at specified conditions)				
(C) Low Altitude (NM)				
(C) (b)(1)				
(C) System Mission				

b. Current Change Explanations --

(U) (Ch-1) Updated to reflect OPEVAL report.

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	328.3	506.1	563.5
Procurement	1535.7	2963.3	2983.8
Recurring	(1320.2)		(2740.3)
Nonrecurring	(79.6)		(212.9)
Total Flyaway	(1399.8)		(2953.2)
Fleet Support	(92.4)		(28.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(43.5)		(1.8)
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	3547.3
Escalation	1083.4	2056.1	1295.4
Development (RDT&E)	(44.5)	(83.1)	(80.4)
Procurement	(1032.1)	(1966.2)	(1215.0)
Construction (MILCON)	(6.8)	(6.8)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	2969.2	5547.3	4842.7
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	8800	16000	16000
Total	8800	16000	16000

Note: Excludes 69 RDT&E prototypes from the SAR Baseline and 69 from the Current Estimate that are not considered fully configured.

(U) Note: 16,000 procurement units includes 8800 Navy Baselines (\$2022.1M), 1200 Navy BLU-108's (\$448.2M), 3,000 Air Force Baselines (\$635.9M), and 3,000 Air Force BLU-108's (\$1092.6M).

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

	Development Estimate (SAR)	Approved Program (APB)	Current Estimate
a. (U) Cost --			
Development (RDT&E)	257.2	257.2	277.5
Procurement	3103.7	3103.7	2620.1
Recurring Flyaway	(2825.2)		(2422.7)
Nonrecurring Flyaway	(102.1)		(94.8)
Total Flyaway	(2927.3)		(2517.5)
Fleet Support	(35.5)		(25.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(140.9)		(77.0)
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	2897.6
Escalation	2946.3	2946.3	1415.8
Development (RDT&E)	(79.1)	(79.1)	(62.8)
Procurement	(2867.2)	(2867.2)	(1353.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	6307.2	6307.2	4313.4
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	7800	7800	7800
Total	7800	7800	7800

Note: Excludes 50 RDT&E 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

	UCR Baseline (JAN 97 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	3491.2	3547.3	
(2) Quantity	16000	16000	
(3) Unit Cost	0.218	0.222	+1.83
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	2963.3	2983.8	
(2) Quantity	16000	16000	
(3) Unit Cost	0.185	0.186	+0.54

Unitary

	UCR Baseline (APR 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 90 BY\$)	3360.9	2897.6	
(2) Quantity	7800	7800	
(3) Unit Cost	0.431	0.371	-13.92
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 90 BY\$)	3103.7	2620.1	
(2) Quantity	7800	7800	
(3) Unit Cost	0.398	0.336	-15.58

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13. (U) Cost Variance Analysis:
Baseline

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	+11.3	-278.8	-	-267.5
Quantity	-	+1565.2	-	+1565.2
Schedule	-	-88.5	+0.4	-88.1
Engineering	-	-	-	-
Estimating	+278.0	+827.9	-29.0	+1076.9
Other	-	-	-	-
Support	-	-190.3	-	-190.3
Subtotal	+289.3	+1835.5	-28.6	+2096.2
Current Changes:				
Economic	-17.6	-204.9	-	-222.5
Quantity	-	-	-	-
Schedule	-	-9.0	-	-9.0
Engineering	-	-	-	-
Estimating	-0.6	-1.7	-	-2.3
Other	-	-	-	-
Support	-	+11.1	-	+11.1
Subtotal	-18.2	-204.5	-	-222.7
Total Changes	+271.1	+1631.0	-28.6	+1873.5
Current Estimate	643.9	4198.8	-	4842.7

(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	+235.1	+590.1	-21.8	+803.4
Other	-	-	-	-
Support	-	-114.7	-	-114.7
Subtotal	+235.1	+1439.5	-21.8	+1652.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.1	-0.8	-	-0.7
Other	-	-	-	-
Support	-	+9.4	-	+9.4
Subtotal	+0.1	+8.6	-	+8.7
Total Changes	+235.2	+1448.1	-21.8	+1661.5
Current Estimate	563.5	2983.8	-	3547.3

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

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	-17.4
Economic adjustment for negative program change. (Economic)	N/A	-0.2
Adjustment for Current and Prior Inflation. (Estimating)	+14.1	+16.2
Budget reduction for SBIR required reduction of engineering change orders. (Estimating)	-3.8	-4.4
Reprogramming for acceleration of SMART RACK procurement. (Estimating)	-10.2	-12.4
RDT&E Subtotal	+0.1	-18.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-206.7
Economic adjustment for negative program change. (Economic)	N/A	+1.8
Adjustment for Current and Prior Inflation. (Estimating)	+2.0	+2.4
Rephasing annual buy for Navy procurement as a result of acceleration requirements. (Schedule)	0.0	-3.5
Rephasing of annual buy profile for the Air Force based on acceleration efforts. (Schedule)	0.0	-5.5
Refinement of estimate for tooling adjustments and contract actuals. (Estimating)	-2.8	-4.1
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Increase estimate for initial spares requirement. (Support)	+9.3	+11.0
	0.0	0.0
Procurement Subtotal	+8.6	-204.5

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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	-15.3	-466.5	-	-481.8
Quantity	-	-	-	-
Schedule	-	-374.2	-	-374.2
Engineering	-	-	-	-
Estimating	+14.6	-756.9	-	-742.3
Other	-	-	-	-
Support	-	-139.7	-	-139.7
Subtotal	-0.7	-1737.3	-	-1738.0
Current Changes:				
Economic	-5.9	-247.5	-	-253.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+10.6	-2.2	-	+8.4
Other	-	-	-	-
Support	-	-10.8	-	-10.8
Subtotal	+4.7	-260.5	-	-255.8
Total Changes	+4.0	-1997.8	-	-1993.8
Current Estimate	340.3	3973.1	-	4313.4

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

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	257.2	3103.7	-	3360.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+11.6	-408.7	-	-397.1
Other	-	-	-	-
Support	-	-66.5	-	-66.5
Subtotal	+11.6	-475.2	-	-463.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+8.7	-1.1	-	+7.6
Other	-	-	-	-
Support	-	-7.3	-	-7.3
Subtotal	+8.7	-8.4	-	+0.3
Total Changes	+20.3	-483.6	-	-463.3
Current Estimate	277.5	2620.1	-	2897.6

b. (U) Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-5.9
Adjustment for Current and Prior Inflation. (Estimating)	+1.1	+1.4
Congressional increase for acceleration of production efforts. (Estimating)	+7.6	+9.2
RD&E Subtotal	+8.7	+4.7
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-249.1
Economic adjustment for negative program change. (Economic)	N/A	+1.6
Refinement of estimate (Estimating)	-1.1	-2.2
Change in Initial Spares (Support)	-6.4	-9.1
Refinement of fleet support estimate. (Support)	-0.9	-1.7
Procurement Subtotal	-8.4	-260.5

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

Baseline

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	-0.03	-0.06	-0.01	--	+0.07	--	-0.01	-0.04	0.30

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	-0.03	-0.03	-0.01	--	+0.05	--	-0.01	-0.03	0.26

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
FUE/IOC	(b)(1)		N/A	(b)(1)
Total Cost	260	2969.2	0	4842.7
Total Quantity	0	8800	0	16000
Prog Acq Unit Cost	0	0.34	0	0.3

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	-0.09	-0.01	-0.05	--	-0.09	--	-0.02	-0.26	0.55

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

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	-0.09	--	-0.05	--	-0.10	--	-0.02	-0.26	0.51

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
FUE/IOC	N/A	(b)(1)	N/A	(b)(1)
Total Cost	0	6307.2	0	4313.4
Total Quantity	0	7800	0	7800
Prog Acq Unit Cost	0	0.81	0	0.55

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

a. RDT&E --

(U) JSOW Baseline/BLU108 EMD:
Raytheon TI Systems, 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
\$322.7	N/A	0

Estimated Price At Completion	
Contractor	Program Manager
\$341.9	\$340.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-20.5	\$-2.0
Cumulative Variances To Date (12/31/97)	\$-20.0	\$-0.9
Net Change	\$0.5	\$1.1

Explanation of Change:

(U) Cost Variance: The favorable cost variance change is primarily due to improvement in overhead and G&A rates as well as passage of time for LOE accounts.

Schedule Variance: The unfavorable schedule variance has improved due to prompt completion of delayed BLU-108 efforts.

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

There is no impact to the contract or JSOW program for these variances.

(U) JSOW UNITARY E&MD:			Initial Contract Price		
Raytheon TI Systems, Dallas, TX	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
N00019-95-C-0120, CPIF/AF	\$211.5	N/A	0		
Award: August 30, 1995					
Definitized: August 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>	
\$223.3	N/A	0	\$201.8	\$222.0	

Previous Cumulative Variances	<u>Cost Variance</u>	<u>Schedule Variance</u>
	\$0.9	\$-4.2
Cumulative Variances To Date (12/31/97)	\$0.6	\$-2.4
Net Change	\$-0.3	\$1.8

Explanation of Change:

(U) Cost Variance: The cost variance continues to be positive and is driven by favorable engineering overhead, subcontractor material overhead and G&A rates.

Schedule Variance: This unfavorable schedule variance is due to engineering labor delays related to availability of less labor resources than projected.

There is no impact to the contract of JSOW program for these variances.

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</u> (FY87-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-14)	<u>Total</u>
RDT&E	674.1	101.3	88.4	120.4	984.2
Procurement	106.3	81.1	162.9	7821.6	8171.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	780.4	182.4	251.3	7942.0	9156.1

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

Baseline

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 (FY00-12)</u>	<u>Total</u>
RDT&E	576.9	31.3	23.3	12.4	643.9
Procurement	106.3	81.1	162.9	3848.5	4198.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	683.2	112.4	186.2	3860.9	4842.7

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	97.2	70.0	65.1	108.0	340.3
Procurement	-	-	-	3973.1	3973.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	97.2	70.0	65.1	4081.1	4313.4

b. Annual Summary -- Baseline

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>
1987				1.1	1.0
1988				20.3	19.2
1989				13.2	13.0
1990				8.3	8.5
1991				15.6	16.5
1992				42.0	45.8
1993				52.6	58.7
1994				71.1	80.9
1995				89.9	104.3
1996				41.0	48.4
1997				29.3	35.2
1998				6.8	8.3
1999				6.4	7.9
Subtotal				397.6	447.7

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

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				45.8	53.1
1996				35.4	41.8
1997				18.3	22.0
1998				18.9	23.0
1999				12.5	15.4
2000				8.6	10.8
2001				1.3	1.6
Subtotal				165.9	196.2

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		20.3		21.0	25.2
1997	100	11.0	40.8	66.6	81.1
1998	135	12.0	46.6	50.1	62.0
1999	328	24.0	73.9	99.5	125.2
2000	752	11.6	151.0	164.6	210.6
2001	752	10.7	143.7	155.5	202.5
2002	859	9.2	158.4	170.3	226.1
2003	866	10.5	148.0	161.9	219.5
2004	819	6.6	122.9	131.0	181.6
2005	675	5.5	90.6	96.4	136.6
2006	675	5.5	88.9	94.6	136.9
2007	675	5.4	87.5	93.1	137.7
2008	675	5.4	86.9	92.6	140.0
2009	675	5.4	87.0	92.7	143.2
2010	675	5.3	86.3	91.9	145.1
2011	675	5.3	85.6	91.1	147.1
2012	664	5.3	85.4	90.9	149.9
2013					
Subtotal	10000	159.0	1583.5	1763.8	2470.3

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

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 \$
1998	45	0.6	13.5	15.4	19.1
1999	100	3.5	25.1	30.0	37.7
2000	263	4.1	61.4	67.1	85.9
2001	377	4.1	79.1	83.8	109.1
2002	360	3.4	79.3	84.3	111.9
2003	484	7.1	106.4	115.2	156.2
2004	717	5.3	133.6	140.1	194.1
2005	717	5.1	147.9	152.9	216.6
2006	717	5.0	146.9	151.8	219.8
2007	717	4.9	144.8	149.8	221.6
2008	535	3.8	98.0	101.8	153.9
2009	300	2.1	37.7	39.8	61.5
2010	300	2.1	37.4	39.5	62.4
2011	300	2.0	37.0	39.0	63.0
2012	68	0.8	8.7	9.5	15.7
Subtotal	6000	53.9	1156.8	1220.0	1728.5

Service	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Navy	10000	159.0	1583.5	2161.4	2918.0
USAF	6000	53.9	1156.8	1385.9	1924.7
Grand Total	16000	212.9	2740.3	3547.3	4842.7

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				26.3	31.0
1997				39.2	47.0
1998				57.5	70.0
1999				52.7	65.1
2000				42.1	52.9
2001				28.6	36.5

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

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 \$
2002				13.5	17.6
2003				0.8	1.0
Subtotal				277.5	340.3

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		7.1	9.1
2001	118	5.7	78.8	86.7	112.9
2002	167	5.2	88.7	97.9	130.0
2003	209	18.3	82.8	107.6	145.9
2004	600	7.6	205.5	221.4	306.9
2005	700	5.4	222.0	236.4	334.8
2006	700	5.3	211.4	225.4	326.3
2007	700	5.3	206.8	220.6	326.4
2008	700	5.2	204.0	217.6	329.0
2009	700	5.2	202.1	215.7	333.3
2010	700	5.2	199.7	213.2	336.7
2011	700	5.2	197.7	211.0	340.6
2012	700	5.2	197.2	210.5	347.2
2013	700	5.5	202.6	216.2	365.0
2014	406	3.8	123.4	132.8	229.0
Subtotal	7800	94.8	2422.7	2620.1	3973.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	7800	94.8	2422.7	2897.6	4313.4

17. (U) Delivery/Expenditure Information:

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

Unitary

Baseline

a. (U) Deliveries To Date - None.

(U) Percent Total Program Quantities Delivered: N/A

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 0.0

(U) Percent Total Program Expended: 0.0%

Unitary

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): \$ 125.2

(U) Percent Total Program Expended: 2.9%

18. (U) Operating and Support Costs:

Baseline

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 CVEG each year - 100 JSOW per CV.

20 year missile life.

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

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

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per JSOW Unit	Avg Annual Cost Per ANTECEDENT
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-12 MHC 51

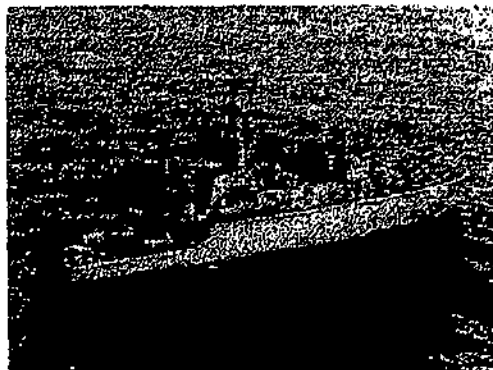
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: MHC 51

AS OF DATE: December 31, 1997

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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

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

Approved Program:

NAE Approved Acquisition Program Baseline (APB) dated October 20, 1995.

No Security Objection
to Open Publication
(AS AMENDED)
98-C-0884
MAR 23 1998
Office of the Chief of
Naval Operations
Dept. of the Navy

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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 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 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 minehunting 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. Structural design concerns surfaced early, however, when preliminary shock and strength testing on sectional test panels indicated major weight and shock problems would materialize and that costly redesign would be necessitated. Consequently, contract effort was terminated in 1986. The Coastal Minehunter (MHC) ship program was begun shortly thereafter to replace the MSH. The MHC is based on the Italian built LERICI Class minesweepers designed and constructed by 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 authorization is 12 ships.

Significant Developments Since Last SAR Report:

Program Deliveries: MHC 57, the last of four MHC ships awarded Avondale Industries, was delivered 1/3/97. MHC 60, the sixth of eight MHC ships awarded Intermarine USA, was delivered 7/15/97.

Technical Issues/Status: Last year's SAR addressed MHC ships' capability to

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7. Executive Summary (Cont'd):

meet design shock qualifications. Prior to the 1995 shock testing of MHC 51 (class leadship) at Aberdeen Proving Grounds, a known shock deficiency existed with the ship's propulsion train couplings (SAC--Sound Attenuating Coupling and MAC--Misalignment Coupling). It was decided that shock trials would serve as an empirical basis for defining and modelling test data as a more practical and affordable approach toward establishing a coupling redesign which would meet Navy mission shock qualifications. During early 1997, the Navy approved a shock hardened SAC and MAC coupling redesign which met these qualifications. Deliveries of the first redesigned coupling shipsets were received during October 97. An installation schedule has been developed and is proceeding.

Following the coupling redesign, updated modelling analyses showed that the new SAC imposed greater loads on an adjacent propulsion train component, the Integrated Fluid Variator and Gearbox (IFVG), which supports the forward end of the larger and heavier redesigned SAC. Effort was begun immediately and a shock qualified bearing redesign was approved during December 1997. Purchase orders were placed during February 1998 for upgraded IFVG bearing shipsets and lead deliveries are planned for August 98. With final installation of all redesigned components, the MHC 51 ship class will be fully shock qualified. Delays with production lead time of the redesigned bearings prevented installation to be done on MHCs 51 and 52 with SCN appropriation funding. The PM has identified other funding to complete this effort.

General Program Status: Following execution of the multi-contract "Global Settlement" agreement in 1995, Georgia shipbuilder, IMUSA, which was approaching insolvency as recently as 2 years ago, today shows strong profit on its remaining MHC ships under contract. The company is expected to achieve a net profit across their total 8 MHC ship program despite large losses suffered on the first two vessels (class leadship MHC 51 and MHC 52). To date, the company has earned \$12M of the \$15M maximum contract early delivery incentive allocation established by the global settlement (5 qualifying ships at maximum incentive of \$3M per ship). The PM has proactively instituted fair and legal measures to help with IMUSA's recovery. The company's entry as the first U.S. based builder of large Glass Reinforced Plastic (GRP) yachts now appears successful with 6 vessels under construction. Currently, MHC shipbuilding represents IMUSA's only large Navy ship construction effort. Despite MHC contract effort nearing completion, the company is actively competing for other contracts and has established itself as a competent east coast ship repair facility. The alternate builder, Avondale Industries, completed its 4 ship MHC program with delivery of their final MHC during January 97.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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.

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9b. Schedule (Cont'd):

b. Current Change Explanations -- None

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
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 -- 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)	17.2	17.2	18.5
Procurement	1440.2	1626.9	1652.9
Basic	(966.4)		(1133.3)
Government Furnished Eq	(346.9)		(367.9)
Other	(31.9)		(53.4)
Outfitting/Post Deliver	(80.1)		(83.7)
Total Sailaway	(1425.3)		(1638.3)
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	1671.4
Escalation	90.9	85.6	84.2
Development (RDT&E)	(-2.2)	(-2.2)	(-2.3)
Procurement	(93.1)	(87.8)	(86.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	1548.3	1729.7	1755.6

Current Estimate is the FY 1999 President's Budget.

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:

	UCR Baseline (OCT 95 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 92 BY\$)	1644.1	1671.4	
(2) Quantity	12	12	
(3) Unit Cost	137.008	139.283	+1.66
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 92 BY\$)	1626.9	1652.9	
(2) Quantity	12	12	
(3) Unit Cost	135.575	137.742	+1.60

Current Estimate (TY) is the FY 1999 President's Budget. All categories of cost include outfitting and post delivery.

13. Cost Variance Analysis:

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

	RDTE	PROC	MILCON	TOTAL
Production Estimate	15.0	1533.3	-	1548.3
Previous Changes:				
Economic	-	-1.1	-	-1.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.2	+192.5	-	+193.7
Other	-	-	-	-
Support	-	-0.3	-	-0.3
Subtotal	+1.2	+191.1	-	+192.3
Current Changes:				
Economic	-	-3.7	-	-3.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+18.7	-	+18.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+15.0	-	+15.0
Total Changes	+1.2	+206.1	-	+207.3
Current Estimate	16.2	1739.4	-	1755.6

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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	+196.5	-	+197.8
Other	-	-	-	-
Support	-	-0.3	-	-0.3
Subtotal	+1.3	+196.2	-	+197.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+16.5	-	+16.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+16.5	-	+16.5
Total Changes	+1.3	+212.7	-	+214.0
Current Estimate	18.5	1652.9	-	1671.4

b. Current Change Explanations --

(Dollars in Millions)

Base-Year Then-Year

(1) <u>Procurement</u>		
Revised OSD inflation indices. (Economic)	N/A	-3.7
Contract change orders combined with other tech/engineering support costs. (Estimating)	+0.6	-1.3
Correction of GFE deficiencies: upgrades to MHC multi-purpose and boat cranes for corrosion control; improvements to MHC bomblet handling system. (Estimating)	+3.5	+2.9
Increase in ships' outfitting cost est mainly due to: Spares and provision tech doc support for SQQ-32 Sonar & SLQ-48 Mine Neutraliz. System; increase in ships' COSAL load auth. (Estimating)	+12.4	+13.4
Adjustment for current and prior year inflation. (Estimating)	0.0	+3.7
Procurement Subtotal	+16.5	+15.0

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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	-0.40	-0.01	--	--	+17.70	--	-0.02	+17.27	146.30

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	-0.40	--	--	--	+17.60	--	-0.02	+17.18	144.95

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	1755.6
Total Quantity	N/A	N/A	12	12
Prog Acq Unit Cost	N/A	N/A	129.03	146.3

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

a. Procurement --

MHC 58, 59, & 60:
INTERMARINE USA, SAVANNAH, GA
N00024-92-C-2203, FPI/FFP
Award: April 22, 1992
Definitized: April 22, 1992

Initial Contract Price		
Target	Ceiling	Qty
\$178.0	\$199.6	3

Current Contract Price		
Target	Ceiling	Qty
\$239.5	N/A	3

Estimated Price At Completion	
Contractor	Program Manager
\$239.5	\$239.5

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15a. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-7.6	\$-2.1
Cumulative Variances To Date (06/30/97)	\$-11.7	\$-1.5
Net Change	\$-4.1	\$0.6

Explanation of Change:

(\$ Millions/Then Year)

GENERAL: MHC 60, the last of this contract's 3 ships, was delivered 7/15/97 and subsequently commissioned USS CARDINAL in ceremonies held in Alexandria, VA on 10/18/97. This is final SAR coverage for this contract which is 100% complete. Following the 1995 execution of the "global settlement" agreement with IMUSA, contract cost and schedule performance improved substantially. The settlement, which resolved several outstanding claims and lawsuits and ultimately kept IMUSA solvent, enabled remaining program ships under contract to be delivered. The settlement also converted this contract from FPI to Firm Fixed Price and provided early delivery incentives.

COST PERFORMANCE: The "Estimated Price At Completion" above reflects the last available FFP contract values which include \$9M of early delivery incentives paid (\$3M for each of the contract's 3 ships). With the contract's last ship delivered during July 97, a profit analysis serves more meaningfully at this point than a variance analysis. In contrast to the negative variances shown above, actual final cost incurred equated to very favorable profit on this contract. The disparity is caused by IMUSA setting overly ambitious cost and schedule performance targets shortly after the contract was converted to FFP in 1996. The PM's final cost at completion estimate of \$202M equates to a \$28.5M profit before incentives. With early delivery incentives factored, final profit is \$37.5M (15.6%).

SCHEDULE: As noted, IMUSA earned full early delivery incentives for all 3 ships under this contract. MHCs 58, 59, and 60 were respectively delivered 1/16/96, 10/14/96, and 7/15/97.

<u>MHC 61/62 (OPTION):</u>			<u>Initial Contract Price</u>		
INTERMARINE USA, SAVANNAH, GA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</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>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$157.9	N/A	2	\$157.9	\$157.9	

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15. Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-7.5	\$-8.1
Cumulative Variances To Date (11/30/97)	\$-13.4	\$-5.2
Net Change	\$-5.9	\$2.9

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 program. The MHC 61/62 contract option is influenced by the same "global settlement" provisions applicable for the other SAR reported MHC 58-60 contract, i.e., conversion from FPI to Firm Fixed Price (FFP) with \$3.0M per ship early delivery incentives.

Last year's SAR noted uncertainty about IMUSA's ability to remain a going concern considering this is their final MHC contract and that MHC business has been the mainstay of their operations over the past several years. The company has since made impressive gains in their large commercial GRP yacht building business with 6 currently under construction. IMUSA also continues to sustain a reputable east coast ship repair and overhaul business and has several small government contracts. The company appears committed to remain in business for the foreseeable future.

COST: The "Estimated Price At Completion" above reflects the current MHC 61/62 FFP contract value. For performance reporting purposes, IMUSA has assigned a \$133.1M budget at completion "cost" baseline for this \$157.9M FFP contract. The unfavorable cost variance of \$-7.5M reported in the last SAR deteriorated further to \$-13.4M (\$108.0M of value earned at an incurred cost of \$121.4M). While some variance relates to higher than expected overhead costs, the PM finds that most ties to IMUSA's overly ambitious cost targets established shortly after the contract was converted from an FPI to an FFP type. This variance is misleading in that actual favorable performance is being reported negatively due to company assigned internal contract work breakdown budgets being set too low without being adjusted. At this stage of the contract, IMUSA has no motivation to change these internal budgets. The contractor's current Estimated At Completion (EAC) cost of \$137.1M is up \$8.2M from their EAC reported in last year's SAR. The PM cost EAC of \$140.0M reported in last year's SAR increased slightly to \$140.3M due to interim negotiated contract changes. The PM EAC equates to a \$17.6M (12.5%) projected profit margin. The projected final profit margin will increase further with IMUSA expected to earn the contract's full \$6M early delivery incentive allocation.

SCHEDULE: Though still negative, a moderate schedule variance improvement from the prior SAR is reported; \$-8.1M to current \$-5.2M. As explained in the cost analysis section above, negative variances in the realm of otherwise favorable performance results from internal budgets and associated phasing plans (Budgeted Cost of Work Scheduled) being too optimistically set at the time the contract was converted to FFP. Despite

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15. Contract Information (Cont'd):

IMUSA's reported negative schedule variance, both MHC 61 and 62 are expected to earn the contract's maximum \$3M early delivery incentives which are respectively 4/14/98 and 12/18/98.

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	1731.3	2.0	4.5	1.6	1739.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1747.5	2.0	4.5	1.6	1755.6

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

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>
1986	1		290.3	277.1	259.3
1987				0.6	0.6
1988					
1989	2		285.8	270.8	274.8
1990	2		244.9	248.0	258.9
1991	2		213.5	203.9	218.8
1992	3		346.6	333.6	367.5
1993	2		257.2	258.1	287.8
1994				14.9	17.1
1995				4.9	5.7

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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 \$
1996				21.5	25.3
1997				13.0	15.5
1998				1.6	2.0
1999				3.6	4.5
2000				1.3	1.6
Subtotal	12		1638.3	1652.9	1739.4

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	1638.3	1671.4	1755.6

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RD&E	0	0
Procurement	10	10

Percent Total Program Quantities Delivered: 83.3%

b. Total Expenditures To Date (In Millions of Dollars): \$ 1528.1

Percent Total Program Expended: 87.0%

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 1996.

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

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

Cost Element	Cost Element 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-17 MILSTAR

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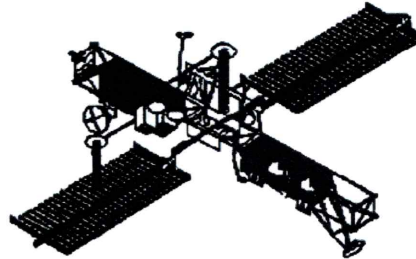
SELECTED ACQUISITION REPORT (RCS: DD-A&T(O&A)823)

PROGRAM: MILSTAR

AS OF DATE: December 31, 1997

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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	Joseph.Sovey@losangeles.af.mil

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

RDT&E:

(U) PE 0303603F

(U) PE 0604479F

PROCUREMENT:

(U) APPN 3080 ICN 836780 (Air Force)

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW
DEPARTMENT OF DEFENSE

~~Classified by: Milstar Security Classification Guide, 10-10-10~~
~~Downgrade instructions: Not Subject to Automatic Downgrade~~
~~Declassify on: Originating Agency Determination Required (OADR)~~

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5. (U) References:

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.

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 June of 1983.

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 October 1992 following a successful October 1992 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 February 7, 1994 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 September 9, 1994. The program office turned over Satellite Control Authority (SCA) to Air Force Space Command (AFSPC) on November 1, 1994.

In a January 17, 1995 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 February 6, 1995.

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

On May 11, 1995 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 November 6, 1995 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 December 15, 1995 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 March 22, 1996.

Milstar I Phase II Initial Operational Testing and Evaluation (IOT&E) was completed on March, 30 1997. No deficiencies were noted.

The fourth Space Operations Squadron deployment of the mobile Constellation Control Station to Europe (with our support) started in May and operations completed in June of 1997. The mission was highly successful and proved the capability to perform command and control of the entire constellation worldwide.

Initial Operational Capability (IOC) for Milstar I was declared by Air Force Space Command on July 21, 1997.

In the Spring of 1997, the MILSATCOM Joint Program Office (MJPO) and AFSPC successfully completed a demonstration of Milstar's ability to operate autonomously for a sustained period without 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 was formally tested during the Phase II IOT&E program.

The Milstar Flight 3 satellite is in final assembly. The Flight 4 Low Data Rate (LDR) payload has been electrically integrated onto the LDR wing and was physically mated in the fall of 1997.

The Defense Information Services Agency sponsored Milstar Advanced Narrowband Voice Terminal/Defense Red Switch Network (ANDVT/DRSN) demo was held in September 1997 and was a success. Local conferencing was demonstrated. MJPO will provide technical support per Joint Staff direction in CONOPs and baseband implementation.

The LDR payload for Flight 4 successfully completed payload testing six months early.

CP Terminals are 100% delivered. They are no longer reported in the SAR.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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
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
Complete	NOV 95	SEP 96	MAR 97
IOC I	MAR 96	JAN 97	JUL 97 (Ch-1)
Mission Control Organic Support Capability	SEP 96	SEP 96	SEP 96
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

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

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u>	Current <u>Estimate</u>
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. Current Change Explanations --

(U) (Ch-1)

The current estimate for IOC I changed from Jun 97 to Jul 97. The program continued to meet its APB threshold date.

10. (U) Performance Characteristics:

a. Performance --

	Development <u>Estimate (SAR)</u>	Approved <u>Program (APB)</u> <u>Obj/Threshold</u>	Demon- <u>strated</u> <u>Perf</u>	Current <u>Estimate</u>
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

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

	Development Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
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
Antijam Capability				
LDR: (EIRP, dBW)				
Uplink: (Q-band)				
() Fixed				
() (Broadband)				
() Ground Trans-				
() portable				
() Ship				
Downlink:				
(K-band)				
() Mobile/				
() Airborne				
() Mobile				
() (dBW/nmi)				
() Airborne				
() (dBW/nmi)				
MDR: (EIRP,				
dBW/nmi)				
Uplink: (Q-band)				
() Ground Trans-				
() portable				
() Large Ship				
Downlink:				
(K-band)				
() Ground Mobile				
() Small Ship				
() Airborne				

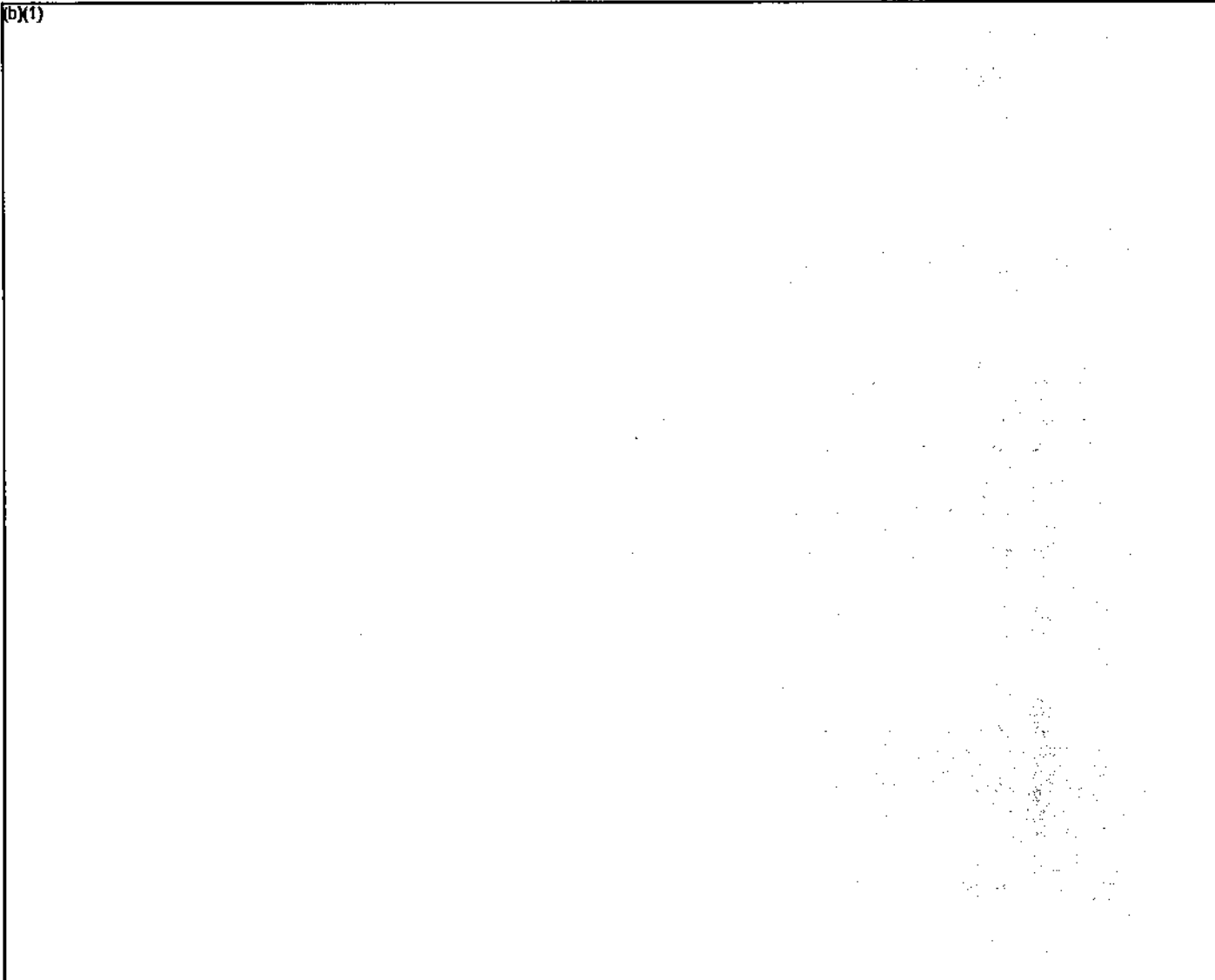
(b)(1)

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

	Development	Approved Program (APB)	Demon- strated	Current
(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

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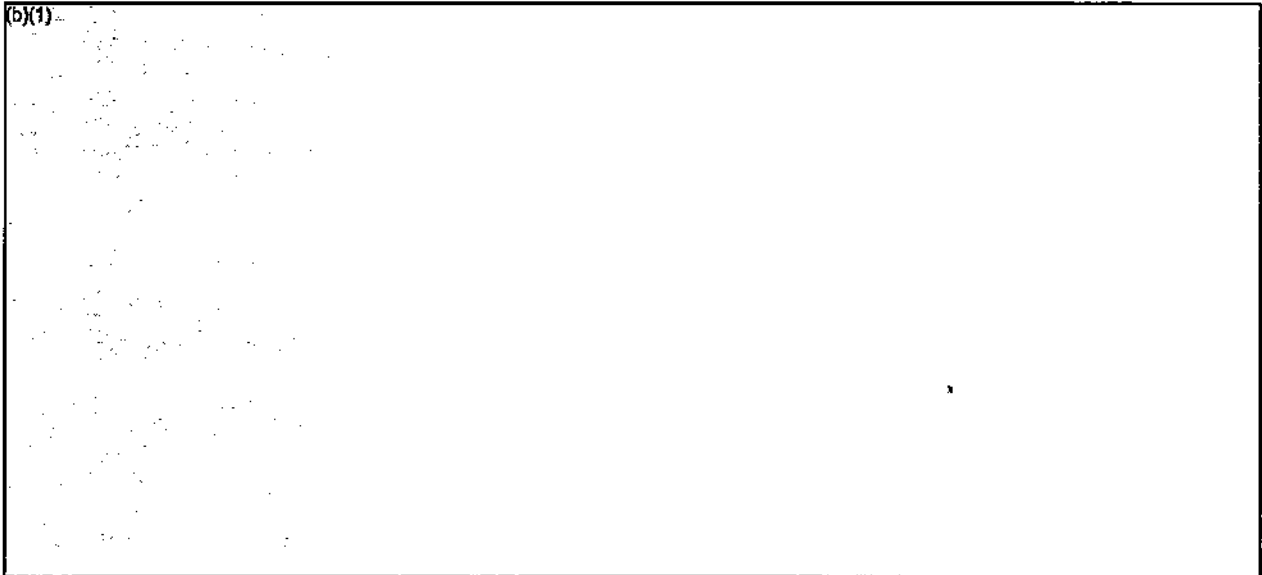
10a. (U) Performance Characteristics (Cont'd):

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. Current Change Explanations --
(U) None

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

(b)(1)



b. (U) Quantity --

Development (RDT&E)	7	6	6
Procurement	4	0	0
Total	11	6	6

(U) Note: All satellites are being procured with RDT&E funding. Procurement

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

funding is for Mission Control Segment support equipment.

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

12. (U) Unit Cost Summary:

	UCR Baseline (FEB 95 APR)	Current Estimate (Dec 97 SAR)	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 (7 through 11). Consequently, procurement unit cost is not applicable to the Milstar space segment.

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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	(b)(4)	6389.3	-	(b)(4)
Previous Changes:				
Economic	-334.0	-249.7	-	-583.7
Quantity	-1022.8	-5980.3	-	-7003.1
Schedule	-176.7	-	-	-176.7
Engineering	-500.6	-	-	-500.6
Estimating	-1125.2	-103.9	-	-1229.1
Other	-	-	-	-
Support	-268.5	-9.1	-	-277.6
Subtotal	-3427.8	-6343.0	-	-9770.8
Current Changes:				
Economic	-38.2	-	-	-38.2
Quantity	-	-	-	-
Schedule	+15.0	-	-	+15.0
Engineering	-	-	-	-
Estimating	+185.2	-	-	+185.2
Other	-	-	-	-
Support	-47.4	-	-	-47.4
Subtotal	+114.6	-	-	+114.6
Total Changes	-3313.2	-6343.0	-	-9656.2
Current Estimate	(b)(4)	46.3	-	(b)(4)

(U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	(b)(4)	3961.4	-	(b)(4)
Previous Changes:				
Quantity	-743.1	-3832.1	-	-4575.2
Schedule	-123.8	-	-	-123.8
Engineering	-325.2	-	-	-325.2
Estimating	-937.0	-81.8	-	-1018.8
Other	-	-	-	-
Support	-178.6	-7.5	-	-186.1
Subtotal	-2307.7	-3921.4	-	-6229.1
Current Changes:				
Quantity	-	-	-	-
Schedule	+11.5	-	-	+11.5
Engineering	-	-	-	-
Estimating	+120.1	-	-	+120.1
Other	-	-	-	-
Support	-33.6	+0.1	-	-33.5
Subtotal	+98.0	+0.1	-	+98.1
Total Changes	-2209.7	-3921.3	-	-6131.0
Current Estimate	(b)(4)	40.1	-	(b)(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>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-43.3
Economic adjustment for negative program change. (Economic)	N/A	+5.1
Stretchout of annual RDT&E buy profile. (Schedule)	+11.5	+15.0
Adjustment for Current and Prior Inflation. (Estimating)	+11.8	+14.3
General funding reductions (Estimating)	-9.0	-11.0
Revised estimate due to Acquisition Stability Reserve (Estimating)	-5.9	-7.5
Revised estimate to fund Operational Constellation Support (Estimating)	+140.3	+209.0
Revised estimate due to Federally Funded Research and Development Centers (FFRDCs) and Contract Advisory and Assistance Services (CAAS) (Estimating)	-22.7	-27.8
Revised estimate due to Small Business Innovative Research (SBIR) reduction (Estimating)	-17.0	-20.8
Adjustment to cost estimate to reflect lower inflation projection (Estimating)	+22.6	+29.0
Reduced launch and operational sustainment support for complete Milstar constellation (Support)	-33.6	-47.4
RDT&E Subtotal	+98.0	+114.6
(2) <u>Procurement</u>		
Correction to peculiar support equipment reported in December 1996 SAR (Support)	+0.1	0.0
Procurement Subtotal	+0.1	0.0

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

a. ~~(S)~~ 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	
(b)(4)	-103.65	+465.41	-26.95	-83.43	-173.98	--	-54.17	+23.23	(b)(4)

b. ~~(S)~~ 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	
1597.33	--	--	--	--	--	--	--	--	N/A

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	JUN 83	N/A	JUN 83
Milestone II	N/A	N/A	N/A	N/A
Milestone III	N/A	N/A	N/A	N/A
FUE/IOC	N/A	OCT 00	N/A	OCT 00
Total Cost	0	(b)(4)	0	(b)(4)
Total Quantity	0	11	0	6
Prog Acq Unit Cost	0	(b)(4)	0	(b)(4)

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
Target Ceiling Qty

\$1659.5 N/A 1

Current Contract Price

Target Ceiling Qty
\$3807.8 N/A 4

Estimated Price At Completion
Contractor Program Manager
\$3373.5 \$3373.5

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$47.9	\$-4.7
Cumulative Variances To Date (12/31/97)	\$71.1	\$-7.7
Net Change	\$23.2	\$-3.0

Explanation of Change:

(U) A change in Cost Variance is due to better than expected performance of the LDR portion of the contract.

A change in Schedule Variance is due to problems with the Spacecraft Structure and Electronic portion of the contract.

There is no major impact to the contract or 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> (FY92-97)	<u>Budget Year</u> (FY98)	<u>Budget Year</u> (FY99)	<u>Balance To Complete</u> (FY00-11)	<u>Total</u>
RD&E	(b)(1)	628.0	550.9	934.4	(b)(1)
Procurement	46.3	-	-	-	46.3
MILCON	-	-	-	-	-
O&M	(b)(1)	-	-	-	(b)(1)
Total	(b)(1)	628.0	550.9	934.4	(b)(1)

b. Annual Summary -- Satellites

Appropriation: 3600 Research, Development, Test + Eval, AF

<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				(b)(1)	(b)(1)
1993				816.7	915.5
1994				725.7	827.3
1995				500.2	581.2
1996				450.7	533.6
1997				547.9	659.7
1998				513.9	628.0
1999				443.9	550.9
2000				269.8	340.2
2001				141.8	181.9
2002				61.7	80.6

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MILSTAR, December 31, 1997

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 \$
2003				36.9	49.1
2004				26.2	35.6
2005				25.7	35.7
2006				25.3	35.9
2007				24.2	35.2
2008				24.0	35.6
2009				23.3	35.4
2010				22.3	34.6
2011				21.8	34.6
Subtotal	6			(b)(1)	

(U) The FY92 line includes FY92 and prior year information.

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 \$
1992				7.6	8.5
1993				4.2	4.8
1994				27.5	32.0
1995				0.8	1.0
Subtotal				40.1	46.3

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	6			(b)(1)	

17. (U) Delivery/Expenditure Information:

(b)(1)

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MILSTAR, December 31, 1997

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

~~72%~~ Percent Total Program Expended:

(b)(1)

18. (U) Operating and Support Costs:

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 August 25, 1992 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

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

PROGRAM: LONGBOW APACHE

AS OF DATE: December 31, 1997

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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:

APACHE ATTACK HELICOPTER

COL STEPHEN G. KEE

ATTN: SFAE-AV-AAH

Assigned: October 20, 1995

BLDG 5681

DSN 897-4200; COMM 205-313-4200

Redstone Arsenal, AL 35898-5000

kees@pecavn.redstone.army.mil

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)

AS AMENDED

~~Classified by: Apache Attack Helicopter 888 04 February 1997~~
~~Downgrade instructions: Multiple Sources~~
~~Declassify on: Originating Agency Determination Required (OADR)~~

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98-C-0944

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Longbow Apache, December 31, 1997

5. (U) References:

Airframe Modifications

SAR Baseline (Production Estimate):

(U) DAE Approved Acquisition Program Baseline dated November 27, 1995.

Approved Program:

(U) AAE Approved Acquisition Program Baseline (APB) dated March 23, 1998.

FCR MISSION KIT

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, now the Boeing Company. The \$1.6B contract provides for the production of 232 aircraft over five years.

Multiyear contracts for Lots 3-7, for both the Fire Control Radar and the Radar Frequency Interferometer were awarded November 26, 1997.

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Longbow Apache, December 31, 1997

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

b. (U) Nunn-McCurdy Unit Cost:

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

FCR MISSION KIT

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

Item	Breach
Schedule	No
Performance	No
Cost -- RDT&E	No
-- Procurement	No
-- MILCON	No
-- O&M	No
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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, 1997

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 1 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	JUL 98	JUL 98 (Ch-1)
IOC	SEP 98	SEP 98	OCT 98

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Longbow Apache, December 31, 1997

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

b. Current Change Explanations --

(U) (Ch-1) The First Unit Equipped (FUE) milestone refers to a company of 6 aircraft. On 19 March 1996, an ODCSOPS decision redefined FUE to include a complete Aviation Restructuring Initiative Longbow Apache Battalion. The new FUE date is changed from October 1997 to July 1998 and is reflected in the current APB revision.

FCR MISSION KIT

a. Milestones --

	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Milestone I In Process Review	N/A	AUG 85	AUG 85
Preliminary Design Contract Award	N/A	NOV 85	NOV 85
Contract Award (Proof of Principle)	N/A	AUG 86	AUG 86
Milestone IB DAB	N/A	JUL 89	JUL 89
IDP Contract Award	N/A	SEP 89	SEP 89
Development Test/Early User Test & Experimentation			
Start	N/A	FEB 90	FEB 90
Complete	N/A	APR 90	APR 90
Milestone II/IV	N/A	DEC 90	DEC 90
Full Scale Development Award	N/A	DEC 90	DEC 90
Long Lead Time Items Contract Award	N/A	NOV 94	DEC 94
Lot 1 Contract Award	N/A	NOV 95	MAR 96
First Production Delivery	N/A	FEB 97	MAR 97

b. Current Change Explanations -- None

10. (U) Performance Characteristics:

Airframe Modifications

a. Performance --

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

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Longbow Apache, December 31, 1997

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

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

b. Current Change Explanations -- None

FCR MISSION KIT

a. Performance --

	Production Estimate (SAR)	Approved Program (APB) Obj/Threshold	Demon- strated Perf	Current Estimate
(S) Probability of Detection				
(S) Ground Targets, Benign Conditions				
(S) Stationary @6KM	N/A			
/2				
(S) Moving @6KM /2/3	N/A			

b. Current Change Explanations -- None

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Longbow Apache, December 31, 1997

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

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	638.4	635.1	635.1
Procurement	5052.2	6272.0	6272.1
Flyaway	(4161.5)		(5031.6)
Other Weapon System	(737.4)		(1178.0)
Peculiar Support	(42.6)		(27.3)
Initial Spares	(110.7)		(35.2)
Construction (MILCON)	0.0	0.0	0.0
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	5690.6	6907.1	6907.2
Escalation	1337.2	16983.6	852.8
Development (RDT&E)	(-46.1)	(-38.0)	(-38.0)
Procurement	(1303.3)	(890.9)	(890.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(16130.7)	(0.0)
Total Then Year \$	7027.8	23890.7	7760.0
b. (U) Quantity --			
Development (RDT&E)	N/A	0	0
Procurement	758	758	758
Total	758	758	758

Note: Excludes 6 RDT&E prototypes from the SAR Baseline and 6 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales --
Foreign Military Sale with Netherlands.
Effective Date February 11, 1994
Quantity - 30 Net estimated cost - \$649M

d. Nuclear Costs -- None.

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Longbow Apache, December 31, 1997

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

FCR MISSION KIT

a. (U) Cost --	Production Estimate (SAR)	Approved Program (APB)	Current Estimate
Development (RDT&E)	885.2	885.2	863.6
Procurement	813.9	813.9	789.2
Flyaway	(741.3)		(722.2)
Other Weapon System	(22.2)		(14.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(50.4)		(52.6)
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	1652.8
Escalation	2.3	471.5	-43.8
Development (RDT&E)	(-117.5)	(-117.5)	(-101.7)
Procurement	(119.8)	(119.8)	(57.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Acquisition O&M	(0.0)	(469.2)	(0.0)
Total Then Year \$	1701.4	2170.6	1609.0

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	227	227	227
Total	227	227	227

Note: Excludes 10 RDT&E 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, 1997

12. (U) Unit Cost Summary:

Airframe Modifications

	UCR Baseline (MAR 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	6907.2	6907.2	
(2) Quantity	758	758	
(3) Unit Cost	9.112	9.112	0.00
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	6272.1	6272.1	
(2) Quantity	758	758	
(3) Unit Cost	8.275	8.275	0.00

FCR MISSION KIT

	UCR Baseline (MAR 98 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. (U) Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	1699.1	1652.8	
(2) Quantity	227	227	
(3) Unit Cost	7.485	7.281	-2.73
b. (U) Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	813.9	789.2	
(2) Quantity	227	227	
(3) Unit Cost	3.585	3.477	-3.01

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Longbow Apache, December 31, 1997

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	-	-10.5	-	-10.5
Quantity	-	-	-	-
Schedule	-	+1.1	-	+1.1
Engineering	-	-	-	-
Estimating	+5.2	-425.1	-	-419.9
Other	-	-	-	-
Support	-	+114.4	-	+114.4
Subtotal	+5.2	-320.1	-	-314.9
Current Changes:				
Economic	-0.4	-253.1	-	-253.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+221.7	-	+221.7
Estimating	-	+794.4	-	+794.4
Other	-	-	-	-
Support	-	+284.5	-	+284.5
Subtotal	-0.4	+1047.5	-	+1047.1
Total Changes	+4.8	+727.4	-	+732.2
Current Estimate	597.1	7162.9	-	7760.0

(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	-3.3	+13.6	-	+10.3
Other	-	-	-	-
Support	-	+115.8	-	+115.8
Subtotal	-3.3	+129.4	-	+126.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	+178.8	-	+178.8
Estimating	-	+677.7	-	+677.7
Other	-	-	-	-
Support	-	+234.0	-	+234.0
Subtotal	-	+1090.5	-	+1090.5
Total Changes	-3.3	+1219.9	-	+1216.6
Current Estimate	635.1	6272.1	-	6907.2

(U) A significant number of the current estimating changes reported above are

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Longbow Apache, December 31, 1997

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

actually program changes and not estimating errors.

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	-0.4
RDT&E Subtotal	<u>0.0</u>	<u>-0.4</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-253.1
Adjustment for Current and Prior Inflation. (Estimating)	+10.8	+11.3
Transfer pre-modification costs (formerly operation and maintenance) to aircraft procurement. Not reported in prior reports. (Estimating)	+382.9	+443.2
Funding to complete safety requirements such as: Remove optical relay tube; health usage monitoring system and improve helmet display unit. (Estimating)	+153.9	+183.0
Cancellation of A model cost reduction program for Launchers (Estimating)	+130.1	+156.9
Funding to upgrade aircraft drive train, rotor systems, and airframe. (Engineering)	+178.8	+221.7
Adjustment for Current and Prior Inflation. (Support)	+3.8	+3.7
Decrease in Initial Spares (Support)	-33.8	-41.1
Increase in Peculiar Support (Support)	+1.0	+1.0
Increased requirements for training devices, program matrix support and transfer of "A" model to Longbow line and Fire Control support on the aircraft line. (Support)	+263.0	+320.9
Procurement Subtotal	<u>+1090.5</u>	<u>+1047.5</u>

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Longbow Apache, December 31, 1997

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

FCR MISSION KIT

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	-	-5.4	-	-5.4
Quantity	-	-	-	-
Schedule	-	+4.9	-	+4.9
Engineering	-	-	-	-
Estimating	-6.3	-4.1	-	-10.4
Other	-	-	-	-
Support	-	-1.7	-	-1.7
Subtotal	-6.3	-6.3	-	-12.6
Current Changes:				
Economic	-	-22.5	-	-22.5
Quantity	-	-	-	-
Schedule	-	-0.9	-	-0.9
Engineering	-	-	-	-
Estimating	+0.5	-51.1	-	-50.6
Other	-	-	-	-
Support	-	-5.8	-	-5.8
Subtotal	+0.5	-80.3	-	-79.8
Total Changes	-5.8	-86.6	-	-92.4
Current Estimate	761.9	847.1	-	1609.0

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Longbow Apache, December 31, 1997

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

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

	RD&E	PROC	MILCON	TOTAL
Production Estimate	885.2	813.9	-	1699.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-22.1	+23.4	-	+1.3
Other	-	-	-	-
Support	-	-3.2	-	-3.2
Subtotal	-22.1	+20.2	-	-1.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.5	-42.5	-	-42.0
Other	-	-	-	-
Support	-	-2.4	-	-2.4
Subtotal	+0.5	-44.9	-	-44.4
Total Changes	-21.6	-24.7	-	-46.3
Current Estimate	863.6	789.2	-	1652.8

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RD&E</u>		
Refined estimate to adjust program actual. (Estimating)	+0.5	+0.5
RD&E Subtotal	+0.5	+0.5
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-26.8
Economic adjustment for negative program change. (Economic)	N/A	+4.3
Acceleration of annual procurement buy profile. (Schedule)	0.0	-0.9
Adjustment for Current and Prior Inflation. (Estimating)	+3.8	+4.0
Depot repair requirements have been executed within multiyear contracts for the FCR and RFI whereby prime contractors provide product sustainment under Interim Contractor Support (ICS). (Estimating)	-31.1	-38.4
Decrease in Estimating (Estimating)	-15.2	-16.7
Adjustment for Current and Prior Inflation. (Support)	+0.3	+0.3

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Longbow Apache, December 31, 1997

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

b. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Decrease in Initial Spares (Support)	-17.0	-24.3
Increase in Other Weapon System (Support)	+14.3	+18.2
Procurement Subtotal	-44.9	-80.3

14. (U) Unit Cost and Other History (Then-Year Dollars in Millions):
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	-0.35	+0.01	--	+0.29	+0.49	--	+0.53	+0.97	10.24

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	-0.35	--	--	+0.29	+0.49	--	+0.53	+0.96	9.45

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	7760
Total Quantity	N/A	758	758	758
Prog Acq Unit Cost	N/A	7.34	9.27	10.24

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Longbow Apache, December 31, 1997

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

FCR MISSION KIT

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	-0.12	-0.01	+0.02	--	-0.27	--	-0.03	-0.41	7.09

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	-0.12	-0.01	+0.02	--	-0.24	--	-0.03	-0.38	3.73

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	1608.8
Total Quantity	N/A	227	227	227
Prog Acq Unit Cost	N/A	6.36	7.5	7.09

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
\$133.9	N/A	10

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$134.3	N/A	10	\$134.3	\$134.3

Explanation of Change:

None.

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Longbow Apache, December 31, 1997

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

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

(U) AH64D Multiyr Production: Boeing Company, Mesa, AZ DAAJ09-95-C-A001, FFP Award: December 12, 1994 Definitized: August 16, 1996	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$1690.3	N/A	232

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$2002.5	N/A	232	\$2002.5	\$2002.5

Explanation of Change:

None.

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		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$82.5	N/A	11

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$83.0	N/A	11	\$83.0	\$83.0

Explanation of Change:

None.

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

(U) AH-64D RFI Multiyr Prod: Lockheed Martin Federal, Owego, NY DAAJ09-97-C-0124, FFP Award: November 26, 1997 Definitized: November 26, 1997	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$92.3	N/A	207

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$92.3	N/A	207	\$92.3	\$92.3

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Longbow Apache, December 31, 1997

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

Explanation of Change:

None.

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

(U) Contract Comments:

Contract Comments:

This is the first time this contract has appeared in a SAR. The price includes funding for RFI production units, spares and contractor maintenance.

(U) <u>AH-64D FCR Multiyr Prod:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Longbow LLC, Orlando, FL			
DAAH23-98-C-008, FFP	\$565.3	N/A	207
Award: November 11, 1997			
Definitized: November 11, 1997			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$565.3	N/A	207	\$565.3	\$565.3

Explanation of Change:

None.

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

(U) Contract Comments:

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 support, contractor maintenance, Contractor Field Service Representatives (CFSRs) and supply window support.

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Longbow Apache, December 31, 1997

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	1359.0	-	-	-	1359.0
Procurement	962.7	512.8	633.7	5900.8	8010.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2321.7	512.8	633.7	5900.8	9369.0

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	597.1	-	-	-	597.1
Procurement	729.3	399.7	510.7	5523.2	7162.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1326.4	399.7	510.7	5523.2	7760.0

FCR MISSION KIT

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 (FY00-03)</u>	<u>Total</u>
RDT&E	761.9	-	-	-	761.9
Procurement	233.4	113.1	123.0	377.6	847.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	995.3	113.1	123.0	377.6	1609.0

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Longbow Apache, December 31, 1997

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				89.0	86.9
1995				112.4	112.0
1996				21.7	22.0
1997				10.4	10.7
Subtotal				635.1	597.1

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		39.5		74.7	75.6
1996	24	117.3	190.8	329.4	338.8
1997	24	66.6	162.8	301.2	314.9
1998	44	11.2	249.9	377.3	399.7
1999	66	3.4	389.6	478.0	510.7
2000	74	0.5	425.4	562.5	611.2
2001	72		423.1	530.2	586.0
2002	72		425.9	534.5	601.9
2003	72	43.3	428.4	573.8	659.6
2004	72		457.4	573.2	673.4
2005	72		425.5	565.1	678.5
2006	72		468.0	570.1	699.6
2007	72		484.8	543.9	682.1
2008	22		218.2	258.2	330.9
Subtotal	758	281.8	4749.8	6272.1	7162.9

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	758	281.8	4749.8	6907.2	7760.0

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LONGBOW APACHE, December 31, 1997

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

b. Annual Summary -- FCR MISSION KIT

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				22.2	22.1
Subtotal				863.6	761.9

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		14.0		40.8	41.3
1996	10	5.2	104.8	93.7	96.4
1997	10	14.3	67.5	91.5	95.7
1998	21		94.4	106.7	113.1
1999	40		99.0	115.1	123.0
2000	45		113.2	117.4	127.6
2001	44		108.8	114.3	126.3
2002	57		101.0	100.9	113.6
2003				8.8	10.1
2004					
2005					
2006					
Subtotal	227	33.5	688.7	789.2	847.1

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	227	33.5	688.7	1652.8	1609.0

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Longbow Apache, December 31, 1997

17. (U) Delivery/Expenditure Information:

Airframe Modifications

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	18	18

(U) Percent Total Program Quantities Delivered: 2.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1572.6

(U) Percent Total Program Expended: 20.3%

FCR MISSION KIT

a. (U) Deliveries To Date	<u>Plan</u>	<u>Actual</u>
RDT&E	0	0
Procurement	10	10

(U) Percent Total Program Quantities Delivered: 4.4%

b. (U) Total Expenditures To Date (In Millions of Dollars): \$ 1089.9

(U) Percent Total Program Expended: 67.7%

18. (U) Operating and Support Costs:

Airframe Modifications

a. (U) Assumptions and Ground Rules --

Assumes 630 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	3.0	0.0
Contractor Support	N/A	N/A
Sustaining Support	N/A	N/A
Indirect Costs	N/A	N/A
Replenishment	492.6	0.0

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Longbow Apache, December 31, 1997

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
Military Personnel	844.0	0.0
Other	182.4	0.0
Total	1522.0	0.0

FCR MISSION KIT

a. (U) Assumptions and Ground Rules --
Assumes 208 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	41.4	0.0
Other	13.7	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	55.1	0.0

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DoD-4 NMD

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

AS OF DATE: December 31, 1997

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1. (U) Designation and Nomenclature (Popular Name): National Missile Defense (NMD)
2. (U) DoD Component: BMDO
3. (U) Responsible Office and Telephone Number:
Ballistic Missile Defense Org. BG Joseph M. Cosumano, Jr.
NMD Joint Program Office Assigned: April 1, 1997
1725 Jefferson Davis Dr., Suite 809 DSN 664-3225; COMM (703) 604-3225
Arlington, VA 22202-4102 joe.cosumano@bmdo.osd.mil
4. (U) Program Elements/Procurement Line Items:
RDT&E:
(U) PE 0603871C

AS AMENDED
OPEN PUBLICATION

MAR 17 1998 9

~~Classified by USA BMD Classification Change~~
~~Downgrade instructions:~~
~~Declassify on: OADR~~

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5. (U) References:

SAR Baseline (Planning Estimate):

(U) Acquisition Decision Memorandum (ADM) dated August 11, 1997, Subject: National Missile Defense (NMD) Acquisition Decision Memorandum.

Approved Program:

(U) DAE Approved Acquisition Program Baseline (APB) dated August 11, 1997.

6. (U) Mission and Description:

(U) The NMD 3+3 program objective is to develop and demonstrate a system capable of protecting the United States against small scale attacks by ballistic missiles and for the deployment of such a system within a short period of time if a deployment decision is made. A deployment of an NMD system could be required as early as FY2003. By achieving and maintaining a three year deployment readiness status, the 3+3 program permits an NMD deployment decision to be deferred until the identification of a specific threat, which currently has not been specified. At the time of a deployment decision, the NMD Joint Program Office (JPO) will be able to provide a better defense system by focusing it on the specific threat location and degree of threat sophistication. The JPO must, therefore, support a wide set of possible deployment contingencies, which vary in time, threat location, and degree of threat sophistication. The JPO challenge is to prepare both for the potential spectrum of limited near term threats and, simultaneously, for the more sophisticated threats the United States could face in the longer term. To implement this goal, the NMD 3+3 program is developing an NMD system composed of developmental NMD elements which are being integrated for possible deployment in a number of system configurations. After development, an NMD system can be produced and deployed within three years. To accomplish this, the NMD 3+3 program is addressing a variety of system architectures based on NMD elements as a function of time and threat. In the face of an uncertain environment this approach allows for maximum flexibility in the design of NMD and will provide decision makers a variety of effective system configurations from which to choose. This system does not replace another system.

7. (U) Executive Summary:

(U) A critical element of the broad United States strategy to counter proliferation is a capability to deal with the emergence of this longer range ballistic missile threat. To achieve this capability the Secretary of Defense established the National Missile Defense (NMD) Deployment Readiness Program, also known as the NMD 3+3 program. The NMD Readiness Program contributes to each of the three components of the nation's broad strategy to deal with proliferation: preventing and reducing the threat, deterring the threat, and defending against the threat. The Joint Requirements Oversight Council (JROC) validated the Capstone Requirements Document (CRD) during the fourth quarter of FY1996 and the Operational Requirements Document (ORD) during the second quarter of FY1997. The Initial and Continued Development Phases will be compliant with the 1972 Anti-Ballistic Missile (ABM) Treaty.

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

The FY1998 plus-up to the NMD program occurred in October, which totaled \$474M. This amount has since been reduced by \$43.8M to reflect congressional reductions. A successful Interim Preliminary Design Review (IPDR-1) was held on October 8-9, 1997 to present the NMD architecture and system requirements to satisfy the Capstone Requirements Document (CRD). TPDR-2 was held on February 24, 1998 to review updated Capability 1 and 2 requirements and assess current designs.

The Lead System Integrator (LSI) Execution Phase contract Request for Proposal (RFP) was released on August 14, 1997. Competing proposals were received back on November 12, 1997. Source selection activities are currently on schedule and contract award is planned as soon as April 1998. The LSI will be responsible for the development, integration, and possible deployment of the NMD system.

Risk reduction Flight No. 3 occurred as scheduled on November 5, 1997 with results indicating it was a success. Integrated Flight Test-2 (IFT) was launched on January 15, 1998. The purpose of this test was to analyze the ability of an Exoatmospheric Kill Vehicle (EKV) sensor to identify and track objects in space. All Detailed Plan Objectives were accomplished and data analysis is continuing.

Limited reporting (i.e., RDT&E only) is permitted for pre-Milestone II programs in accordance with Title 10, United States Code, Section 2432.

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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APOC)	No

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>Planning Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
NMD Integrated System Test	SEP 99	SEP 99	SEP 99
Deployment Review	MAR 00	MAR 00	MAR 00
IOC	TBD	TBD	TBD

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>
(S) KPP 1: Operational Effectiveness for the Strategic Defense of the US	(b)(1)			
(S) Provide protection to all				
(S) Against limited ballistic missile attacks of (RVs)				
(U) With threat characterization				
(S) To a negation probability of				
(S) At a performance probability of				
(S) Mission duration (hrs)				
(S) Key functions (TBD) restored within (mins)				
(S) System survivability				
(S) KPP 2: HIC Parameter (sec)				
(S) Selected employment options				
(S) Kill assessment data (seconds)				
(S) Safeguards to prevent inadvertent launches				
(S) KPP 3: ABMDS Parameter (sec)				
(S) System Life Cycle (yrs)				

(U) The threshold for performance is C1, consisting of a defense against a few simple targets. C2, on the path to the objective, consists of a defense

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

against a few complex targets. The objective system, C3, consists of a defense against many complex targets. The overarching objective of C1, C2, and C3 is to demonstrate the capability of protecting the United States against small scale attacks by ballistic missiles.

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)	4892.0	4892.0	4662.8
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 88 Base-Year \$	4892.0	4892.0	4662.8
Escalation	1737.0	1737.0	1528.6
Development (RDT&E)	(1737.0)	(1737.0)	(1528.6)
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 \$	6629.0	6629.0	6191.4

b. (U) Quantity --

Development (RDT&E)	N/A	N/A	0
Procurement	N/A	N/A	0
Total	N/A	N/A	0

c. Foreign Military Sales -- None.

d. Nuclear Costs -- None.

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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	6629.0	-	-	6629.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-109.4	-	-	-109.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-287.1	-	-	-287.1
Estimating	-41.1	-	-	-41.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-437.6	-	-	-437.6
Total Changes	-437.6	-	-	-437.6
Current Estimate	6191.4	-	-	6191.4

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

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

	RD&E	PROC	MILCON	TOTAL
Planning Estimate	4892.0	-	-	4892.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-203.0	-	-	-203.0
Estimating	-26.2	-	-	-26.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-229.2	-	-	-229.2
Total Changes	-229.2	-	-	-229.2
Current Estimate	4662.8	-	-	4662.8

b. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RD&E		
Revised escalation indices. (Economic)	N/A	-116.0
Economic adjustment for negative program change. (Economic)	N/A	+6.6
Restructure of Mission Common requirements beginning in FY99 for common NMD/Theater Missile Defense infrastructure such as the Joint National Test Facility, the Airborne Surveillance Testbed, (Engineering)	-203.5	-287.9
Increase requirement to fund Wargame 2000 (Engineering)	+0.5	+0.8
Adjustment for Current and Prior Inflation. (Estimating)	+17.8	+23.3
A revision of FY96 costs to reflect actuals for testing. (Estimating)	+41.0	+53.4
Reduction for Small Business Innovation Research. (Estimating)	-24.1	-33.5
Budget reduced for Congressional and OSD reductions, as well as other BMDO realignments. (Estimating)	-34.7	-47.2

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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 estimate for engineering support. (Estimating)	-26.2	-37.1
 RDT&E Subtotal	 -229.2	 -437.6

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

a. Program Acquisition Unit Cost (PAUC) History

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

b. Procurement Unit Cost (PUC) History

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	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	TBD	TBD	TBD	TBD
Total Cost	6629	0	0	6191.4
Total Quantity	0	0	0	0
Prog Acq Unit Cost	0	0	0	0

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

a. RDT&E --

(U) NMD GBR-P:

Raytheon Company, Bedford, MA

DASG60-92-C-0184, CPFF

Award: November 9, 1994

Definitized: April 18, 1997

Initial Contract Price

<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$142.2	N/A	0

Current Contract Price

<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$142.2	N/A	0

Estimated Price At Completion

<u>Contractor</u>	<u>Program Manager</u>
\$149.9	\$153.7

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.8	\$-6.0
Cumulative Variances To Date (12/31/97)	\$-5.3	\$-6.9
Net Change	\$-4.5	\$-0.9

Explanation of Change:

(U) This contract was originally awarded in November 1994 and the GBR-P portion was definitized in April 1997. The Initial Contract Target Price reflects the April 1997 definitization.

The cumulative cost variance of -\$5.3M (-5.5%) reflects an unfavorable change of -\$4.5M since the last report. The increase is largely due to vendor quality and delivery problems with elastomeric screws and transition assembly output islands, rework required to convert a circuit card from the THAAD configuration to NMD, lack of microwave amplifiers, rework and an increase in size and late delivery of the legacy software code provided by the THAAD GBR portion of this contract.

The cumulative schedule variance of -\$6.9M (-6.7%) reflects an unfavorable change of -\$0.9M since the last report. The increase is due to slips in delivery by vendors and manufacturing material delays, along with associated delays in assembly activities.

The Program Manager's Estimated Price at Completion of \$153.7M reflects an increase of \$8.6M since the last report and is attributed to the problems discussed above.

(U) <u>NMD PLV-EKV:</u>	<u>Initial Contract Price</u>		
Lockheed Martin, Sunnyvale, CA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DASG60-86-C-0014, CPFF	\$232.2	N/A	0
Award: January 31, 1990			
Definitized: January 31, 1990			

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$232.2	N/A	0	\$277.5	\$280.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-12.4	\$-2.3
Cumulative Variances To Date (12/31/97)	\$-21.6	\$-0.8
Net Change	\$-9.2	\$1.5

Explanation of Change:

(U) The change of -\$9.2M in the cumulative cost variance was spread throughout the program among numerous cost accounts. Several of the major contributors to the variance were In-Plant Integration Assembly and Test (-\$1.1M), Air Vehicle Miscellaneous Hardware (-\$0.8M), Project Management

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

(-\$0.5M), Ground Support Equipment (-\$0.4M), Subsystem Requirements (-\$0.4M), and Avionics Equipment (-\$0.4M). Key causes of the variances include unplanned efforts to recover from the hardware/software anomalies, unplanned software modifications, revised overhead rates (-\$1.4M impact), underestimation of effort required to perform software upgrades, schedule adjustments (slips and accommodating late delivery), and additional scope on hardware upgrades (\$1.2M of which is recoverable).

The cumulative schedule variance of -\$0.8M represents an improvement of \$1.5M since the last report. The improvement occurred in several areas, notably the Integrated System Test Vehicle Subcontractor (\$0.3M), Ground Support Equipment (\$0.3M), Air Vehicle Miscellaneous Hardware (\$0.2M), and In-Plant Integration, Assembly, and Test (IA&T) (\$0.1M).

The Program Manager's Estimate at Completion was increased by \$9.7M since the last report, based primarily on Lockheed's steady cost growth since July 1997 of approximately \$6.6M.

(U) <u>NMD EKV:</u> Boeing North American, Downey, CA DASG60-90-C-0165, CPFF Award: October 2, 1990 Definitized: October 2, 1990	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$310.1	N/A	0
	Current Contract Price		<u>Qty</u>
	<u>Target</u>	<u>Ceiling</u>	
	\$373.0	N/A	0
	Estimated Price At Completion		
	<u>Contractor</u>	<u>Program Manager</u>	
	\$397.4	\$403.4	
	<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances	\$-12.4	\$-10.1	
Cumulative Variances To Date (12/31/97)	\$-22.4	\$-11.4	
Net Change	\$-10.0	\$-1.3	

Explanation of Change:

(U) The change of -\$10M in the cumulative unfavorable cost variance from the last report was driven by problems associated with the Seeker, Kill Vehicle (KV) Subsystem (S/S) Engineering Integration, Assembly, and Test (IA&T) and Avionics efforts. The increase is due primarily to the late delivery of electronic components, software development problems, problems associated with the KV Guidance, Navigation and Control (GN&C) algorithms, communications and telemetry subsystem (CTS) design problems, and an adjustment to the TRW subcontract baseline.

The change of -\$1.3M in the cumulative schedule variance from the last report is due primarily to efforts associated with the KV Engineering S/S IA&T and Avionics, resulting from problems pertaining to the KV GN&C algorithms, CTS design, and Avionics software.

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

The Program Manager's Estimate Price at Completion was increased by \$80.6M since the last report, reflecting the incorporation of an undefinitized change order for the purchase of three additional kill vehicles, plus projected cost growth of approximately \$30M. The projected cost growth is due primarily to delays in deliveries of the subsystem hardware and the delays and complexities in development and integration of final qualified software.

(U) <u>NMD EKV:</u>			Initial Contract Price		
Raytheon Missile Systems, Tucson AZ			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DASG60-90-C-0166, CPFF			\$329.8	N/A	0
Award: October 2, 1990					
Definitized: October 2, 1990					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$379.6	N/A	0	\$402.9	\$406.6	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/31/98)			\$-23.3	\$-8.1	
Net Change			\$-19.6	\$-6.3	
			\$3.7	\$1.8	

Explanation of Change:

(U) The \$3.7M improvement in Raytheon's (formerly Hughes) cumulative cost variance was due to Raytheon's agreement to use corporate funds to cover much of the overrun on the sensor effort. This resulted in a net improvement of the sensor Cost Variance (CV) of \$7.5M since the last report. In August 1997, Raytheon Tucson took over management of the sensor effort from a sister division in El Segundo, CA, and performance has improved significantly since then. The favorable CV for the sensor effort was partially offset by the ongoing technical problems in the propulsion, avionics, and guidance unit efforts.

The \$1.8M improvement in the schedule variance since the last report is associated with the close-out of the El Segundo sensor effort and the replanning of the remaining sensor work at Tucson.

The increase to the Program Manager's Estimated Contract Price at Completion since the last report (increase of \$31.7M) reflects incorporation of an undefinitized change order for the purchase of two additional kill vehicles, partially offset by a reduction due to Raytheon's decision to use corporate funds to cover part of the sensor cost growth.

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

(U) <u>BMC3 SE&I:</u>			Initial Contract Price		
TRW, Inc., Rosslyn, VA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
HQ0006-95-C-0018, CPEF	\$203.7	N/A	0		
Award: August 24, 1995					
Definitized: August 24, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$215.3	N/A	0	\$215.3	\$215.3	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$2.6	\$-2.8	
Cumulative Variances To Date (12/31/97)			\$3.8	\$-2.6	
Net Change			\$1.2	\$0.2	

Explanation of Change:

(U) The total contract information is reported, however, the NMD Deployment Readiness portion of this effort is funded at \$172M. The positive cost variance and the negative schedule variance (September 1997) were caused by a continued shortage in staffing. The contractor continues to move the available staff among the tasks to support the Government's needs as quickly as possible. These variances should continue to improve as the contractor staffs up to the baseline. There is no impact to this contract or the program from these variances at this time.

(U) <u>Multi-Serv. Launch Syst.:</u>			Initial Contract Price		
Lockheed Martin Corp., Denver, CO	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
F4704-92-C-0013, CPEF	\$30.8	N/A	1		
Award: May 18, 1992					
Definitized: May 13, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$108.6	N/A	8	\$110.9	\$110.9	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			N/A	N/A	
Cumulative Variances To Date (12/31/97)			\$-33.3	\$0.2	
Net Change			\$-33.3	\$0.2	

Explanation of Change:

(U) This is the first report for this contract, which is managed by the Air Force. NMD funding is \$58.0M. There are currently five launch missions remaining under this contract.

The cost variance is due primarily to the demo flight delay and a quantity

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

reduction from forty to eight. This variance predates NMD involvement and is not expected to grow in the future. The last three missions were re-baselined on December 30, 1996. The total re-negotiated price for each of these missions is \$7M.

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 (FY91-97)</u>	<u>Budget Year (FY98)</u>	<u>Budget Year (FY99)</u>	<u>Balance To Complete (FY00-03)</u>	<u>Total</u>
RDT&E	2104.5	934.3	950.5	2202.1	6191.4
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2104.5	934.3	950.5	2202.1	6191.4

b. Annual Summary -- NMD

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 \$
1991				74.9	86.3
1992				159.9	189.3
1993				117.0	141.7
1994				81.0	100.1
1995				155.7	196.1
1996				452.1	579.6
1997				623.0	811.4
1998				706.9	934.3
1999				708.0	950.5
2000				633.4	864.4
2001				479.0	664.9
2002				254.4	359.4
2003				217.9	313.4
Subtotal				4662.8	6191.4

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total				4662.8	6191.4

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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): \$ 1647

(U) Percent Total Program Expended: 26.6%

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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AF-7 C-17A

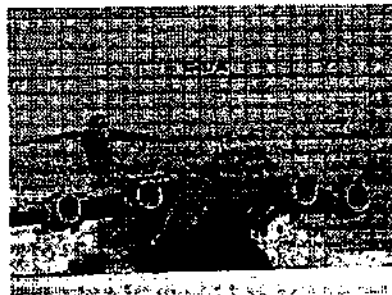
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SELECTED ACQUISITION REPORT (RCS: DD-A&T(Q&A)823)
PROGRAM: C-17A

AS OF DATE: December 31, 1997

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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 SYSTEM PROGRAM OFFICE
AERONAUTICAL SYSTEMS CENTER
2590 LOOP ROAD WEST
WPAFB, OH 45433-7142

E/GEN CHARLES L. JOHNSON
Assigned: June 4, 1996
DSN 785-1545; COMM 937-255-1545
johnsocl@cl7mis.wpafb.af.mil

In late 1997, Boeing Aircraft merged with McDonnell Douglas Aircraft Corporation all contractor names are changed from the 1996 SAR. "McDonnell Douglas" has been replaced with "Boeing Airlift & Tankers."

4. Program Elements/Procurement Line Items:

RD&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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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 C-17 is a multi-engine, turboprop, wide-body, strategic airlift aircraft which improves the overall capability of the United States Air Force to rapidly project, reinforce, and sustain combat forces worldwide. The aircraft augments the C-5 and C-141 in intertheater deployment and the C-130 with intratheater operations. The C-17 is capable of carrying outsized cargo over intertheater ranges into austere airfields and introduces a direct deployment capability that significantly improves airlift responsiveness. The C-17 provides needed total force structure modernization and responsiveness to dramatically improve the mobility of our general purpose forces.

Significant features of the multi-engine C-17 include: super critical wing design and winglets reduce drag and increase fuel efficiency and range; receiving inflight refueling capability increases range; externally blown flap configuration, direct lift control spoilers, and a high impact landing gear system contribute to the aircraft capability to operate into and out of small austere airfields; a forward and upward directed thrust reverser system provides backup capability, reduces the aircraft ramp space requirements, and minimizes interference of dust and debris with the activities of ground personnel; cargo door, ramp airdrop, and cargo restraint systems which are operable by a single loadmaster and permit immediate equipment offload without special handling equipment; two-man cockpit, with cathode ray tube displays, reduces complexity and improves reliability; built-in test features reduce maintenance and troubleshooting times; and walk-in avionics bays improve accessibility. These items significantly reduce maintenance manhours per flight hour.

7. Executive Summary:

The C-17 research and development contract was awarded in July 1982, and initial production began in January 1988. The Milestone IIIB decision authorized the full rate production of 120 total aircraft in November 1995.

On May 31, 1996, Secretary Widnall signed letters of transmittal to McDonnell Douglas Aircraft (now Boeing Airlift and Tankers) and Pratt & Whitney for 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 U.S. taxpayer more than \$1B over a 7-year period. This \$1B savings is in addition to the previously negotiated annual savings of more than \$4.4B realized from production

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7. Executive Summary (Cont'd):

efficiencies, streamlining, and reform initiatives.

FLEXIBLE SUSTAINMENT CONTRACT AWARDED

Mr. Arthur Money, the Assistant Secretary of the Air Force for Acquisition, presided over the signing of the Flexible Sustainment contract award on December 19, 1997. The contract award culminated an intense, 18-month effort establishing an innovative support structure for the C-17 weapon system.

C-17 PARTICIPATED IN THE LONGEST AIRDROP IN HISTORY

On September 14, 1997, eight C-17s successfully flew 7,780 nonstop miles from Pope AFB, NC, to the Republic of Kazakhstan, the longest distance airborne exercise in history. The Army's 82nd Airborne Division dropped over 500 members during the exercise. This was the first field training exercise using the C-17 to airdrop U.S. troops over Central Asia:

SEMI-PREPARED RUNWAY CAPABILITY RELEASED

On January 6, 1998, Headquarters Air Mobility Command released the initial semi-prepared runway operational capability to the field units. This release enables the C-17 to safely and successfully land on semi-prepared runway surfaces, in wet or dry conditions.

SPEED LINE ESTABLISHED TO REPAIR THRUST REVERSERS

In fewer than 45 days, two speed lines were established at the Tulsa Modification Center. Speed line one, completed in mid-November 1997, repaired the Engine Fan Thrust Reverser tracks and guides. Speed line two, still in operation, inspects Main Landing Gear components and replaces parts showing accelerated wear. The quick and thorough implementation of these speed lines was a fine example of teamwork between the contractor, Air Mobility Command, and the C-17 System Program Office.

MAINTENANCE TRAINING SYSTEM (MTS) CONTRACT AWARDED

The C-17 MTS contract was awarded to Engineering Support Incorporated on June 23, 1997, upgrading C-17 maintenance training devices concurrency from a P-5 to a P-33 configuration.

FORWARD MAIN LANDING GEAR (MLG) DURABILITY REDESIGN COMPLETED

The redesign of the Forward MLG Post, Trunnion Collar, and the Aft MLG Trunnion Collar have been completed. Retrofit of the redesigned parts begins in August 1998 and will run through March 2001. Durability testing continues determining service life expectancy for all the landing gear parts. Expected completion timeframe for the MLG Durability Test is December 2000.

CORE INTEGRATED PROCESSOR (CIP) TEST SUCCESSFUL

The first phase of CIP flight test was successfully completed on December 12, 1997. All 120 test points, including airdrop, navigation, intra-formation station keeping, and rendezvous, flew on ten missions. The next phase of flight test begins in late February 1998. P-41 (Production Lot IX) production incorporation is next, followed by fleet-wide retrofit in calendar year 1998.

AIR MOBILITY CONTINGENCY PRECISION APPROACH CAPABILITY (AMCPAC)

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7. Executive Summary (Cont'd):

In September 1996, the Air Force Chief of Staff directed the incorporation of a precision approach and landing capability into 35 C-17 aircraft. The Precision Landing System Receiver enables Air Mobility Command to operate from locations equipped with standard USAF Mobile Microwave Landing System transmitters. Congress was notified of the new start retrofit effort on January 6, 1997. Retrofit completion is projected for summer 1998.

AIR FORCE MATERIAL COMMAND POLLUTION PREVENTION AWARD

The C-17 Pollution Program was recognized by the Region IX Environmental Protection Agency as one of the region's top performers. The Boeing/Air Force team won the 1997 United State's Air Force's Pollution Prevention Award.

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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
-- Program Acquisition Unit Cost (PAUC)	No
-- Average Procurement Unit Cost (APUC)	No

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

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9b. Schedule (Cont'd):

b. Current Change Explanations --
None.

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	2.7	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	2,500	2,900
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	113,000	130,000 (Ch-1)
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):

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB) Obj/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
LBS of heavy eqmt	N/A	110,000 / 60,000	110,000/ 60,000	110,000/ 60,000
No. of CDS bundles	N/A	40 / 30	40	40

b. Current Change Explanations --

(CH-1) The current estimate for Payload Range at 3200 nautical miles changed from 131,000 lbs to 130,000 lbs due to growing operating weight. This growth is a result of incorporation of several projects to improve system capabilities or reduce life cycle cost.

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

	<u>Production Estimate (SAR)</u>	<u>Approved Program (APB)</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	6463.2	7733.3	7619.9
Procurement	34419.2	32824.2	32511.2
Airframe	(22158.8)		(23074.5)
Engines	(5478.3)		(2251.8)
Avionics	(1168.8)		(913.6)
ECO			(0.0)
Product Improvement			(305.4)
Non Recurring			(1052.4)
Total Flyaway	(28805.9)		(27597.7)
Total Other Wpn Sys			(0.0)
Peculiar Support	(2267.0)		(3069.5)
Initial Spares	(3346.3)		(1844.0)
Construction (MILCON)	368.5	334.4	352.3
Acquisition O&M	0.0	0.0	0.0
Total FY 96 Base-Year \$	41250.9	40891.9	40483.4
Escalation	561.0	2369.8	702.3
Development (RDT&E)	(-1122.3)	(-998.6)	(-932.9)
Procurement	(1673.7)	(3356.8)	(1630.2)
Construction (MILCON)	(9.6)	(11.6)	(5.0)
Acquisition O&M	(0.0)	(0.0)	(0.0)
Total Then Year \$	41811.9	43261.7	41185.7

Total program current estimate changes since the December 1996 SAR reflect reduced inflation assumptions and the cancellation of the Centralized Electronic Repair Capability.

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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	<u>210</u>	<u>120</u>	<u>120</u>
Total	210	120	120

NOTES:

The quantity excludes one aircraft (T-1) which 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:

	UCR Baseline (MAR 96 APB)	Current Estimate (Dec 97 SAR)	Percent Change
a. Prog. Acq. Unit Cost (PAUC)			
(1) Cost (FY 96 BY\$)	40891.9	40483.4	
(2) Quantity	120	120	
(3) Unit Cost	340.766	337.362	-1.00
b. Avg. Proc. Unit Cost (APUC)			
(1) Cost (FY 96 BY\$)	32824.2	32511.2	
(2) Quantity	120	120	
(3) Unit Cost	273.535	270.927	-0.95

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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	+95.2	-309.8	-8.2	-222.8
Quantity	-	-11383.3	-	-11383.3
Schedule	-	+2939.8	+10.1	+2949.9
Engineering	+50.6	+86.5	-	+137.1
Estimating	+1064.7	+7302.1	-16.5	+8350.3
Other	+170.0	+178.0	-	+348.0
Support	-21.8	-615.5	-	-637.3
Subtotal	+1358.7	-1802.2	-14.6	-458.1
Current Changes:				
Economic	-18.8	-576.3	-4.1	-599.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+6.2	+182.5	-2.1	+186.6
Other	-	-	-	-
Support	-	+244.5	-	+244.5
Subtotal	-12.6	-149.3	-6.2	-168.1
Total Changes	+1346.1	-1951.5	-20.8	-626.2
Current Estimate	6687.0	34141.4	357.3	41185.7

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	+48.9	+81.4	-	+130.3
Estimating	+965.3	+6661.9	-14.4	+7612.8
Other	+171.6	+170.7	-	+342.3
Support	-28.1	-897.4	-	-925.5
Subtotal	+1157.7	-2269.8	-14.4	-1126.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.0	+164.2	-1.8	+161.4
Other	-	-	-	-
Support	-	+197.6	-	+197.6
Subtotal	-1.0	+361.8	-1.8	+359.0
Total Changes	+1156.7	-1908.0	-16.2	-767.5
Current Estimate	7619.9	32511.2	352.3	40483.4

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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	-18.8
Adjustment for Current and Prior Inflation. (Estimating)	+2.0	+2.1
FY98 Appropriation Reduction. (Estimating)	-2.9	-3.0
Rephase of Producibility Enhancement / Performance Improvement effort. (Estimating)	+0.2	+1.1
Quadrennial Defense Review Acquisition Strategic Reserve reduction (Estimating)	-5.1	-5.6
Air Mobility Command (customer) rephased Producibility Enhancement / Performance Improvement projects' priorities. (Estimating)	+14.7	+22.3
Congressional and general reductions. (Estimating)	-6.8	-7.2
Omnibus and Other Reductions. (Estimating)	-0.9	-1.2
Small Business Innovation Research Reduction in FY 98. (Estimating)	-2.2	-2.3
RDT&E Subtotal	-1.0	-12.6
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-576.3
Adjustment for Current and Prior Inflation. (Estimating)	+87.8	+92.3
Quadrennial Defense Review Acquisition Strategic Reserve from FY00-02. (Estimating)	-115.8	-131.0
Program Rephasing of the Producibility Enhancement / Performance Improvement Projects. (Estimating)	-20.1	-20.1
Congressional General Reductions. (Estimating)	-50.5	-54.0
C-17 Multi-Year Procurement exempt from Escalation. (Estimating)	+282.0	+315.1
Adjustments to prior years from Flyaway to Support (FY 95-96). (Estimating)	-19.2	-19.8
Adjustment for Current and Prior Inflation. (Support)	+13.4	+14.0
Rephase in Initial Spares from FY96 to the end of the Program. (Support)	+1.5	+11.9
Incorporation of the Flexible Sustainment contract signed Dec 97 for effort from FY98-06. (Support)	+163.5	+198.8
Adjustment to prior years to Support from Flyaway (FY95-96). (Support)	+19.2	+19.8
Procurement Subtotal	+361.8	-149.3

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

b. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-4.3
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.2
Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+1.5
C-17 funds reprogrammed to Family Housing projects occurred in late 1997. (Estimating)	-3.2	-3.6
MILCON Subtotal	-1.8	-6.2

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 Init 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	-6.85	+54.47	+24.58	+1.14	+71.14	+2.90	-3.27	+144.11	343.21

b. Procurement Unit Cost (PUC) History

Initial SAR Baseline to Current SAR Baseline

PUC Init 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	-7.38	+34.04	+24.50	+0.72	+62.37	+1.48	-3.09	+112.64	284.51

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	41185.7
Total Quantity	210	N/A	210	120
Prog Acq Unit Cost	189.3	N/A	199.1	343.21

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

a. RDT&E --

Performance Improvement:

Boeing Airlift & Tankers, Long Beach, CA
F33657-95-D-2026, CPAF

Award: July 9, 1995

Definitized: July 9, 1995

Initial Contract Price
Target Ceiling Qty

\$71.3 N/A 0

Current Contract Price
Target Ceiling Qty
\$144.3 N/A 0

Estimated Price At Completion
Contractor Program Manager
\$144.3 \$144.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$6.8	\$-2.5
Cumulative Variances To Date (11/30/97)	<u>\$0.6</u>	<u>\$-0.7</u>
Net Change	\$-6.2	\$1.8

Explanation of Change:

Current Contract Price changed from the previous SAR with additional funding for the following Performance Improvement projects: Systems Engineering & Software Block Upgrade Systems Engineering, Air Mobility Contingency Precision Approach Capability, Automated Communications Processor (ACP) and Airborne Radio Communications (ARC) 210, Electronic Flight Control Systems, Dual Row Airdrop, and the Aircraft Structural Integrity Program.

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15. Contract Information (Cont'd):

Cost Variance: Overhead costs, a primary cost driver, were higher than the Forward Pricing Rate Agreement used to budget the effort.

Schedule Variance: The primary driver of this change was the implementation of an urgent need by Air Mobility Command for inclusion of the ARC 210 and ACP projects. The ACP project also delivered line replaceable units ahead of schedule.

b. Procurement --
Producibility Enhancement:
 Boeing Airlift & Tankers, Long Beach, CA
 F33657-95-D-2026, CPAF
 Award: July 9, 1995
 Definitized: July 9, 1995

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$123.4	N/A	0

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$347.4	N/A	0

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$347.4	\$352.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.2	\$-5.7
Cumulative Variances To Date (11/30/97)	<u>\$-5.1</u>	<u>\$-9.6</u>
Net Change	\$-8.3	\$-3.9

Explanation of Change:

Current Contract Price changed from the previous SAR with additional funding for the following Producibility Enhancement projects: Pollution Prevention Program, AGILE Phase II, Proposal Preparation Costs and Support Improvements.

Cost Variance: The negative impact on cost results from increased overhead costs incurred over and above the Forward Pricing Rate Agreement used to budget the effort. Repairs and down time in the main landing gear project increased costs.

Schedule Variance: The primary driver for the negative variance is due to part failures in the Nacelle/Engine Affordability Team project. Additionally, the late receipt of engineering drawings from Northrop Grumman Vought for tool design and fabrication contributed to the delay.

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15. Contract Information (Cont'd):

<u>Aircraft MYP (FY97-03):</u> Boeing Airlift & Tankers, Long Beach, CA F33657-96-C-2059, FFP Award: May 31, 1996 Definitized: May 31, 1996	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$14209.4	N/A	80

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$14209.4	N/A	80	\$14209.4	\$14209.4

Explanation of Change:

On May 31, 1996, a 7-year multiyear procurement contract for 80 aircraft (P-41 through P-120) was signed.

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

<u>FY96 Lot VIII Buy:</u> Boeing Airlift & Tankers, Long Beach, CA F33657-94-C-2251, FFP Award: February 23, 1996 Definitized: February 23, 1996	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$1877.1	N/A	8

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1877.1	N/A	8	\$1877.1	\$1877.1

Explanation of Change:

The Lot VIII contract authorized the production of eight aircraft, P-33 through P-40. The contract was awarded on February 23, 1996.

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

<u>FY95 Lot VII Buy:</u> Boeing Airlift & Tankers, Long Beach, CA F33657-93-C-0036, FFP Award: April 1, 1994 Definitized: April 1, 1994	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$1530.5	\$1675.9	6

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1530.5	N/A	6	\$1530.5	\$1530.5

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15. Contract Information (Cont'd):

Explanation of Change:

No Cost Performance Report data is available after the July 28, 1996 report. All aircraft are delivered (the last aircraft delivered May 1997). This is the final time this contract is being reported in the SAR.

Cost and Schedule variance reporting 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)

<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>
RODT&E	5876.9	104.6	123.1	582.4	6687.0
Procurement	16721.7	2201.3	3012.8	12205.6	34141.4
MILCON	250.4	6.5	71.0	29.4	357.3
O&M	-	-	-	-	-
Total	22849.0	2312.4	3206.9	12817.4	41185.7

b. Annual Summary -- C17

Appropriation: 3600 Research, Development, Test + Eval, AF

<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				54.1	33.4
1982					
1983				86.4	59.6
1984				37.4	26.8
1985				163.3	121.0
1986				461.7	350.4
1987				787.8	625.5
1988				1351.4	1101.4
1989				1098.7	938.3
1990				1026.0	903.9
1991				818.7	748.3
1992				269.0	252.9
1993				171.0	164.3
1994				228.8	223.5
1995				184.9	184.2
1996				70.9	72.0

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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 \$
1997				69.3	71.4
1998				100.0	104.6
1999				115.8	123.1
2000				142.9	154.3
2001				144.9	159.3
2002				102.4	114.5
2003				97.5	111.2
2004				37.0	43.1
Subtotal				7619.9	6687.0

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		74.2	61.1
1988	2	91.0	695.7	849.0	733.5
1989	4	17.3	1038.5	1329.9	1186.3
1990	4	77.2	1248.5	1641.4	1511.7
1991		80.3		244.7	233.7
1992	4	43.3	1390.9	1854.6	1804.5
1993	6	19.5	1932.7	1985.2	1959.4
1994	6	156.6	1829.5	2197.7	2206.5
1995	6	379.3	1698.0	2324.8	2373.6
1996	8	6.4	2008.2	2477.0	2571.1
1997	8	3.3	1753.7	1975.6	2080.3
1998	9	2.6	1869.2	2059.2	2201.3
1999	13	4.2	2424.5	2771.7	3012.8
2000	15	4.3	2617.9	3043.7	3369.4
2001	15	4.3	2585.6	2963.7	3340.1
2002	15	4.3	2579.2	2793.4	3212.4
2003	5	126.3	873.2	1309.6	1537.5
2004				411.9	494.3
2005				149.6	183.5
2006				41.4	51.9
2007				12.9	16.5
Subtotal	120	1052.4	26545.3	32511.2	34141.4

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

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				6.7	6.9
1997				77.5	80.9
1998				6.1	6.5
1999				65.9	71.0
2000				26.8	29.4
Subtotal				352.4	357.3

0

	Qty	Flyaway Dollars Nonrec	Flyaway Dollars Rec	Total Program Base-Year \$	Total Program Then-Year \$
Grand Total	120	1052.4	26545.3	40483.5	41185.7

17. Delivery/Expenditure Information:

a. Deliveries To Date	Plan	Actual
RDT&E	1	1
Procurement	37	37

Percent Total Program Quantities Delivered: 31.7%

b. Total Expenditures To Date (In Millions of Dollars): \$ 20030.6

Percent Total Program Expended: 48.6%

18. Operating and Support Costs:

a. Assumptions and Ground Rules --
The average annual cost per C-17 squadron was derived from the most current Air Force Service Cost Position (dated September 13, 1995), adjusted to include impacts from the Flexible Sustainment maintenance concept. The total Operating and Support (O&S) cost was divided by the nine operational squadrons and further divided by the number of years covered by the estimate (36 years,

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

from FY96 through FY31). This estimate was developed in FY96 BY dollars.

The O&S costs were based on a total of 120 aircraft, 96 were operated under the Active/Associate Reserve concept, six under the Air Reserve Component Unit Equipped, eight training aircraft, and ten in backup aircraft inventory. The estimate includes direct and indirect costs, as described below:

(1) Direct costs include; mission personnel, unit-level consumables, depot maintenance, interim contractor support (ICS), 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 consist primarily of government furnished equipment software maintenance. Other costs previously included under depot maintenance are now captured under ICS/CLS. 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 aircraft. 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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